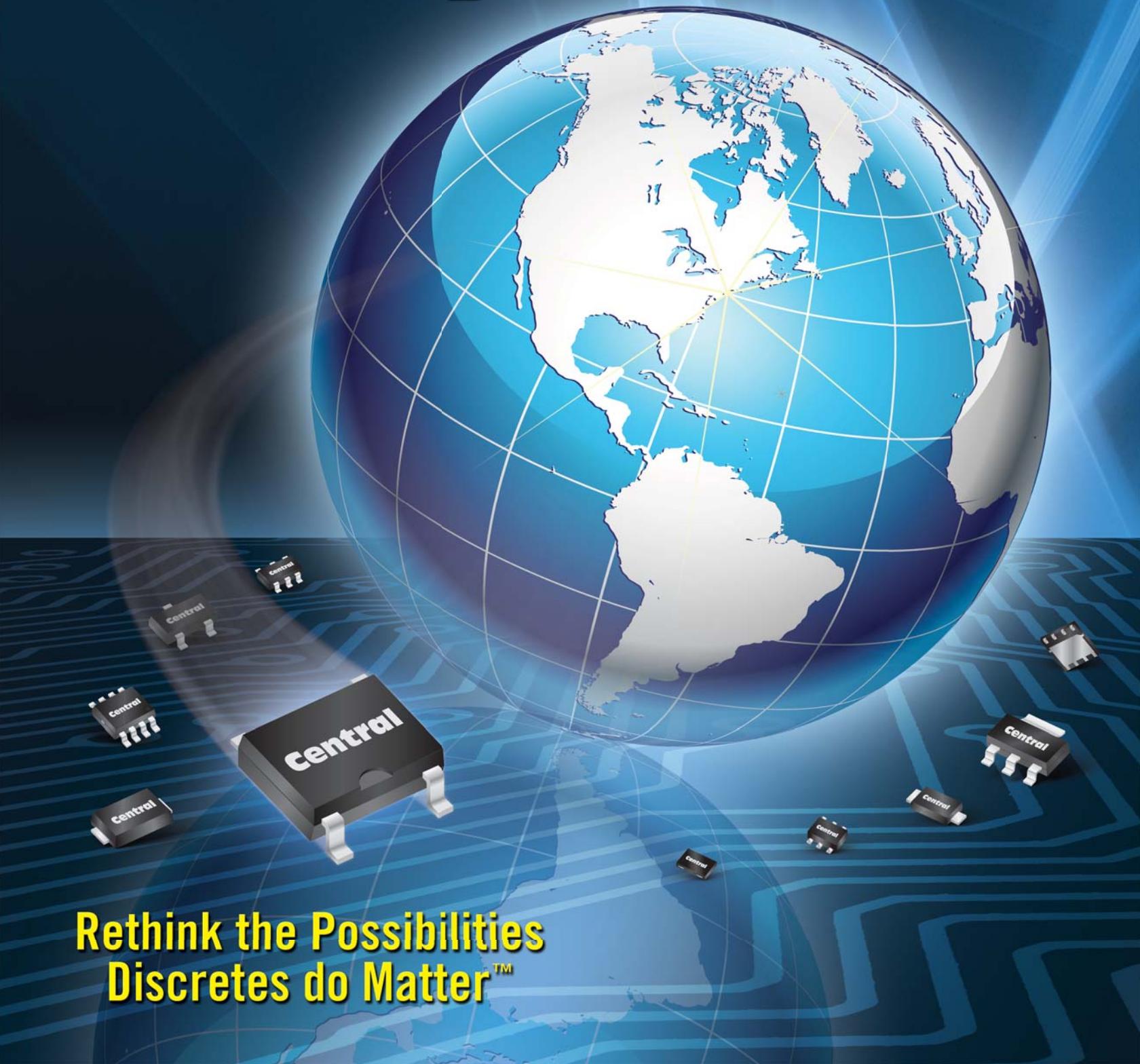


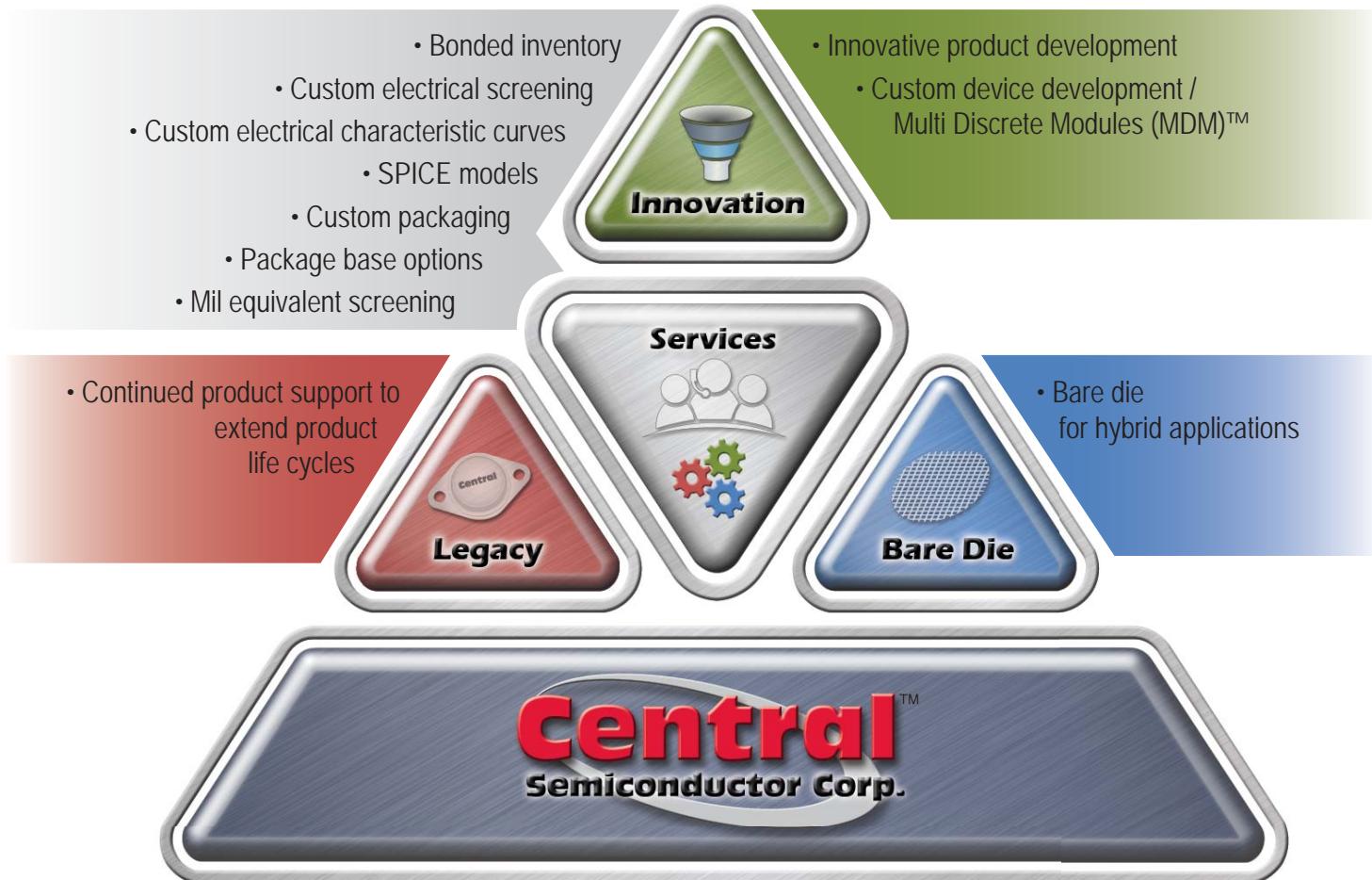


# *surface mount selection guide*



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# Surface Mount Selection Guide

This selection guide provides designers with the key electrical characteristics for each of the surface mount discrete semiconductors manufactured by Central Semiconductor. The guide is organized by device type and includes small signal transistors, MOSFETs, bipolar power transistors, diodes, protection devices, rectifiers, thyristors, and Multi Discrete Modules. Each section is divided by sub classifications within each type, such as low V<sub>CE(SAT)</sub> transistors and low leakage diodes. An alpha-numeric index is provided for easy reference.

An online parametric search is also available at [www.centralsemi.com/parasearch](http://www.centralsemi.com/parasearch).  
For further information please contact Central's Sales Support Team directly at 631-435-1110.

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Alpha-numeric listing of all devices included in this selection guide.

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## Small Signal Transistors

Central's popular standard and enhanced devices provide a diverse offering ranging from high current transistors in the SOT-223 package to the ultra miniature low V<sub>CE(SAT)</sub> transistors in the SOT-923.

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## MOSFETs

Central's latest MOSFETs offer distinct advantages in both size and performance. The new ultra low r<sub>DS(ON)</sub> UltraMOS™ MOSFETs devices are ideal for today's power management requirements.

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## Bipolar Power Transistors

Central manufactures standard legacy devices in the DPAK, SOT-223 and SOT-89 packages and in the newest TLM833S leadless package.

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## Diodes

One of Central's strengths is its diode portfolio. From fast switching diodes to energy efficient Schottky devices to Zener and Current Limiting diodes, Central has the discrete technology to meet designers' ever-changing requirements.

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## Protection Devices

The latest transient voltage suppressors are designed to meet the challenges of ESD protection in power user ports, interface and high speed data I/Os.

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## Rectifiers

Central's rectifiers provide the perfect solution for current requirements greater than 1.0 amp. New to the family are Hyper Fast rectifiers and high temperature Silicon Carbide Schottky rectifiers; both are ideal for the latest PFC applications.

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## Thyristors

Central's SCRs and TRIACs are well suited for high current switching of DC and AC motor control applications. Central manufactures some of the smallest SCRs in the industry including the low profile CMPS5064 in the SOT-23 package.

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## Multi Discrete Modules

Integrating different device types into a single package often facilitates assembly cost reductions. MOSFETs and diodes, MOSFETs and rectifiers, transistors and rectifiers, and other custom combinations are available.

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## Package Mechanical Specifications

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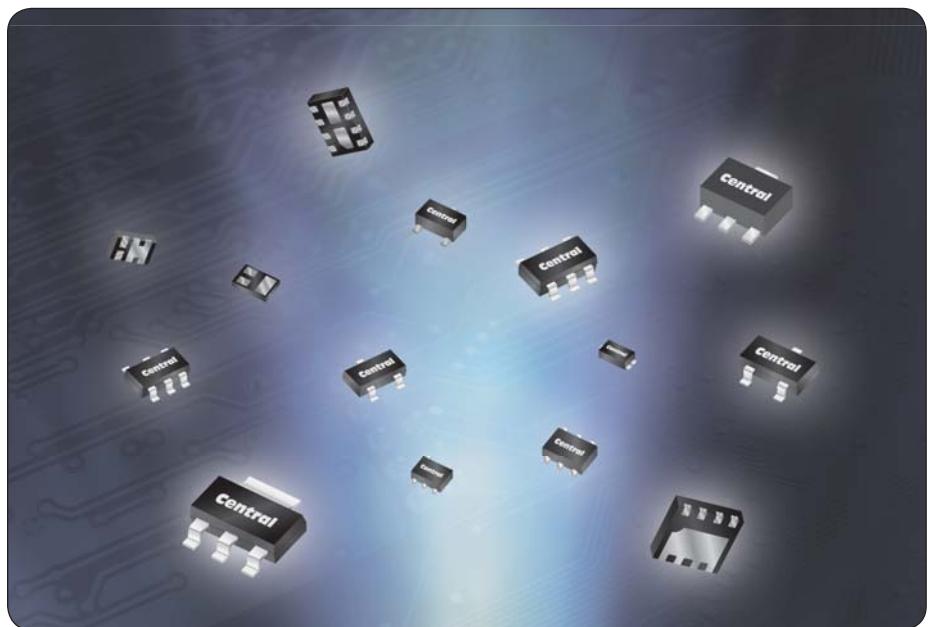
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CMUSH2-4L	29	CSDD-12M	67	CTLT7410-M621	13	CZT2222A	7
CMUSH2-4S	29	CSDD-12N	67	CTLT8099-M322S	7	CZT250K	13
CMUSHW2-4L	29	CSDD-16M	67	CTLT853-M833S	9	CZT2680	23
CMUT2222A	7	CSDD-16N	67	CTLT853-M833S	23	CZT2907A	7
CMUT2907A	7	CSDD-25M	67	CTLT953-M833S	9	CZT2955	23
CMUT3410	9	CSDD-25N	67	CTLT953-M833S	23	CZT3019	9
CMUT3410	13	CSDD-8M	67	CTLTV5-4	44	CZT3055	23
CMUT3904	7	CSDD-8N	67	CTLTV5V0B	43	CZT3090L	23
CMUT3906	7	CSHD10-100C	60	CTLTVS6V2	43	CZT3090LE	23
CMUT4401	7	CSHD10-45L	60	CTLTVS12	43	CZT3120	23
CMUT4403	7	CSHD3-100	57	CTLZ3V9 thru CTLZ8V2	33	CZT3150	23
CMUT5087E	9	CSHD3-40	57	CUD10-02	51	CZT3150	23
CMUT5088E	9	CSHD3-60	57	CUD10-04	51	CZT31C	23
CMUT5179	11	CSHD5-100	58	CUD10-06	51	CZT32C	23
CMUT5401	11	CSHD5-25L	58	CUD3-02	51	CZT3904	7
CMUT5401E	11	CSHD5-40	58	CUD6-02C	51	CZT3906	7
CMUT5551	11	CSHD5-60	58	CUDD16-02C	51	CZT4033	9
CMUT5551E	11	CSHD6-100C	59	CUDD16-04C	51	CZT5338	23
CMUT7410	9	CSHD6-40C	59	CUDD16-08C	51	CZT5401	11
CMUT7410	13	CSHD6-60C	59	CUDD8-02	51	CZT5401E	11
CMXD2004	27	CSHD8-100	59	CUDD8-04	51	CZT5551	11
CMXD2004S	27	CSHD8-200	59	CUDD8-08	51	CZT5551E	11
CMXD2004SR	27	CSHD8-60	59	CWDM305N	17	CZT5551HC	11
CMXD2004TO	27	CSHD12-60C	61	CWDM305ND	17	CZT651	9
CMXD3003TO	31	CSHDD16-100C	61	CWDM305P	19	CZT7090L	23
CMXD3004SR	27	CSHDD16-200C	61	CWDM305PD	19	CZT7090LE	23
CMXD4448	27	CSHDD16-40C	61	CWDM3011N	17	CZT7120	23
CMXD6001	31	CSHDD16-60C	61	CWDM3011P	19	CZT751	9
CMXDM7002A	17	CSHDD8-100	59	CXDM1002N	17	CZT853	9
CMXESD70-4	44	CSHDD8-40	59	CXDM3069N	17	CZT853	23
CMXSH-3	29	CSHDD8-60	59	CXDM4060N	17	CZT900K	13
CMXSH2-4LS	29	CSICD10-650	61	CXDM4060P	19	CZT953	9
CMXSTB200	31	CSL05	43	CXDM6053N	17	CZT953	23
CMXSTB300	31	CSL05D	43	CXR1-04	48	CZT955	23
CMXSTB400	31	CTLDM303N-M832DS	17	CXSH-4	55	CZTA14	13
CMXT2207	7	CTLDM304P-M832DS	19	CXT2222A	7	CZTA27	13
CMXT2222A	7	CTLDM7002A-M621	17	CXT2907A	7	CZTA28	13
CMXT2907A	7	CTLDM7002A-M621H	17	CXT3019	9	CZTA42	11
CMXT3090L	23	CTLDM7003-M621	17	CXT3090L	23	CZTA44	11
CMXT3904	7	CTLDM7120-M621H	17	CXT3150	23	CZTA44HC	23
CMXT3906	7	CTLDM7120-M832DS	17	CXT3410	9	CZTA46	11
CMXT3946	7	CTLDM7181-M832D	19	CXT3410	13	CZTA64	13
CMXT7090L	23	CTLDM8002A-M621	19	CXT3820	13	CZTA77	13
CMXTC935A	32	CTLDM8002A-M621H	19	CXT3904	7	CZTA92	11
CMXTVS5-4	44	CTLDM8120-M621H	19	CXT3906	7	CZTA94	11
CMXTVS5V6	45	CTLDM8120-M832DS	19	CXT4033	9	CZTA96	11
CMXTVS6V2	45	CTLHR10-06	53	CXT491E	9	CZTUX87	23
CMXZ2V4TO thru CMXZ47VTO	35	CTLM3410-M832D	9	CXT491E	23	MCR703A	66
CMYTVS5-2	45	CTLM3474-M832D	13	CXT5401	11	MCR704A	66
CMZ5334B thru CMZ5388B	37	CTLM3474-M832D	9	CXT5401E	11	MCR706A	66
CMZ5913B thru CMZ5956B	37	CTLM7110-M832D	72	CXT5551	11	MCR708A	66
CMZ5913BP thru CMZ5956BP	37	CTLM7410-M832D	9	CXT5551E	11	MCR716	67
CQ223-2M	68	CTLM8110-M832D	72	CXT5551HC	11	MCR718	67
CQ223-2N	68	CTLR5-06	48	CXT591E	9	P4SMA5.0A thru P4SMA220A	40
CQ223-4M	68	CTLS5064-M532	66	CXT591E	23	P6SMB6.8A thru P6SMB250A	42
CQ223-4N	68	CTLS5064R-M532	66	CXT7090L	23	P6SMB6.8CA thru P6SMB250CA	42
CQ89-2M	68	CTLSH01-30	29	CXT7410	9		
CQ89-2N	68	CTLSH01-30L	28	CXT7410	13		
CQD-4M	69	CTLSH05-40M621	28	CXT7820	13		
CQD-4N	69	CTLSH1-40M322S	54	CXT853	9		
CQD-8M3	69	CTLSH1-40M621H	28	CXT853	23		
CQDD-12M	69	CTLSH1-40M621H	54	CXT953	9		
CQDD-12M3	69	CTLSH1-40M832DS	54	CXT953	23		
CQDD-12N	69	CTLSH1-50M832DS	54	CXTA14	13		
CQDD-16M	69	CTLSH10-45L	60	CXTA27	13		
CQDD-16N	69	CTLSH10-100L	60	CXTA42	11		



# Small Signal Transistors

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## General Purpose Amplifiers/Switches

	FAMILY	I <sub>C</sub> (A) MAX	BV <sub>CBO</sub> (V) MIN	BV <sub>CEO</sub> (V) MIN	BV <sub>EBO</sub> (V) MIN	I <sub>CBO</sub> * I <sub>CEV</sub> (nA) MAX	@ V <sub>CB</sub> @ V <sub>CE</sub> (V)	h <sub>FE</sub> MIN	@ V <sub>CE</sub> MAX	@ I <sub>C</sub> (mA)	V <sub>CE(SAT)</sub> (V) MAX	@ I <sub>C</sub> (mA)	C <sub>ob</sub> (pF) MAX	f <sub>T</sub> (MHz) MIN	NF (dB) MAX	t <sub>off</sub> (ns) MAX		
<b>S</b> Devices are listed in order of descending breakdown voltage.																		
E►	NPN	2222AE	0.6	100	45	6.0	10	60	100	300	10	150	0.5	500	8.0	300	4.0	285
		8099	0.5	80	80	6.0	100	80	100	300	5.0	1.0	0.4	100	6.0	150	—	—
		2222A	0.6	75	40	6.0	10	60	100	300	10	150	1.0	500	8.0	300	4.0	285
		3904E	0.2	60	40	6.0	50*	30	100	300	1.0	10	0.2	50	4.0	300	4.0	250
		3904	0.2	60	40	6.0	50*	30	100	300	1.0	10	0.3	50	4.0	300	5.0	250
		3920	0.2	60	50	7.0	100	60	120	560	6.0	1.0	0.4	50	3.5	300	—	—
		4401	0.6	60	40	6.0	100*	35	100	300	1.0	150	0.75	500	6.5	250	—	255
E►	PNP	2907AE	0.6	90	60	5.0	10	50	100	300	10	150	0.7	500	8.0	200	—	100
		8599	0.5	80	80	5.0	100	80	100	300	5.0	1.0	0.4	100	4.5	150	—	—
		2907A	0.6	60	60	5.0	10	50	100	300	10	150	1.6	500	8.0	200	—	100
		3906E	0.2	60	40	6.0	50*	30	100	300	1.0	10	0.2	50	4.0	300	4.0	250
		3906	0.2	40	40	5.0	50*	30	100	300	1.0	10	0.4	50	4.5	250	4.0	300
		4403	0.6	40	40	5.0	100*	35	100	300	2.0	150	0.75	500	8.5	200	—	255
		2222A (NPN) +	0.6	75	40	6.0	10	60	100	300	10	150	1.0	500	8.0	300	4.0	285
E►	NPN & PNP	2907A (PNP)	0.6	60	60	5.0	10	50	100	300	10	150	1.6	500	8.0	200	—	100
		3904E (NPN) +	0.2	60	40	6.0	50*	30	100	300	1.0	10	0.2	50	4.0	300	4.0	250
		3906E (PNP)	0.2	60	40	6.0	50*	30	100	300	1.0	10	0.2	50	4.0	300	4.0	250
		3904 (NPN) +	0.2	60	40	6.0	50*	30	100	300	1.0	10	0.3	50	4.0	300	5.0	250
		3906 (PNP)	0.2	40	40	5.0	50*	30	100	300	1.0	10	0.4	50	4.5	250	4.0	300
		4401 (NPN) +	0.6	60	40	6.0	100*	35	100	300	1.0	150	0.75	500	6.5	250	—	255
		4403 (PNP)	0.6	40	40	5.0	100*	35	100	300	2.0	150	0.75	500	8.5	200	—	255

**E►** Indicates Enhanced Specification Device. Enhanced Spec in Red and **Bold**

**S** Indicates Sorted Columns.



Package dimensions shown are maximum values in mm.

FAMILY	TLM322S	SOT-923	SOT-953	SOT-883L	SOT-523	SOT-563	SOT-323	SOT-363	SOT-23	SOT-26	SOT-89	SOT-223
	2.05 x 2.05 x 0.6	1.10 x 0.65 x 0.41	1.05 x 1.05 x 0.5	1.05 x 0.65 x 0.4	1.7 x 1.7 x 0.78	1.7 x 1.7 x 0.6	2.2 x 2.2 x 1.1	2.2 x 2.3 x 1.1	3.05 x 2.49 x 1.09	3.0 x 3.0 x 1.2	4.7 x 4.5 x 1.7	6.7 x 7.3 x 1.8

2222AE										CMPT2222AE			
8099	CTLT8099-M322S					CMLT8099 (2x) CMLT8099M (2x Matched)				CMPT8099			
2222A					CMUT2222A	CMLT2222A (2x)	CMST2222A	CMKT2222A (2x)	CMPT2222A	CMXT2222A (2x)	CXT2222A	CZT2222A	
3904E		CMBT3904E	CMNT3904E	CET3904E		CMLT3904E (2x)			CMPT3904E				
3904					CMUT3904		CMST3904	CMKT3904 (2x)	CMPT3904	CMXT3904 (2x)	CXT3904	CZT3904	
3920								CMKT3920 (2x)					
4401					CMUT4401				CMPT4401				

2907AE										CMPT2907AE			
8599										CMPT8599			
2907A						CMUT2907A	CMLT2907A (2x)	CMST2907A	CMKT2907A (2x)	CMPT2907A	CMXT2907A (2x)	CXT2907A	CZT2907A
3906E		CMBT3906E	CMNT3906E	CET3906E		CMLT3906E (2x)			CMPT3906E				
3906					CMUT3906		CMST3906	CMKT3906 (2x)	CMPT3906	CMXT3906 (2x)	CXT3906	CZT3906	
4403					CMUT4403				CMPT4403				

2222A (NPN)													
2907A (PNP)	+ 						CMLT2207 (2x)		CMKT2207 (2x)		CMXT2207 (2x)		
3904E (NPN)	+ 												
3906E (PNP)	+ 						CMLT3946E (2x)						
3904 (NPN)	+ 												
3906 (PNP)	+ 												
4401 (NPN)	+ 												
4403 (PNP)	+ 						CMLT4413 (2x)						

(2x) under part number indicates two devices in one package.  
(4x) under part number indicates four devices in one package.

## Low Noise Amplifiers

	FAMILY	I <sub>C</sub> (A) MAX	BV <sub>CBO</sub> (V) MIN	BV <sub>CEO</sub> (V) MIN	BV <sub>EBO</sub> (V) MIN	I <sub>CBO</sub> (nA) MAX	@ V <sub>CB</sub> (V)	h <sub>FE</sub> MIN	@ V <sub>CE</sub> MAX	@ I <sub>C</sub> (mA)	V <sub>CE(SAT)</sub> (V) MAX	@ I <sub>C</sub> (mA)	C <sub>ob</sub> †TYP (pF) MAX	f <sub>T</sub> †TYP (MHz) MIN	NF (dB) MAX	t <sub>off</sub> (ns) MAX	S
Devices are listed in order of ascending NF.																	
E►	5089	0.05	30	25	4.5	50	15	400	1,200	5.0	0.1	0.5	10	4.0	50	2.0	—
	930	0.03	45	45	5.0	10	45	100	300	5.0	0.01	1.0	10	8.0	30	3.0	—
	2484	0.05	60	60	6.0	10	45	250	—	5.0	1.0	0.35	1.0	6.0	—	3.0	—
	5088	0.05	35	30	4.5	50	20	300	900	5.0	0.1	0.5	10	4.0	50	3.0	—
	5088E	0.1	<b>50</b>	<b>50</b>	<b>5.0</b>	50	20	300	900	5.0	0.1	0.1	10	4.0	<b>100</b>	3.0	—
	6428	0.2	60	50	6.0	10	30	250	650	5.0	0.1	0.6	100	3.0	100	—	—
E►	6429	0.2	55	45	6.0	10	30	500	1,250	5.0	0.1	0.6	100	3.0	100	—	—
	5087	0.05	50	50	3.0	50	35	250	800	5.0	0.1	0.3	10	4.0	40	2.0	—
	5087E	0.1	<b>50</b>	<b>50</b>	<b>5.0</b>	50	20	300	900	5.0	0.1	0.1	10	4.0	<b>100</b>	3.0	—
	5086	0.05	50	50	3.0	50	35	150	500	5.0	0.1	0.3	10	4.0	40	3.0	—
E►	992	0.05	110	110	5.0	—	—	200	800	6.0	1.0	0.3	10	3.0	50	3.0	—
	5088E (NPN) +	0.1	<b>50</b>	<b>50</b>	<b>5.0</b>	50	20	300	900	5.0	0.1	0.1	10	4.0	<b>100</b>	3.0	—
	5087E (PNP) +	0.1	<b>50</b>	<b>50</b>	<b>5.0</b>	50	20	300	900	5.0	0.1	0.1	10	4.0	<b>100</b>	3.0	—
	5088 (NPN) +	0.05	35	30	4.5	50	20	300	900	5.0	0.1	0.5	10	4.0	50	3.0	—
	5087 (PNP) +	0.05	50	50	3.0	50	35	250	800	5.0	0.1	0.3	10	4.0	40	2.0	—

## High Current

S Devices are listed in order of descending breakdown voltage.																	
E►	853	6.0	200	100	6.0	10	150	100	300	2.0	2,000	0.05	100	38†	190†	—	—
	3019	0.5	120	80	7.0	10	90	100	300	10	150	0.5	500	12	100	4.0	—
	A06	0.5	80	80	4.0	100	80	100	—	1.0	100	0.25	100	—	100	—	—
	491E	1.0	80	60	5.0	100	60	<b>200</b>	<b>600</b>	5.0	500	<b>0.2</b>	500	10	150	—	—
	651	2.0	80	60	5.0	100	80	75	—	2.0	500	0.5	2,000	—	75	—	—
	3410	1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	10	100	—	—
E►	68	0.8	25	20	5.0	100	25	85	375	1.0	500	0.5	1,000	—	65	—	—
	953	5.0	140	100	6.0	50	100	100	300	1.0	1,000	0.05	100	45†	150†	—	—
	4033	0.5	80	80	5.0	50	60	100	300	5.0	100	0.5	500	20	100	—	—
	A56	0.5	80	80	4.0	100	80	100	—	1.0	100	0.25	100	—	50	—	—
	591E	1.0	80	60	5.0	100	60	<b>200</b>	<b>600</b>	5.0	500	<b>0.2</b>	500	10	150	—	—
	751	2.0	80	60	5.0	100	80	75	—	2.0	500	0.5	2,000	—	75	—	—
NPN & PNP	7410	1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	15	100	—	—
	69	1.0	25	20	5.0	100	25	85	375	1.0	500	0.5	1,000	—	65	—	—
	3410 (NPN) +	1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	10	100	—	—
NPN & PNP	7410 (PNP) +	1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	15	100	—	—

E► Indicates Enhanced Specification Device. Enhanced Spec in Red and Bold

S Indicates Sorted Columns.



### Tiny Leadless Module™

Package dimensions shown are maximum values in mm.

FAMILY	TLM621 	TLM832D 	TLM833S 	SOT-523 	SOT-563 	SOT-323 	SOT-363 	SOT-23 	SOT-89 	SOT-223 
	2.15 x 1.15 x 0.8	3.1 x 2.1 x 1.0	3.15 x 3.15 x 1.0	1.7 x 1.7 x 0.78	1.7 x 1.7 x 0.6	2.2 x 2.2 x 1.1	2.2 x 2.3 x 1.1	3.05 x 2.49 x 1.09	4.7 x 4.5 x 1.7	6.7 x 7.3 x 1.8
5089								CMKT5089M10 (2x Matched)	CMPT5089	
930									CMPT930	
2484									CMPT2484	
5088								CMKT5088 (2x)	CMPT5088	
5088E				CMUT5088E	CMLT5088E (2x) CMLT5088EM (2x Matched)			CMPT5088E		
6428									CMPT6428	
6429									CMPT6429	
5087								CMKT5087 (2x)	CMPT5087	
5087E				CMUT5087E	CMLT5087E (2x) CMLT5087EM (2x Matched)			CMPT5087E		
5086									CMPT5086	
992									CMPT992	
5088E (NPN) + 5087E (PNP)					CMLT5078E (2x)					
5087E (PNP)										
5088 (NPN) + 5087 (PNP)								CMKT5078 (2x)		

853				CTLT853-M833S					CXT853	CZT853
3019									CMPT3019	CXT3019
A06									CMPTA06	
491E					CMLT491E				CMPT491E	CXT491E
651										CZT651
3410	CTLT3410-M621	CTLM3410-M832D (2x)		CMUT3410	CMLT3410 (2x)	CMST3410		CMPT3410	CXT3410	
68									CBCX68	CBCP68
953				CTLT953-M833S					CXT953	CZT953
4033									CMPT4033	CXT4033
A56									CMPTA56	
591E					CMLT591E				CMPT591E	CXT591E
751										CZT751
7410	CTLT7410-M621	CTLM7410-M832D (2x)		CMUT7410	CMLT7410 (2x)	CMST7410		CMPT7410	CXT7410	
69									CBCX69	CBCP69
3410 (NPN) + 7410 (PNP)		CTLM3474-M832D (2x)			CMLT3474 (2x)					

(2x) under part number indicates two devices in one package.  
(4x) under part number indicates four devices in one package.

## RF Oscillator

	FAMILY	I <sub>C</sub> (A) MAX	BV <sub>CBO</sub> (V) MIN	BV <sub>CEO</sub> * (V) MIN	BV <sub>EBO</sub> (V) MIN	I <sub>CBO</sub> (nA) MAX	@ V <sub>CB</sub> (V)	h <sub>FE</sub> MIN	@ V <sub>CE</sub> MAX	@ I <sub>C</sub> (mA)	V <sub>CE(SAT)</sub> (V) MAX	@ I <sub>C</sub> (mA)	C <sub>ob</sub> (pF) MAX	f <sub>T</sub> (MHz) MIN	NF (dB) MAX	t <sub>off</sub> (ns) MAX	
Devices are listed in order of descending f <sub>T</sub> . <span style="color:red;">▼</span>																	
NPN	5179	0.05	20	12	2.5	20	15	25	—	1.0	3.0	0.4	10	1.0	900	4.5	—
	H10	0.05	30	25	3.0	100	25	60	—	10	4.0	0.5	4.0	0.7	650	—	—
	918	0.05	30	15	3.0	10	15	20	—	1.0	3.0	0.4	10	1.7	600	6.0	—
PNP	H81	0.05	20	20	3.0	100	10	60	—	10	5.0	0.5	5.0	0.85	600	—	—

## High Voltage

▼ Devices are listed in order of descending breakdown voltage.

E► NPN	A46	0.5	450	450	6.0	100	400	50	200	10	10	0.5	50	7.0	20	—	—
	A44	0.3	450	400	6.0	100	400	50	200	10	10	0.75	50	7.0	20	—	—
	6517	0.5	350	350	5.0	50	250	30	200	10	30	1.0	50	—	40	—	—
E► PNP	A42E	0.5	350	350	6.0	250	200	50	—	10	30	0.35	50	6.0	50	—	—
	A42	0.5	300	300	6.0	100	200	40	—	10	30	0.5	20	3.0	50	—	—
	5551E	0.6	250	220	6.0	50	120	120	300	5.0	10	0.1	50	6.0	100	8.0	—
E►	5551	0.6	180	160	6.0	50	120	80	250	5.0	10	0.2	50	6.0	100	8.0	—
	5551HC	1.0	180	160	6.0	50	120	80	250	5.0	10	0.2	50	15	100	—	—
	A96	0.5	450	450	6.0	100	400	50	200	10	10	0.5	50	7.0	20	—	—
E► PNP	A94	0.3	400	400	6.0	100	350	50	200	10	10	0.75	50	7.0	20	—	—
	6520	0.5	350	350	5.0	50	250	30	200	10	30	1.0	50	—	40	—	—
	A92E	0.5	350	350	6.0	250	200	50	—	10	30	0.35	50	6.0	50	—	—
E►	A92	0.5	300	300	5.0	250	200	25	—	10	30	0.5	20	6.0	50	—	—
	5401E	0.6	250	220	7.0	50	120	100	300	5.0	10	0.15	50	6.0	100	8.0	—
	5401	0.6	160	150	5.0	50	100	60	240	5.0	10	0.5	50	6.0	100	8.0	—
NPN & PNP	5551 (NPN) +	0.6	180	160	6.0	50	120	80	250	5.0	10	0.2	50	6.0	100	8.0	—
	5401 (PNP)	0.6	160	150	5.0	50	120	60	240	5.0	10	0.5	50	6.0	100	8.0	—

## Saturated Switches

Devices are listed in order of descending f<sub>T</sub>. ▼

NPN	2369	0.5	40	15	4.5	400	20	40	120	1.0	10	0.25	10	4.0	500	—	18
	3646	0.2	40	15	5.0	500*	20	15	—	1.0	300	0.5	300	5.0	350	—	28
PNP	3640	0.08	12	12	4.0	10*	6.0	30	120	0.3	10	0.6	50	3.5	500	—	35

E► Indicates Enhanced Specification Device. Enhanced Spec in Red and **Bold**

▼ Indicates Sorted Columns.



Tiny Leadless  
Module™

Package dimensions shown are maximum values in mm.

FAMILY	TLM832D	SOT-523	SOT-563	SOT-23	SOT-89	SOT-223
	3.1 x 2.1 x 1.0	1.7 x 1.7 x 0.78	1.7 x 1.7 x 0.6	3.05 x 2.49 x 1.09	4.7 x 4.5 x 1.7	6.7 x 7.3 x 1.8

5179		CMUT5179		CMPT5179		
H10				CMPTH10		
918				CMPT918		
H81				CMPTH81		

A46				CMPTA46		CZTA46
A44			CMLTA44	CMPTA44	CXTA44	CZTA44
6517				CMPT6517		
A42E				CMPTA42E		
A42				CMPTA42	CXTA42	CZTA42
5551E		CMUT5551E		CMPT5551E	CXT5551E	CZT5551E
5551	CTLT5551-M832D (2x)	CMUT5551	CMLT5551 (2x)	CMPT5551	CXT5551	CZT5551
5551HC			CMLT5551HC	CMPT5551HC	CXT5551HC	CZT5551HC
A96				CMPTA96		CZTA96
A94			CMLTA94	CMPTA94		CZTA94
6520				CMPT6520		
A92E				CMPTA92E		
A92				CMPTA92	CXTA92	CZTA92
5401E		CMUT5401E		CMPT5401E	CXT5401E	CZT5401E
5401		CMUT5401		CMPT5401	CXT5401	CZT5401
5551 (NPN)			CMLT5554 (2x)			
5401 (PNP)						

2369				CMPT2369		
3646				CMPT3646		
3640				CMPT3640		

(2x) under part number indicates two devices in one package.

## Darlington

	FAMILY	I <sub>C</sub> (A) MAX	BV <sub>CBO</sub> (V) MIN	BV <sub>CEO</sub> *BV <sub>CES</sub> (V) MIN	BV <sub>EBO</sub> (V) MIN	I <sub>CBO</sub> (nA) MAX	@ V <sub>CB</sub> (V)	h <sub>FE</sub> MIN 	@ V <sub>CE</sub> (V)	@ I <sub>C</sub> (mA)	V <sub>CE(SAT)</sub> (V) MAX	@ I <sub>C</sub> (mA)	C <sub>ob</sub> (pF) MAX	f <sub>T</sub> (MHz) MIN	NF (dB) MAX	t <sub>off</sub> (ns) MAX	
Devices are listed in order of descending h <sub>FE</sub> .																	
E►	900K	1.0	50	25	10	100	30	900,000	—	5.0	100	1.5	100	—	125	—	—
	250K	1.0	50	25	10	100	30	250,000	—	5.0	100	1.5	100	—	125	—	—
	A14E	0.5	40	40*	10	100	40	40,000	—	5.0	100	1.0	100	—	125	—	—
	6427E	0.5	60	60*	14	100	30	25,000	200,000	5.0	100	1.0	500	7.0	200†	10	—
	A14	0.5	30	30*	10	100	30	20,000	—	5.0	100	1.5	100	—	125	—	—
	6427	0.5	40	40	12	50	30	20,000	200,000	5.0	100	1.5	500	7.0	130	10	—
	A13	0.5	30	30*	10	100	30	10,000	—	5.0	100	1.5	100	—	125	—	—
	A27	0.5	60	60*	10	100	50	10,000	—	5.0	100	1.5	100	—	125	—	—
	A28	0.5	80	80*	12	100	60	10,000	—	5.0	100	1.5	100	8.0	125	—	—
	A29	0.5	100	100*	12	100	80	10,000	—	5.0	100	1.5	100	8.0	125	—	—
PNP	2000	0.6	200	200*	10	500	180	3,000	—	5.0	160	1.1	80	—	—	—	—
	A64	0.5	30	30*	10	100	30	20,000	—	5.0	100	1.5	100	—	125	—	—
	A63	0.5	30	30*	10	100	30	10,000	—	5.0	100	1.5	100	—	125	—	—
PNP	A77	0.5	60	60*	10	100	50	10,000	—	5.0	100	1.5	100	—	125	—	—

## Low V<sub>CE(SAT)</sub>

NPN	3410	1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	10	100	—	—
	3820	1.0	80	60	5.0	100	60	100	—	5.0	1,000	0.28	1,000	10	150	—	—
PNP	7410	1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	15	100	—	—
	7820	1.0	80	60	5.0	100	60	100	—	5.0	1,000	0.34	1,000	15	150	—	—
NPN & PNP	3410 (NPN) + 7410 (PNP)	1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	10	100	—	—
		1.0	40	25	6.0	100	40	100	300	1.0	100	0.45	1,000	15	100	—	—

## Chopper

PNP	404A	0.15	40	35	25	100	10	100	400	0.15	12	0.20	24	40	—	—
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Indicates Enhanced Specification Device. Enhanced Spec in Red and Bold Indicates Sorted Columns.



Tiny Leadless Module™

FAMILY	TLM621	TLM832D	SOT-523	SOT-563	SOT-323	SOT-23	SOT-89	SOT-223	
			1.7 x 1.15 x 0.8	3.1 x 2.1 x 1.0	1.7 x 1.7 x 0.78	1.7 x 1.7 x 0.6	2.2 x 2.2 x 1.1	3.05 x 2.49 x 1.09	4.7 x 4.5 x 1.7

Package dimensions shown are maximum values in mm.

900K									CZT900K
250K									CZT250K
A14E							CMPTA14E		
6427E				CMLT6427E	CMST6427E				
A14							CMPTA14	CXTA14	CZTA14
6427							CMPT6427		
A13							CMPTA13		
A27							CMPTA27	CXTA27	CZTA27
A28									CZTA28
A29							CMPTA29		
2000									CZT2000
A64							CMPTA64	CXTA64	CZTA64
A63							CMPTA63		
A77							CMPTA77		CZTA77

	3410	CTLT3410-M621		CMUT3410	CMLT3410 (2x)	CMST3410	CMPT3410	CXT3410	
	3820				CMLT3820G		CMPT3820	CXT3820	
	7410	CTLT7410-M621		CMUT7410	CMLT7410 (2x)	CMST7410	CMPT7410	CXT7410	
	7820				CMLT7820G		CMPT7820	CXT7820	
	3410 (NPN) + 7410 (PNP)		CTLM3474-M832D (2x)		CMLT3474 (2x)				
	404A						CMPT404A		

(2x) under part number indicates two devices in one package.

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	$I_D$ (A) MAX	$BV_{DSS}$ (V) MIN	$r_{DS(ON)}$ ( $\Omega$ ) TYP	Case Type
600V	CDM4-600LR	4.0	600	0.65 @ 2.0A
	CDM7-600LR	7.0	600	0.53 @ 3.5A
	CDM22011-600LRFP	11	600	0.30 @ 5.5A
	CDM7-700LR	7.0	700	0.50 @ 3.5A
	CDM2206-800LR	6.0	800	0.8 @ 3.0A
	CDM22012-800LRFP	12	800	0.37 @ 6.0A

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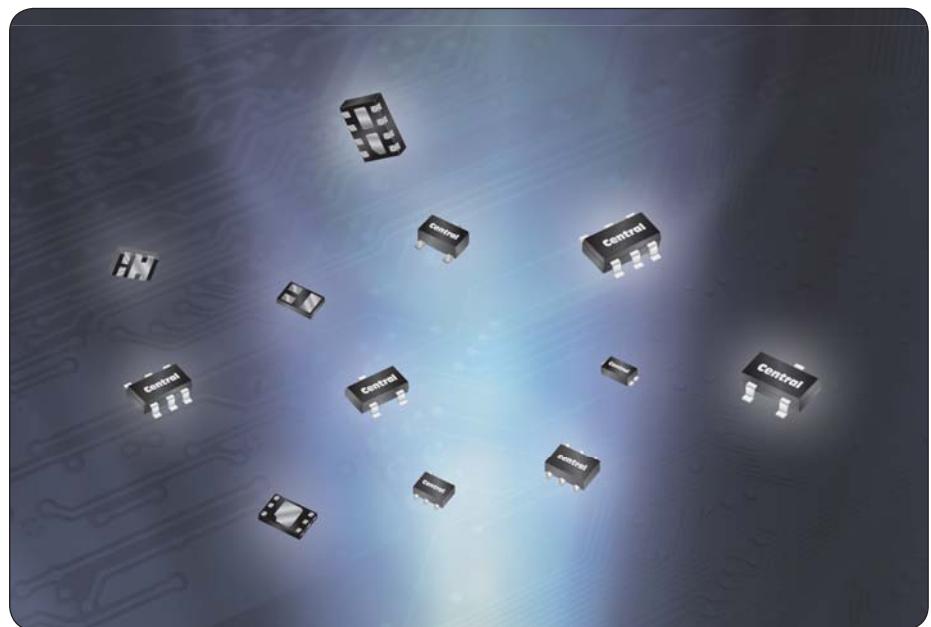
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# MOSFETs

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# MOSFETs



Tiny Leadless Module™

FAMILY	$I_D$ $*T_L=25^\circ C$ (A)	$BV_{DSS}$ (V)	$r_{DS(ON)}$ @ $V_{GS}$		$V_{GS(th)}$		$C_{iss}$ (pF) †TYP	$C_{rss}$ (pF) †TYP	$C_{oss}$ (pF) †TYP	$Q_g(\text{tot})$ (nC) †TYP	$t_{on}$ (ns) †TYP	$t_{off}$ (ns) †TYP	TLM621 2.15 x 1.15 x 0.8	TLM621H 2.15 x 1.65 x 0.4	TLM832DS 3.05 x 2.05 x 1.05
			MIN	MAX	(Ω)	(V)									
<span style="color: red;">S</span> Devices are listed in order of ascending $I_D$ .															
7001	0.1	20	3.0	4.0	0.6	0.9	†9.0	†4.0	†9.5	†0.566	†50	†75			
7002	0.115	60	7.5	10	1.0	2.5	50	5.0	25	†0.592	20	20			
3590	0.16	20	3.0	4.5	0.4	1.0	†9.0	†2.2	3.0	†0.458	†25	†85			
7002A	0.28	60	2.0	10	1.0	2.5	50	5.0	25	†0.592	20	20	CTLDM7002A-M621	CTLDM7002A-M621H (2x)	
7002AE	<b>0.3</b>	<b>60</b>	<b>1.4</b>	10	1.2	2.0	50	5.0	25	†0.5	20	45			
7003E	0.28	50	<b>2.3</b>	1.8	0.49	1.2	50	5.0	25	†0.764	—	—			
7003TG	0.28	50	2.3	1.8	0.7	1.2	50	5.0	25	†0.764	—	—			
7003	0.28	50	3.0	1.8	0.49	1.0	50	5.0	25	†0.764	—	—	CTLDM7003-M621 (2x)		
3737	0.54	20	0.55	4.5	0.45	1.0	150	20	25	†1.58	†10	†25			
7005	0.65	20	0.23	4.5	0.5	1.1	†100	†18	†18	†1.58	†10	†25			
7120	1.0	20	0.14	2.5	0.5	1.2	†220	†45	†120	†2.4	†25	†140		CTLDM7120-M621H	
7120TG	1.0	20	0.25	1.5	0.5	0.85	†220	†45	†120	†2.4	†25	†140		CTLDM7120-M832DS (2x)	
7002AHC	1.0	63	0.22	10	1.2	2.3	240	25	50	†2.3	35	50			
7004	*1.78	30	0.56	2.5	0.5	1.0	†43	†5.0	†8.0	†0.792	†20	†75			
1002N	2.0	100	0.30	10	1.5	2.5	†550	†48	†45	†6.0	†32	†50			
1003N	3.0	100	0.15	10	2.0	4.0	†705	†55	80	†15	†40	†60			
3-800	3.0	800	4.8	10	2.0	4.0	†415	†1.5	†44	†11.3	†33	†50			
203NH	3.2	20	0.05	4.5	0.6	1.2	†395	†44	†97	10	†6.0	†22.8			
303N	3.6	30	0.04	4.5	0.6	1.2	†590	†55	†50	13	†15	†29		CTLDM303N-M832DS (2x)	
303NH	3.6	30	0.04	4.5	0.6	1.2	†590	†55	†50	13	†15	†29			
4-600LR	4.0	600	0.95	10	2.0	4.0	†328	†1.31	†26	†11.59	†32	†57			
4-650	4.0	650	2.7	10	2.0	4.0	†463	†1.0	†60	†11.4	†32	†44			
6053N	5.3	60	0.041	10	1.0	3.0	†920	†53	†49	†8.8	†33	†42			
305N	5.8	30	0.03	10	1.0	3.0	560	54	†52	†4.2	†6.5	†8.5			
4060N	6.0	40	0.031	10	1.0	3.0	†730	†64	†58	†12	†27	†33			
3069N	6.9	30	0.03	10	0.7	1.4	†580	†47	†42	†11	†20	†28			
7-600LR	7.0	600	0.58	10	2.0	4.0	†440	†1.94	†33	†14.5	†35	†70			
7-650	7.0	650	1.5	10	2.88	4.0	†754	†0.8	†97	†16.8	†42	†66			
7-700LR	7.0	700	0.60	10	2.0	4.0	†561	†2.45	†26.9	†18.8	†44	†87			
3011N	11	30	0.02	10	1.0	3.0	†860	†100	†120	†6.3	†20	†30			

E Indicates Enhanced Specification Device. Enhanced Spec in Red and Bold

S Indicates Sorted Columns.

Package dimensions shown are maximum values in mm.

	SOT-953 	SOT-963 	SOT-883VL 	SOT-883L 	SOT-523 	SOT-563 	SOT-23 	SOT-23F 	SOT-26 	SOT-89 	SOIC-8 	SOT-223 	DPAK 
	1.05 x 1.05 x 0.5	1.05 x 1.05 x 0.5	1.05 x 0.65 x 0.32	1.05 x 0.65 x 0.4	1.7 x 1.7 x 0.78	1.7 x 1.7 x 0.6	3.05 x 2.49 x 1.09	3.0 x 2.5 x 1.0	3.0 x 3.0 x 1.2	4.7 x 4.5 x 1.7	5.01 x 6.18 x 1.71	6.7 x 7.3 x 1.8	10.73 x 6.81 x 2.75
	CMNDM7001		CEDM7001VL	CEDM7001	CMUDM7001								
							2N7002						
		CMRDM3590 (2x)											
						CMLDM7002A CMLDM7002AJ (2x)	CMPDM7002A		CMXDM7002A (2x)				
				CEDM7002AE			CMPDM7002AE						
						CMLDM7003E CMLDM7003JE (2x)							
						CMLDM7003TG (2x)							
						CMLDM7003 CMLDM7003J (2x)	CMPDM7003						
						CMLDM3737 (2x)							
					CMUDM7005	CMLDM7005 CMLDM7005R (2x)							
						CMLDM7120G	CMPDM7120G						
						CMLDM7120TG							
						CMPDM 7002AHC							
			CEDM7004VL	CEDM7004	CMUDM7004								
										CXDM1002N			
											CZDM1003N		
							CMPDM203NH						CDM3-800
							CMPDM303NH						
												CDM4-600LR	
													CDM4-650
									CXDM6053N				
										CWDM305N CWDM305ND (2x)			
										CXDM4060N			
										CXDM3069N			
											CDM7-600LR		
											CDM7-650		
											CDM7-700LR		
											CWDM3011N		

# MOSFETs



**S** Devices are listed in order of ascending  $I_D$ .

FAMILY	$I_D$ $*T_L=25^\circ C$ (A)	BVDS	$r_{DS(ON)}$ ( $\Omega$ )	@ $V_{GS}$ (V)	$V_{GS(th)}$		$C_{iss}$ (pF) †TYP	$C_{rss}$ (pF) †TYP	$C_{oss}$ (pF) †TYP	$Q_{g(tot)}$ (nC) †TYP	$t_{on}$ (ns) †TYP	$t_{off}$ (ns) †TYP	TLM621 	TLM621H 	
					MIN	MAX									
P-Channel	8001	0.1	20	8.0	4.0	0.6	1.1	†45	†15	†15	†0.658	†35	†80		
	7590	0.14	20	5.0	4.5	0.4	1.0	†10	†4.0	†3.7	†0.50	†35	†100		
	8002A	0.28	50	3.0	5.0	1.0	2.5	70	7.0	15	†0.72	20	20	CTLDM8002A-M621	CTLDM8002A-M621H (2x)
	5757	0.43	20	0.9	4.5	0.45	1.0	175	20	30	†1.2	†38	†48		
	8004	0.45	30	2.0	2.5	0.5	1.0	55	10	15	†0.88	—	—		
	8005	0.65	20	0.36	4.5	0.5	1.0	†100	†25	†21	†1.2	†38	†48		
	8120	0.86	20	0.2	2.5	0.45	1.0	†200	†80	†60	†3.56	†20	†25		CTLDM8120-M621H
	8120TG	0.86	20	0.24	1.8	0.45	0.85	†200	†80	†60	†3.56	†20	†25		
	202PH	2.3	20	0.088	5.0	0.6	1.4	†800	†85	†75	12	†25	†48		
	302PH	2.4	30	0.091	4.5	0.7	1.4	†800	†69	†62	9.6	†12	†17		
	304P	4.2	30	0.070	10	0.7	1.3	†760	†53	†50	†64	†40	†75		
	305P	5.3	30	0.072	10	1.0	3.0	†500	†50	150	†7.0	†7.0	†8.0		
	4060P	6.0	40	0.065	10	1.0	3.0	†750	†61	†56	†6.5	†18	†64		
	3011P	11	30	0.020	10	1.0	3.0	†3100	†450	†320	†80	†49	†330		
N-Channel & P-Channel	3590 (N-Channel)	0.16	20	3.0	4.5	0.4	1.0	†9.0	†2.2	†3.0	†0.458	†25	†85		
	+ 7590 (P-Channel)	0.14	20	5.0	4.5	0.4	1.0	†10	†4.0	†3.7	†0.50	†35	†100		
	7002A (N-Channel)	0.28	60	2.0	10	1.0	2.5	50	5.0	25	†0.592	20	20		
	+ 8002A (P-Channel)	0.28	50	3.0	5.0	1.0	2.5	70	7.0	15	†0.72	20	20		
	7120 (N-Channel)	1.0	20	0.14	2.5	0.5	1.2	†220	†45	†120	†2.4	†25	†140		
	+ 8120 (P-Channel)	0.86	20	0.2	2.5	0.45	1.0	†200	†80	†60	†3.56	†20	†25		
	3737 (N-Channel)	0.54	20	0.55	4.5	0.45	1.0	150	20	25	†1.58	†10	†25		
	+ 5757 (P-Channel)	0.43	20	0.9	4.5	0.45	1.0	175	20	30	†1.2	†38	†48		
	7004 (N-Channel)	*1.78	30	0.56	2.5	0.5	1.0	†43	†5.0	15	†0.792	†20	†75		
	+ 8004 (P-Channel)	0.45	30	2.0	2.5	0.5	1.0	55	10	15	†0.88	—	—		
	7005 (N-Channel)	0.65	20	0.23	4.5	0.5	1.1	†100	†18	16	†1.58	†10	†25		
	+ 8005 (P-Channel)	0.65	20	0.36	4.5	0.5	1.0	†100	†25	21	†1.2	†38	†48		

**S** Indicates Sorted Columns.

**Tiny Leadless Module™**

Package dimensions shown are maximum values in mm.

	TLM832D	TLM832DS	SOT-953	SOT-963	SOT-883VL	SOT-883L	SOT-523	SOT-563	SOT-363	SOT-23	SOT-23F	SOT-89	SOIC-8
													
	3.1 x 2.1 x 1.0	3.05 x 2.05 x 1.05	1.05 x 1.05 x 0.5	1.05 x 1.05 x 0.5	1.05 x 0.65 x 0.32	1.05 x 0.65 x 0.4	1.7 x 1.7 x 0.78	1.7 x 1.7 x 0.6	2.2 x 2.3 x 1.1	3.05 x 2.49 x 1.09	3.0 x 2.5 x 1.0	4.7 x 4.5 x 1.7	5.01 x 6.18 x 1.71
			CMNDM8001		CEDM8001VL	CEDM8001	CMUDM8001						
			CMRDM7590 (2x)										
								CMLDM8002A CMLDM8002AJ (2x)		CMPDM8002A			
								CMLDM5757 (2x)					
					CEDM8004VL	CEDM8004	CMUDM8004						
								CMUDM8005	CMLDM8005 (2x)	CMKDM8005 (2x)			
		CTLDM8120-M832DS (2x)						CMLDM8120		CMPDM8120			
								CMLDM8120TG					
										CMPDM202PH			
										CMPDM302PH			
		CTLDM304P-M832DS (2x)											
												CWDM305P CWDM305PD (2x)	
												CXDM4060P	
													CWDM3011P
			CMRDM3575 (2x)										
								CMLM0708A (2x)					
	CTLDM7181-M832D (2x)												
								CMLDM3757 (2x)					
								CMLDM7484 (2x)					
								CMLDM7585 (2x)					

(2x) under part number indicates two devices in one package.



## Support Resources



### Application Resources

More information on page 24



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### Parametric Search

More information on page 38

[www.centralsemi.com/parasearch](http://www.centralsemi.com/parasearch)

### my.Centralsemi

More information on page 70



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### Engineering Resources

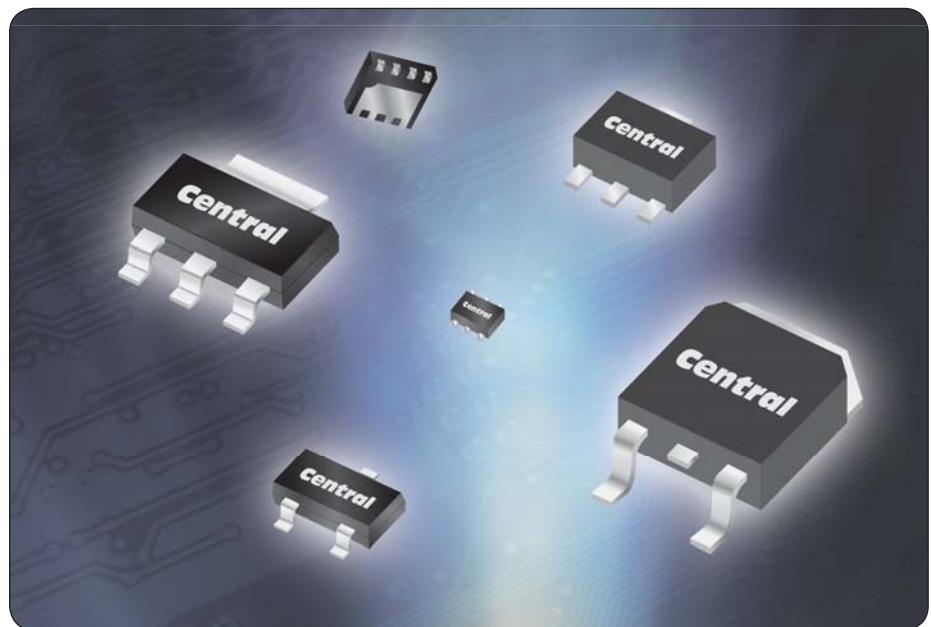


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### Quality Resources



[www.centralsemi.com/quality](http://www.centralsemi.com/quality)



## Bipolar Power Transistors

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## General Purpose Amplifiers/Switches

	FAMILY	I <sub>C</sub> (A) MAX	BV <sub>CBO</sub> * BV <sub>CEV</sub> (V) MIN	BV <sub>CEO</sub> (V) MIN	hFE		@ I <sub>C</sub> (A)	V <sub>CE(SAT)</sub> (V) MAX	@ I <sub>C</sub> (A)	f <sub>T</sub> †TYP. (MHZ) MIN
		Devices are listed in order of descending I <sub>C</sub> .								
NPN	3055	10	70	60	20	100	4.0	1.1	4.0	-
	44H11	8.0	80	80	40	-	4.0	1.0	8.0	60†
	853	6.0	200	100	100	300	2.0	0.17	2.0	190†
	41C	6.0	100	100	15	75	3.0	1.5	6.0	3.0
	3150	5.0	50	25	150	-	2.0	0.5	4.0	150†
	5338	5.0	100	100	30	120	2.0	1.2	5.0	30
	200	5.0	40	25	45	180	2.0	1.8	5.0	65
	31C	3.0	100	100	10	50	3.0	1.2	3.0	3.0
	3120	3.0	120	70	100	300	0.5	0.5	2.0	8.0
	A44HC	2.0	450	400	30	-	1.0	0.5	1.0	10
	2680	1.5	250	200	40	-	0.5	0.5	1.0	50
	491E	1.0	80	60	200	600	0.5	0.4	1.0	150
PNP	2955	10	70	60	20	100	4.0	1.1	4.0	2.0
	45H11	8.0	80	80	40	-	4.0	1.0	8.0	50†
	42C	6.0	100	100	15	75	3.0	1.5	6.0	3.0
	953	5.0	140	100	100	300	1.0	0.22	2.0	150†
	210	5.0	40	25	45	180	2.0	1.8	5.0	5.0
	955	4.0	180	140	100	300	1.0	0.36	3.0	200†
	32C	3.0	100	100	10	50	3.0	1.2	3.0	3.0
	7120	3.0	120	70	100	300	0.5	0.5	2.0	8.0
	591E	1.0	80	60	200	600	0.5	0.4	1.0	150

## High Voltage

Devices are listed in order of descending breakdown voltage.

NPN	13003	1.5	700*	400	5.0	25	1.0	3.0	1.5	4.0
	50	1.0	500	400	30	150	0.3	1.0	1.0	10
	47	1.0	350	250	30	150	0.3	1.0	1.0	10
	340	0.5	300	300	30	240	0.05	-	-	-
PNP	350	0.5	300	300	30	240	0.05	-	-	-

## Extremely High Voltage

NPN	UX87	0.5	900*	450	12	-	0.04	1.0	0.2	20†
-----	------	-----	------	-----	----	---	------	-----	-----	-----

## Darlington

NPN	112	2.0	100	100	1,000	12,000	2.0	2.0	2.0	25
	122	8.0	100	100	1,000	12,000	4.0	4.0	8.0	4.0
PNP	117	2.0	100	100	1,000	12,000	2.0	2.0	2.0	25
	127	8.0	100	100	1,000	12,000	4.0	4.0	8.0	4.0

## Low V<sub>CE(SAT)</sub>

Devices are listed in order of descending V<sub>CE(SAT)</sub>

NPN	3150	5.0	50	25	150	-	2.0	0.6	4.0	150†
	3090L	3.0	45	15	200	-	1.0	0.3	3.0	100
	3090LE	3.0	<b>60</b>	<b>50</b>	<b>300</b>	-	1.0	<b>0.25</b>	3.0	100
E► PNP	7090L	3.0	50	40	200	-	1.0	0.75	2.0	100
E► PNP	7090LE	3.0	<b>60</b>	<b>50</b>	<b>250</b>	-	1.0	<b>0.3</b>	2.0	100

Indicates Enhanced Specification Device. Enhanced Spec in Red and Bold.

Indicates Sorted Columns.



Tiny Leadless  
Module™

Package dimensions shown are maximum values in mm.

FAMILY	TLM833S 	SOT-563 	SOT-23 	SOT-26 	SOT-89 	SOT-223 	DPAK 
	3.15 x 3.15 x 1.0	1.7 x 1.7 x 0.6	3.05 x 2.49 x 1.09	3.0 x 3.0 x 1.2	4.7 x 4.5 x 1.7	6.7 x 7.3 x 1.8	10.73 x 6.81 x 2.75

3055						CZT3055	CJD3055
44H11							CJD44H11
853	CTLT853-M833S				CXT853	CZT853	
41C							CJD41C
3150						CZT3150	
5338						CZT5338	
200							CJD200
31C						CZT31C	CJD31C
3120						CZT3120	
A44HC						CZTA44HC	
2680						CZT2680	
491E		CMLT491E	CMPT491E		CXT491E		
2955						CZT2955	CJD2955
45H11							CJD45H11
42C							CJD42C
953	CTLT953-M833S				CXT953	CZT953	
210							CJD210
955						CZT955	
32C						CZT32C	CJD32C
7120						CZT7120	
591E		CMLT591E	CMPT591E		CXT591E		

13003							CJD13003
50							CJD50
47							CJD47
340							CJD340
350							CJD350

UX87						CZTUX87	
112							CJD112
122						CZT122	CJD122
117							CJD117
127						CZT127	CJD127

3150						CXT3150	CZT3150
3090L					CMXT3090L	CXT3090L	CZT3090L
3090LE							CZT3090LE
7090L					CMXT7090L	CXT7090L	CZT7090L
7090LE							CZT7090LE



# Application Resources

Central Semiconductor's online Application Resources provide designers with an insightful overview of devices designed to meet the requirements of specific end product applications.

[www.centralsemi.com/applications](http://www.centralsemi.com/applications)



## Alternative Energy



## Lighting



## Consumer



## Medical



## Industrial



## Networking



### Block diagrams include:

- Detailed device information
- Technical datasheets
- Package specifications
- Links to request samples



For more information:

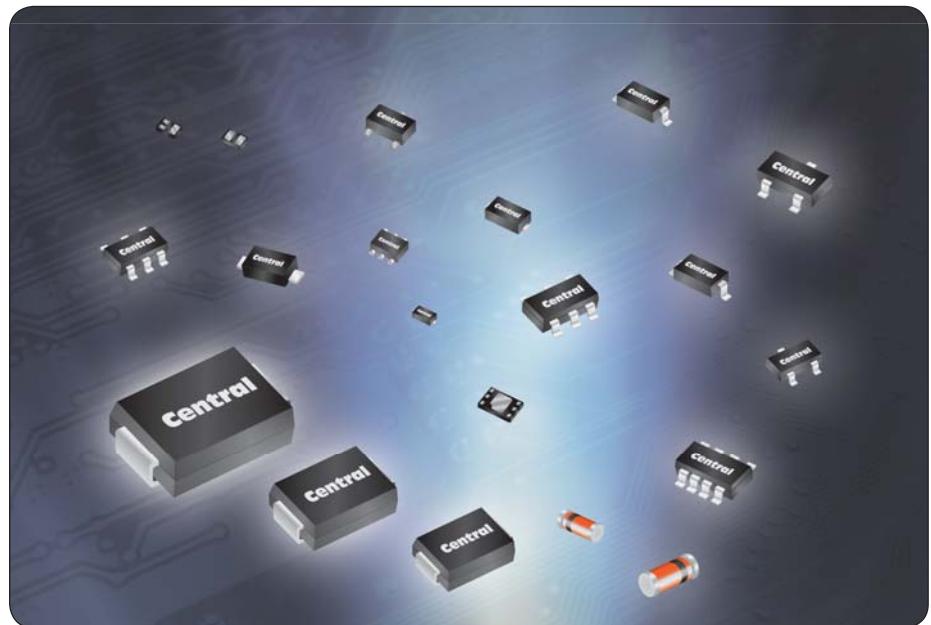
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# Diodes

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## Switching Diodes

FAMILY	DESCRIPTION	V <sub>RRM</sub> (V) MAX	I <sub>F</sub> (mA) MAX	V <sub>F</sub> (V) MAX	@	I <sub>F</sub> (mA)	t <sub>rr</sub> (ns) MAX	FAMILY	SOD-923 Central 1.10 x 0.65 x 0.41
 Devices are listed in order of ascending V <sub>RRM</sub> .									
4150	Single	50	250	0.86 0.92 1.0		50 100 200	4.0	4150	
6i	Monolithic, Quad Diode Array	60	250	1.0		10	100	6i	
56	High Current, Dual, Isolated	60	200	0.75 1.0		10 200	6.0	56	
2836	CMUD2836, CMSD2836, and CMPD2836: Dual, Common Anode CMKD2836: Dual Pair, Common Anode	75	200	1.0		50	4.0	2836	
2838	CMUD2838, CMSD2838, and CMPD2838: Dual, Common Cathode CMLD2838, and CMKD2838: Dual Pair, Common Cathode	75	200	1.0		50	4.0	2838	
28	Dual, Isolated	85	200	0.715 1.0		1.0 50	6.0	28	
100	Dual, Isolated	85	250	0.715 1.0		1.0 50	6.0	100	
1001	CMPD1001: Single CMPD1001A: Dual, Common Anode CMPD1001S: Dual, In Series	90	250	0.75 0.9 1.0		10 100 200	50	1001	
914	Single	100	250	1.0		10	4.0	914	
4448	CMAD4448, CFD4448, CMOD4448, CMUD4448, CMDD4448, CMSD4448, and CMHD4448: Single CMLD4448: Dual, Isolated CMLD4448: Dual, Opposing, Isolated CMKD4448, and CMXD4448: Triple, Isolated	100	250	1.0		100	4.0	4448	CMAD4448 (1x)
7000	CMUD7000, CMSD7000, and CMPD7000: Dual, In Series CMKD7000: Dual Pair, In Series	100	200	0.7 0.82 1.1		1.0 10 100	4.0	7000	
2836E	Dual, Common Anode, Enhanced	<b>120</b>	200	<b>0.85 0.95</b>		10 50	4.0	2836E	
2838E	Dual, Common Cathode, Enhanced	<b>120</b>	200	<b>0.85 0.95</b>		10 50	4.0	2838E	
914E	Single, Enhanced	<b>120</b>	250	<b>0.85</b>		10	4.0	914E	
7000E	CMPD7000E: Dual Pair, In Series, Enhanced CMKD7000E: Dual, In Series, Enhanced	<b>120</b>	200	<b>0.65 0.77 1.0</b>		1.0 10 100	4.0	7000E	
5001	CMPD5001: Single CMPD5001S: Dual, In Series	120	400	0.75 0.9 1.0		10 100 200	50	5001	
2003	CMHD2003, and CMPD2003: Single CMPD2003C: Dual, Common Cathode CMPD2003S: Dual, In Series	250	250	1.0		100	50	2003	
2004	CMLD2004, CMDD2004, and CMPD2004: Single CMFD2004, and CMFD2004i: Dual, Isolated CMLD2004A, and CMPD2004A: Dual, Common Anode CMLD2004C, and CMPD2004C: Dual, Common Cathode CMLD2004S, and CMPD2004S: Dual, In Series CMLD2004DO: Dual, Opposing CMXD2004: Triple, Isolated CMXD2004TO: Triple, Opposing CMXD2004S, and CMXD2004SR: Dual Pair, In Series	300	225	1.0		100	50	2004	
2005	CMOD2005: Single CMSD2005S, and CMPD2005S: Dual, In Series	350	225	0.87 1.0		20 100	50	2005	
3004	Dual, In Series	375	225	1.0		100	50	3004	

 Indicates Enhanced Specification Device. Enhanced Spec in Red and Bold

 Indicates Sorted Columns.

Package dimensions shown are maximum values in mm.

SOD-882L  1.05 x 0.65 x 0.4	SOT-883L  1.05 x 0.65 x 0.4	SOD-523  1.80 x 0.9 x 0.8	SOT-523  1.7 x 1.7 x 0.78	SOT-563  1.7 x 1.7 x 0.6	SOD-323  2.6 x 1.35 x 1.0	SOT-323  2.2 x 2.2 x 1.1	SOT-363  2.2 x 2.3 x 1.1	SOD-123  3.9 x 1.8 x 1.35	SOT-23  3.05 x 2.49 x 1.09	SOT-143  3.04 x 2.50 x 1.14	SOT-26  3.0 x 3.0 x 1.2	SOT-28  3.0 x 3.0 x 1.45
								CMHD4150 (1x)	CMPD4150 (1x)			
												CMEDA-6i (4x)
										BAS56 (2x)		
			CMUD2836 (2x)			CMSD2836 (2x)	CMKD2836 (4x)		CMPD2836 (2x)			
			CMUD2838 (2x)	CMLD2838 (4x)		CMSD2838 (2x)	CMKD2838 (4x)		CMPD2838 (2x)			
										BAS28 (2x)		
										BAW100 (2x)		
									CMPD1001 (1x)			
									CMPD1001A CMPD1001S (2x)			
									CMPD914 (1x)			
	CFD4448 (1x)		CMOD4448 (1x)	CMUD4448 (1x)	CMLD4448 CMLD4448DO (2x)	CMDD4448 (1x)	CMSD4448 (1x)	CMKD4448 (3x)	CMHD4448 (1x)			CMXD4448 (3x)
				CMUD7000 (2x)			CMSD7000 (2x)	CMKD7000 (4x)		CMPD7000 (2x)		
										CMPD2836E (2x)		
		CED2838E (2x)								CMPD2838E (2x)		
										CMPD914E (1x)		
							CMKD7000E (4x)			CMPD7000E (2x)		
										CMPD5001 (1x)		
										CMPD5001S (2x)		
								CMHD2003 (1x)		CMPD2003 (1x)		
			CMOD2004 (1x)		CMLD2004 CMLD2004A CMLD2004C CMLD2004S CMLD2004DO (2x)	CMDD2004 (1x)	CMSD2004S (2x)		CMPD2004 (1x)	CMFD2004i (2x)	CMXD2004 (3x)	
			CMOD2005 (1x)				CMSD2005S (2x)		CMPD2005S (2x)		CMXD2004S CMXD2004SR (4x)	
											CMXD3004SR (2x)	

**Suffix Codes:**

A = Common Anode  
 C = Common Cathode  
 S = In Series  
 E = Enhanced Specification

i = Isolated Chips (CMEDA-6i has four Monolithic isolated diodes.)

DO = Dual, Opposing

TO = Triple, Opposing

SR = Opposing Dual Pair, In Series

(2x) under part number indicates two devices in one package.

(3x) under part number indicates three devices in one package.

(4x) under part number indicates four devices in one package.

# Schottky Diodes



Tiny Leadless  
Module™

										Tiny Leadless Module™				
FAMILY		DESCRIPTION		V <sub>RRM</sub> (V) MAX	I <sub>F</sub> *I <sub>O</sub> MAX (mA)	V <sub>F</sub> @ MAX	I <sub>F</sub> (mA)	t <sub>rr</sub> (ns) MAX	C <sub>T</sub> †TYP (pF) MAX	FAMILY	TLM2D3D6 0.65 x 0.35 x 0.32	TLM621 2.15 x 1.15 x 0.8	TLM621H 2.15 x 1.65 x 0.4	SOD-923 1.10 x 0.65 x 0.41
E ➤	6263E	CMUD6263E: Single, Enhanced CMUD6263AE: Dual, Common Anode, Enhanced CMUD6263CE: Dual, Common Cathode, Enhanced CMUD6263SE: Dual, In Series, Enhanced	70	70	0.32 0.4 0.75	100µA 1.0 10		5.0	2.0	6263E				
	6263	CMAD6263, CMOD6263, CMDD6263, CMSD6263, and CMPD6263: Single CMSD6263A, and CMPD6263A: Dual, Common Anode CMSD6263C, and CMPD6263C: Dual, Common Cathode CMSD6263S, and CMPD6263S: Dual, In Series CMKD6263: Triple, Isolated CMLD6263: Dual, Isolated CMLD6263A: Dual Pair, Common Anode CMLD6263C: Dual Pair, Common Cathode CMLD6263S: Dual Pair, In Series CMRD6263DO, CMLD6263DO, and CMKD6263DO: Dual, Opposing, Isolated	70	15	0.395 (TYP) 0.41		1.0 1.0	5.0	2.0	6263			CMAD6263 (1x)	
▼ Devices are listed in order of ascending I <sub>F</sub>														
Low Current • 30V	SH01-30	Single	30	*100	0.46	10	—	7.0†	SH01-30	CTL SH01-30 (1x)				
	SH-3	CMOSH-3, CMDSH-3, CMSSH-3, CMHSH-3, and CMPSH-3: Single CMFSH-3: Dual, Isolated CMSSH-3A, and CMPSH-3A: Dual, Common Anode CMSSH-3C, and CMPSH-3C: Dual, Common Cathode CMSSH-3S, and CMPSH-3S: Dual, In Series CMKSH-3DO: Dual, Opposing Polarity CMKSH-3T, and CMXSH-3: Triple, Isolated	30	100	0.33 0.45	2.0 15	5.0	7.0	SH-3					
Low V <sub>F</sub> 30V	SH1-3	Single	30	*100	0.18	1.0	—	15†	SH1-3					
	SH2-3	Single	30	*200	0.42 (TYP) 0.55	100 200	—	15†	SH2-3					
Low Current • 40V	SH01-30L	Single	30	*100	0.095 0.37	5.0µA 10	—	4.0†	SH01-30L	CTL SH01-30L (1x)				
	SH2-3L	Single	30	*200	0.40 0.48	100 200	—	25	SH2-3L					
Medium Current	SH-3E	CMSSH-3E, and CMPSH-3E: Single CMSSH-3AE, and CMPSH-3AE: Dual, Common Anode CMSSH-3CE, and CMPSH-3CE: Dual, Common Cathode CMSSH-3SE, and CMPSH-3SE: Dual, In Series	40	200	0.33 0.42	2.0 15	5.0	7.0	SH-3E					
	SH-4	CMASH-4, CFSH-4, and CMDSH-4E: Single CMLSH-4: Dual, Isolated CMRSH-4DO, CMLSH-4DO: Dual, Opposing, Isolated	40	*200	0.38 0.65	1.0 15	5.0	7.0	SH-4				CMASH-4 (1x)	
High Current	SH2-4	CMOSH2-4L, CMUSH2-4L, CMUHW2-4L and CMDSH2-4L: Single CMKSH2-4LR: Triple, Isolated CMXSH2-4LS: Dual Pair, In Series	40	200	0.4	100	5.0	10	SH2-4					
		CFSH2-4L: Single	40	*200	0.52	100	5.0	10						
		CMUHW2-4: Single CMUSH2-4A: Dual, Common Anode CMUSH2-4C: Dual, Common Cathode CMUSH2-4S: Dual, In Series CMLSH2-4LA: Dual Pair, Common Anode CMLSH2-4LC: Dual Pair, Common Cathode CMLSH2-4LS: Dual Pair, In Series CMLSH2-4T: Triple, Isolated	40	200	0.6 0.75	50 100	5.0	10						
1.0 Amp	SH05-20L	Single	20	500	0.29 0.38 0.50	10 100 500	—	—	SH05-20L					
	SH05-4	CMUSH05-4, CMLSH05-4, CMDSH05-4, and CMPSH05-4: Single CMPSH05-4C: Dual, Common Cathode CMLSH05-4DO: Dual, Opposing, Isolated	40	500	0.27 0.35 0.47	10 100 500	5.0	50	SH05-4		CTL SH05-40M621 (1x)			
	SH05-45	Single	45	500	0.27 0.35 0.47	10 100 500	—	50	SH05-45					
	SH05-10	CMLSH05-10DA: Dual, Opposing, Isolated	100	500	0.85	500	—	—	SH05-10					
SH1-40	Single	40	*1000	0.29 0.36	10 100	15	—	SH1-40				CTL SH1-40M621H (1x)		

➤ Indicates Enhanced Specification Device. Enhanced Spec in Red and Bold

▼ Indicates Sorted Columns.

Package dimensions shown are maximum values in mm.

SOT-963  1.05 x 1.05 x 0.5	SOD-882L  1.05 x 0.65 x 0.4	SOD-723  1.45 x 0.65 x 0.55	SOD-523  1.80 x 0.9 x 0.8	SOT-523  1.7 x 1.7 x 0.78	SOT-523W  1.7 x 1.68 x 0.8	SOT-563  1.7 x 1.7 x 0.6	SOD-323  2.6 x 1.35 x 1.0	SOT-323  2.2 x 2.2 x 1.1	SOT-363  2.2 x 2.3 x 1.1	SOD-123  3.9 x 1.8 x 1.35	SOT-23  3.05 x 2.49 x 1.09	SOT-143  3.04 x 2.50 x 1.14	SOT-26  3.0 x 3.0 x 1.2
				CMUD6263E (1x) CMUD6263AE CMUD6263CE CMUD6263SE (2x)									
CMRD6263DO (2x)			CMOD6263 (1x)		CMLD6263 (2x) CMLD6263A CMLD6263C CMLD6263S (4x) CMLD6263DO (2x)	CMDD6263 (1x)	CMSD6263 (1x) CMSD6263A CMSD6263C CMSD6263S (2x)	CMKD6263 (3x) CMKD6263DO (2x)		CMPD6263 (1x) CMPD6263A CMPD6263C CMPD6263S (2x)			
	CFSH01-30 (1x)												
			CMOSH-3 (1x)			CMDSH-3 (1x)	CMSSH-3 (1x) CMSSH-3A CMSSH-3C CMSSH-3S (2x)	CMKSH-3DO (2x) CMKSH-3T (3x)	CMHSH-3 (1x) CMPSH-3A CMPSH-3C CMPSH-3S (2x)	CMPSH-3 (1x) CMPSH-3A CMPSH-3C CMPSH-3S (2x)	CMFSH-3i (2x)	CMXSH-3 (3x)	
		CMGSH1-3 (1x)					CMDSH1-3 (1x)						
	CFSH01-30L (1x)												
	CFSH2-3L (1x)												
								CMSSH-3E (1x) CMSSH-3AE CMSSH-3CE CMSSH-3SE (2x)			CMPSH-3E (1x) CMPSH-3AE CMPSH-3CE CMPSH-3SE (2x)		
CMRSH-4DO (2x)	CFSH-4 (1x)		CMOSH-4E (1x)		CMLSH-4 CMLSH-4DO (2x)	CMDSH-4E (1x)							
			CMOSH2-4L (1x)	CMUSH2-4L (1x)	CMUSHW2-4L (1x)		CMDSH2-4L (1x)		CMKSH2-4LR (3x)				CMXSH2-4LS (4x)
	CFSH2-4L (1x)												
				CMUSH2-4 (1x) CMUSH2-4A CMUSH2-4C CMUSH2-4S (2x)		CMLSH2-4LA CMLSH2-4LC CMLSH2-4LS CMLSH2-4T (2x)							
	CFSH05-20L (1x)												
				CMUSH05-4 (1x)		CMLSH05-4 (1x) CMLSH05-4DO (2x)	CMDSH05-4 (1x)			CMPSH05-4 (1x) CMPSH05-4C (2x)			
							CMDSH05-45 (1x)						
						CMLSH05- 10DA (2x)							
						CMLSH1-40 (1x)							

**Suffix Codes:**

A = Common Anode      T = Triple  
 C = Common Cathode      E = Enhanced Specification  
 S = In Series      AE = Common Anode with Enhanced Specification  
 DO = Dual, Opposing      CE = Common Cathode with Enhanced Specification

SE = In Series with Enhanced Specification      LS = Low  $V_F$ , Dual Pair, In Series  
 DO = Dual, Opposing      L = Low  $V_F$   
 i = Isolated Chips      LR = Low  $V_F$ , Triple, Isolated

(2x) under part number indicates two devices in one package.  
 (3x) under part number indicates three devices in one package.  
 (4x) under part number indicates four devices in one package.

## Low Leakage Diodes

FAMILY	DESCRIPTION	V <sub>RRM</sub> (V) MAX	I <sub>O</sub> (mA) MAX	I <sub>R</sub> (nA) MAX	V <sub>R</sub> (V)	V <sub>F</sub> (V) MAX	I <sub>F</sub> (mA)	C <sub>T</sub> (pF) MAX	
S Devices are listed in order of ascending I <sub>R</sub>									
Low Leakage Diodes	3003	CMOD3003, CMDD3003, and CMPD3003: Single CMOD3003A: Dual, Common Anode CMPD3003C: Dual, Common Cathode CMOD3003S: Dual, In Series CMKD3003DO and CMLD3003DO: Dual, Opposing, Isolated CMXD3003TO: Triple, Opposing, Isolated	200	200	1.0	125	1.1	200	4.0
	3595	Single	150	150	1.0	125	1.0	200	8.0
	457A	Single	70	200	25	60	1.0	100	6.0
	459A	Single	200	200	25	175	1.0	100	6.0

## Ultra Low Leakage Diodes

Ultra Low Leakage Diodes	6001	CMAD6001, CMOD6001, CMSD6001, CMUDW6001, CMDD6001, and CMPD6001: Single  CMSD6001A, and CMPD6001A: Dual, Common Anode CMSD6001C, and CMPD6001C: Dual, Common Cathode CMSD6001S, and CMPD6001S: Dual, In Series CMLD6001: Dual, Isolated CMLD6001DO: Dual, Opposing, Isolated CMKD6001, and CMXD6001: Triple, Isolated  CMKD6000: Dual Pair, In Series	100	250	0.5	75	1.1	100	2.0
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## Stabistor Diodes

FAMILY	V <sub>F</sub> (V) MIN	@	I <sub>F</sub> (mA)	V <sub>F</sub> (V) MIN	@	I <sub>F</sub> (mA)	V <sub>F</sub> (V) MIN	@	I <sub>F</sub> (mA)	V <sub>F</sub> (V) MIN	@	I <sub>F</sub> (mA)				
S Devices are listed in order of ascending V <sub>F</sub>																
Stabistor Diodes	S17	0.58	0.68	0.1	0.665	0.76	1.0	0.725	0.82	5.0	0.75	0.84	10	0.87	0.96	100
	STB200	—	—	—	1.11	1.31	1.0	—	—	—	1.38	1.58	10	1.64	1.94	100
	STB300	—	—	—	1.71	1.91	1.0	—	—	—	2.08	2.28	10	2.61	2.91	100
	STB400	—	—	—	2.20	2.80	1.0	—	—	—	2.60	3.20	10	3.40	4.10	100

 Indicates Sorted Columns.

## Current Limiting Diodes

### SOD-123FL



3.7 x 1.7 x 0.8

Package dimensions shown are maximum values in mm.

### MAXIMUM RATINGS: (T<sub>A</sub>=25°C)

Peak Operating Voltage (CMJ0130 THRU CMJ5750)

Power Dissipation

Operating and Storage Junction Temperature

Thermal Resistance

### SYMBOL

P<sub>OV</sub> 100 V

P<sub>D</sub> 500 mW

T<sub>J</sub>, T<sub>stg</sub> -65 to +150 °C

Θ<sub>JA</sub> 250 °C/W

### UNITS

Type	Regulator Current (Note 1)			Minimum Dynamic Impedance Z <sub>T</sub> @ V <sub>T</sub> =25V	Minimum Knee Impedance Z <sub>K</sub> @ V <sub>K</sub> =6.0V	Maximum Limiting Voltage V <sub>L</sub> @ I <sub>L</sub> =0.8 x I <sub>P</sub> MIN	Temperature Coefficient (Note 2) TC	Marking Code
	MIN mA	NOM mA	MAX mA					
CMJ0130	0.05	0.13	0.21	6.0	2,000	0.6	+2.10 to +0.10	101
CMJ0300	0.20	0.31	0.42	4.0	1,000	0.8	+0.40 to -0.20	301
CMJ0500	0.40	0.515	0.63	2.0	500	1.1	+0.15 to -0.25	501
CMJ0750	0.60	0.76	0.92	1.0	200	1.4	0.0 to -0.32	701
CMJ1000	0.88	1.1	1.32	0.65	100	1.7	-0.10 to -0.37	102
CMJ1500	1.28	1.5	1.72	0.45	70	2.0	-0.13 to -0.40	152
CMJ2000	1.68	2.0	2.32	0.35	50	2.3	-0.15 to -0.42	202
CMJ2700	2.28	2.69	3.1	0.30	30	2.7	-0.18 to -0.45	272
CMJ3500	3.0	3.55	4.1	0.25	20	3.2	-0.20 to -0.47	352
CMJ4500	3.9	4.5	5.1	0.20	10	3.7	-0.22 to -0.50	452
CMJ5750	5.0	5.75	6.5	0.05	5.0	4.5	-0.25 to -0.53	562

Package dimensions shown are maximum values in mm.

FAMILY	SOD-923  1.10 x 0.65 x 0.41	SOD-523  1.80 x 0.9 x 0.8	SOT-523  1.7 x 1.7 x 0.78	SOT-523W  1.7 x 1.68 x 0.8	SOT-563  1.7 x 1.7 x 0.6	SOD-323  2.6 x 1.35 x 1.0	SOT-363  2.2 x 2.3 x 1.1	SOD-123  3.9 x 1.8 x 1.35	SOT-23  3.05 x 2.49 x 1.09	SOT-26  3.0 x 3.0 x 1.2	SOD-80  3.71 x 1.7
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3003		CMOD3003 (1x)			CMLD3003DO (2x)	CMDD3003 (1x)	CMKD3003DO (2x)		CMPD3003 (1x)	CMPD3003A CMPD3003C CMPD3003S (2x)	CMXD3003TO (3x)
3595								CMHD3595 (1x)			CLL3595 (1x)
457A								CMHD457A (1x)			CLL457A (1x)
459A								CMHD459A (1x)			CLL459A (1x)

6001	CMAD6001 (1x)	CMOD6001 (1x)	CMSD6001 (1x) CMSD6001A CMSD6001C CMSD6001S (2x)	CMUDW6001 (1x)	CMLD6001 CMLD6001DO (2x)	CMDD6001 (1x)	CMKD6001 (3x) CMKD6000 (4x)		CMPD6001 (1x) CMPD6001A CMPD6001C CMPD6001S (2x)	CMXD6001 (3x)	
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Package dimensions shown are maximum values in mm.

FAMILY	SOT-23  3.05 x 2.49 x 1.09	SOT-26  3.0 x 3.0 x 1.2
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S17	CBAS17 (1x)	
STB200		CMXSTB200 (2x)
STB300		CMXSTB300 (3x)
STB400		CMXSTB400 (4x)

Suffix Codes:

A = Common Anode (except CMHD457A & CMHD459A)      S = In Series  
C = Common Cathode      DO = Dual, Opposing

(2x) under part number indicates two devices in one package.  
(3x) under part number indicates three devices in one package.  
(4x) under part number indicates four devices in one package.

## High Current, Current Limiting Diodes

### SOD-123FL



3.7 x 1.7 x 0.8

Package dimensions shown are maximum values in mm.

#### MAXIMUM RATINGS: ( $T_A=25^\circ\text{C}$ )

Peak Operating Voltage (CMJH080 THRU CMJH180)

#### SYMBOL

#### UNITS

$P_{OV}$  50 V

$P_D$  500 mW

$T_J, T_{stg}$  -65 to +150 °C

$\Theta_{JA}$  250 °C/W

Power Dissipation

Operating and Storage Junction Temperature

Thermal Resistance

#### ELECTRICAL CHARACTERISTICS: ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Type	Regulator Current (Note 1)			$Z_T @ V_T=25\text{V}$	$Z_K @ V_K=6.0\text{V}$	$V_L @ I_L=0.8 \times I_P \text{ MIN}$	Temperature Coefficient (Note 2)	TC	Marking Code
	MIN mA	NOM mA	MAX mA						
CMJH080	6.56	8.2	9.84	0.32	15	3.1	-0.25 to -0.45	822	
CMJH100	8.0	10	12	0.17	6.0	3.5	-0.25 to -0.45	103	
CMJH120	9.6	12	14.4	0.08	3.0	3.8	-0.25 to -0.45	123	
CMJH150	12	15	18	0.03	2.0	4.3	-0.25 to -0.45	153	
CMJH180	16	18	20	0.02	1.8	4.6	-0.25 to -0.45	183	

Notes: 1) Pulsed Method: Pulse Width (ms) = 27.5 divided by  $I_P$  NOM (mA)

2) The Temperature Coefficient is measured between + 25°C and +50°C.

## Temperature Compensated Zener Diodes

**325mW**

**6.2 to 9.0V**

Package dimensions shown are maximum values in mm.

POWER	325mW			
CASE	 2.2 x 2.3 x 1.1 <b>SOT-363</b>			
	ZENER VOLTAGE ± 5% TOL $V_Z @ I_{ZT}$	ZENER TEST CURRENT $I_{ZT}$	MAXIMUM ZENER IMPEDANCE $Z_{ZT} @ I_{ZT}$	VOLTAGE TEMPERATURE STABILITY* $\Delta V_Z \text{ MAX}$
	VOLTS	mA	$\Omega$	mV
CMKTC825A	6.2	7.5	20	44

Package dimensions shown are maximum values in mm.

POWER	325mW			
CASE	 3.0 x 3.0 x 1.2 <b>SOT-26</b>			
	ZENER VOLTAGE ± 5% TOL $V_Z @ I_{ZT}$	ZENER TEST CURRENT $I_{ZT}$	MAXIMUM ZENER IMPEDANCE $Z_{ZT} @ I_{ZT}$	VOLTAGE TEMPERATURE STABILITY* $\Delta V_Z \text{ MAX}$
	VOLTS	mA	$\Omega$	mV
CMXTC935A	9.0	7.5	—	95

\* The Maximum allowable voltage change observed at the specified temperatures of -55°C, 0°C, 25°C, 75°C, and 100°C

Package dimensions shown are maximum values in mm.

## Zener Diodes

100 to 250mW

1.8 to 47V

Package dimensions shown are maximum values in mm.

POWER	100mW		200mW		250mW									
	CASE	TLM2D3D6	SOT-363	SOD-523					SOD-323					
ZENER VOLTAGE	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	TRIPLE ZENER	@ I <sub>ZT</sub> (mA)	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	LOW LEVEL SHARP KNEE	@ I <sub>ZT</sub> (μA)	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	LOW LEVEL SHARP KNEE	@ I <sub>ZT</sub> (μA)
1.8	-	-	-	-	-	-	CMOZ1L8	250	-	-	-	-	CMDZ1L8	500
2.0	-	-	-	-	-	-	CMOZ2L0	250	-	-	-	-	CMDZ2L0	500
2.2	-	-	-	-	-	-	CMOZ2L2	250	-	-	-	-	CMDZ2L2	500
2.4	-	-	CMKZ5221B*	20	CMOZ2V4	5.0	CMOZ2L4	250	CMRDZ5221B	20	CMRDZ2V4	5.0	CMRDZ2L4	500
2.5	-	-	CMKZ5222B*	20	-	-	CMOZ2L5	250	CMRDZ5222B	20	-	-	CMRDZ2L5	500
2.6	-	-	-	-	CMOZ2V6	5.0	-	-	-	CMRDZ2V6	5.0	-	-	-
2.7	-	-	CMKZ5223B*	20	CMOZ2V7	5.0	CMOZ2L7	250	CMRDZ223B	20	CMRDZ2V7	5.0	CMRDZ2L7	500
2.8	-	-	CMKZ5224B*	20	-	-	-	-	CMRDZ224B	20	-	-	CMRDZ2L8	500
3.0	-	-	CMKZ5225B*	20	CMOZ3V0	5.0	CMOZ3L0	250	CMRDZ225B	20	CMRDZ3V0	5.0	CMRDZ3L0	500
3.3	-	-	CMKZ5226B*	20	CMOZ3V3	5.0	CMOZ3L3	250	CMRDZ226B	20	CMRDZ3V3	5.0	CMRDZ3L3	500
3.6	-	-	CMKZ5227B*	20	CMOZ3V6	5.0	CMOZ3L6	250	CMRDZ227B	20	CMRDZ3V6	5.0	CMRDZ3L6	500
3.9	CTLZ3V9	5.0	CMKZ5228B*	20	CMOZ3V9	5.0	CMOZ3L9	250	CMRDZ228B	20	CMRDZ3V9	5.0	CMRDZ3L9	500
4.3	-	-	CMKZ5229B*	20	CMOZ4V3	5.0	CMOZ4L3	250	CMRDZ229B	20	CMRDZ4V3	5.0	CMRDZ4L3	500
4.7	CTLZ4V7	5.0	CMKZ5230B*	20	CMOZ4V7	5.0	CMOZ4L7	250	CMRDZ230B	20	CMRDZ4V7	5.0	CMRDZ4L7	500
5.1	CTLZ5V1	5.0	CMKZ5231B*	20	CMOZ5V1	5.0	CMOZ5L1	250	CMRDZ231B	20	CMRDZ5V1	5.0	CMRDZ5L1	500
5.6	CTLZ5V6	5.0	CMKZ5232B*	20	CMOZ5V6	5.0	CMOZ5L6	250	CMRDZ232B	20	CMRDZ5V6	5.0	CMRDZ5L6	500
6.0	-	-	CMKZ5233B*	20	-	-	-	-	CMRDZ233B	20	-	-	-	-
6.2	CTLZ6V2	5.0	CMKZ5234B*	20	CMOZ6V2	5.0	CMOZ6L2	250	CMRDZ234B	20	CMRDZ6V2	5.0	CMRDZ6L2	500
6.8	CTLZ6V8	5.0	CMKZ5235B*	20	CMOZ6V8	5.0	CMOZ6L8	250	CMRDZ235B	20	CMRDZ6V8	5.0	CMRDZ6L8	500
7.5	CTLZ7V5	5.0	CMKZ5236B*	20	CMOZ7V5	5.0	CMOZ7L5	250	CMRDZ236B	20	CMRDZ7V5	5.0	CMRDZ7L5	500
8.2	CTLZ8V2	5.0	CMKZ5237B*	20	CMOZ8V2	5.0	CMOZ8L2	250	CMRDZ237B	20	CMRDZ8V2	5.0	CMRDZ8L2	500
8.7	-	-	CMKZ5238B*	20	-	-	-	-	CMRDZ238B	20	-	-	-	-
9.1	-	-	CMKZ5239B*	20	CMOZ9V1	5.0	CMOZ9L1	250	CMRDZ239B	20	CMRDZ9V1	5.0	CMRDZ9L1	500
10	-	-	CMKZ5240B*	20	CMOZ10V	5.0	CMOZ10L	250	CMRDZ240B	20	CMRDZ10V	5.0	CMRDZ10L	500
11	-	-	CMKZ5241B*	20	CMOZ11V	5.0	CMOZ11L	250	CMRDZ241B	20	CMRDZ11V	5.0	CMRDZ11L	500
12	-	-	CMKZ5242B*	20	CMOZ12V	5.0	CMOZ12L	250	CMRDZ242B	20	CMRDZ12V	5.0	CMRDZ12L	500
13	-	-	CMKZ5243B*	9.5	CMOZ13V	5.0	CMOZ13L	250	CMRDZ243B	9.5	CMRDZ13V	5.0	CMRDZ13L	500
14	-	-	CMKZ5244B*	9.0	-	-	-	-	CMRDZ244B	9.0	-	-	-	-
15	-	-	CMKZ5245B	8.5	CMOZ15V	5.0	CMOZ15L	250	CMRDZ245B	8.5	CMRDZ15V	5.0	CMRDZ15L	500
16	-	-	CMKZ5246B*	7.8	CMOZ16V	5.0	CMOZ16L	250	CMRDZ246B	7.8	CMRDZ16V	5.0	CMRDZ16L	500
17	-	-	CMKZ5247B*	7.4	-	-	-	-	CMRDZ247B	7.4	-	-	-	500
18	-	-	CMKZ5248B*	7.0	CMOZ18V	5.0	CMOZ18L	250	CMRDZ248B	7.0	CMRDZ18V	5.0	CMRDZ18L	500
19	-	-	CMKZ5249B*	6.6	-	-	-	-	CMRDZ249B	6.6	-	-	-	-
20	-	-	CMKZ5250B*	6.2	CMOZ20V	5.0	CMOZ20L	250	CMRDZ250B	6.2	CMRDZ20V	5.0	CMRDZ20L	500
22	-	-	CMKZ5251B*	5.6	CMOZ22V	5.0	CMOZ22L	250	CMRDZ251B	5.6	CMRDZ22V	5.0	CMRDZ22L	500
24	-	-	CMKZ5252B*	5.2	CMOZ24V	5.0	CMOZ24L	250	CMRDZ252B	5.2	CMRDZ24V	5.0	CMRDZ24L	500
25	-	-	CMKZ5253B*	5.0	-	-	-	-	CMRDZ253B	5.0	-	-	-	-
27	-	-	CMKZ5254B*	4.6	CMOZ27V	5.0	CMOZ27L	250	CMRDZ254B	4.6	CMRDZ27V	5.0	CMRDZ27L	500
28	-	-	CMKZ5255B*	4.5	-	-	-	-	CMRDZ255B	4.5	-	-	-	-
30	-	-	CMKZ5256B*	4.2	CMOZ30V	5.0	CMOZ30L	250	CMRDZ256B	4.2	CMRDZ30V	5.0	CMRDZ30L	500
33	-	-	CMKZ5257B*	3.8	CMOZ33V	5.0	CMOZ33L	250	CMRDZ257B	3.8	CMRDZ33V	5.0	CMRDZ33L	500
36	-	-	CMKZ5258B*	3.4	CMOZ36V	5.0	CMOZ36L	250	CMRDZ258B	3.4	CMRDZ36V	5.0	CMRDZ36L	500
39	-	-	CMKZ5259B*	3.2	CMOZ39V	5.0	CMOZ39L	250	CMRDZ259B	3.2	CMRDZ39V	5.0	CMRDZ39L	500
43	-	-	CMKZ5260B*	3.0	CMOZ43V	5.0	CMOZ43L	250	CMRDZ260B	3.0	CMRDZ43V	5.0	CMRDZ43L	500
47	-	-	CMKZ5261B*	2.7	-	-	CMOZ47L	250	CMRDZ261B	2.7	CMRDZ47V	5.0	CMRDZ47L	500

\* Available on special order; please consult factory.



## Zener Diodes (continued)

**250 to 350mW**

**1.8 to 75V**

Package dimensions shown are maximum values in mm.

POWER	250mW						350mW							
	CASE	SOT-323			SOT-563			SOT-23						
ZENER VOLTAGE	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	DUAL, COMMON ANODE	@ I <sub>ZT</sub> (mA)	DUAL, COMMON ANODE	@ I <sub>ZT</sub> (mA)	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	LOW NOISE LOW LEVEL	@ I <sub>ZT</sub> (μA)	LOW LEVEL	@ I <sub>ZT</sub> (μA)	PROELECTRON SPECIFICATION	@ I <sub>ZT</sub> (μA)
1.8	-	-	-	-	-	-	-	-	CMPZ4614*	250	CMPZ4678	50	-	-
2.0	-	-	-	-	-	-	-	-	CMPZ4615*	250	CMPZ4679*	50	-	-
2.2	-	-	-	-	-	-	-	-	CMPZ4616*	250	CMPZ4680*	50	-	-
2.4	CMSZ5221B	20	CMSZDA2V4	5.0	CMLZDA2V4	5.0	CMPZ5221B	20	CMPZ4617*	250	CMPZ4681*	50	BZX84C2V4	5.0
2.5	CMSZ5222B	20	-	-	-	-	-	-	-	-	-	-	-	-
2.7	CMSZ5223B	20	CMSZDA2V7	5.0	CMLZDA2V7	5.0	CMPZ5223B	20	CMPZ4618*	250	CMPZ4682	50	BZX84C2V7	5.0
2.8	CMSZ5224B	20	-	-	-	-	CMPZ5224B	20	-	-	-	-	-	-
3.0	CMSZ5225B	20	CMSZDA3V0	5.0	CMLZDA3V0	5.0	CMPZ5225B	20	CMPZ4619	250	CMPZ4683	50	BZX84C3V0	5.0
3.3	CMSZ5226B	20	CMSZDA3V3	5.0	CMLZDA3V3	5.0	CMPZ5226B	20	CMPZ4620	250	CMPZ4684	50	BZX84C3V3	5.0
3.6	CMSZ5227B	20	CMSZDA3V6	5.0	CMLZDA3V6	5.0	CMPZ5227B	20	CMPZ4621	250	CMPZ4685	50	BZX84C3V6	5.0
3.9	CMSZ5228B	20	CMSZDA3V9	5.0	CMLZDA3V9	5.0	CMPZ5228B	20	CMPZ4622*	250	CMPZ4686	50	BZX84C3V9	5.0
4.3	CMSZ5229B	20	CMSZDA4V3	5.0	CMLZDA4V3	5.0	CMPZ5229B	20	CMPZ4623	250	CMPZ4687	50	BZX84C4V3	5.0
4.7	CMSZ5230B	20	CMSZDA4V7	5.0	CMLZDA4V7	5.0	CMPZ5230B	20	CMPZ4624*	250	CMPZ4688	50	BZX84C4V7	5.0
5.1	CMSZ5231B	20	CMSZDA5V1	5.0	CMLZDA5V1	5.0	CMPZ5231B	20	CMPZ5625	250	CMPZ4689	50	BZX84C5V1	5.0
5.6	CMSZ5232B	20	CMSZDA5V6	5.0	CMLZDA5V6	5.0	CMPZ5232B	20	CMPZ4626	250	CMPZ4690	50	BZX84C5V6	5.0
6.0	CMSZ5233B	20	-	-	-	-	CMPZ5233B	20	-	-	-	-	-	-
6.2	CMSZ5234B	20	CMSZDA6V2	5.0	CMLZDA6V2	5.0	CMPZ5234B	20	CMPZ4627	250	CMPZ4691	50	BZX84C6V2	5.0
6.8	CMSZ5235B	20	CMSZDA6V8	5.0	CMLZDA6V8	5.0	CMPZ5235B	20	CMPZ4099*	250	CMPZ4692	50	BZX84C6V8	5.0
7.5	CMSZ5236B	20	CMSZDA7V5	5.0	CMLZDA7V5	5.0	CMPZ5236B	20	CMPZ4100*	250	CMPZ4693	50	BZX84C7V5	5.0
8.2	CMSZ5237B	20	CMSZDA8V2	5.0	CMLZDA8V2	5.0	CMPZ5237B	20	CMPZ4101	250	CMPZ4694	50	BZX84C8V2	5.0
8.7	CMSZ5238B	20	-	-	-	-	CMPZ5238B	20	CMPZ4102*	250	CMPZ4695	50	-	-
9.1	CMSZ5239B	20	CMSZDA9V1	5.0	CMLZDA9V1	5.0	CMPZ5239B	20	CMPZ4103*	250	CMPZ4696	50	BZX84C9V1	5.0
10	CMSZ5240B	20	CMSZDA10V	5.0	CMLZDA10V	5.0	CMPZ5240B	20	CMPZ4104*	250	CMPZ4697	50	BZX84C10	5.0
11	CMSZ5241B	20	CMSZDA11V	5.0	CMLZDA11V	5.0	CMPZ5241B	20	CMPZ4105*	250	CMPZ4698	50	BZX84C11	5.0
12	CMSZ5242B	20	CMSZDA12V	5.0	CMLZDA12V	5.0	CMPZ5242B	20	CMPZ4106*	250	CMPZ4699	50	BZX84C12	5.0
13	CMSZ5243B	9.5	CMSZDA13V	5.0	CMLZDA13V	5.0	CMPZ5243B	9.5	CMPZ4107*	250	CMPZ4700	50	BZX84C13	5.0
14	CMSZ5244B	9.0	-	-	-	-	CMPZ5244B	9.0	CMPZ4108*	250	CMPZ4701	50	-	-
15	CMSZ5245B	8.5	CMSZDA15V	5.0	CMLZDA15V	5.0	CMPZ5245B	8.5	CMPZ4109*	250	CMPZ4702	50	BZX84C15	5.0
16	CMSZ5246B	7.8	CMSZDA16V	5.0	CMLZDA16V	5.0	CMPZ5246B	7.8	CMPZ4110*	250	CMPZ4703	50	BZX84C16	5.0
17	CMSZ5247B	7.4	-	-	-	-	CMPZ5247B	7.4	CMPZ4111*	250	CMPZ4704	50	-	-
18	CMSZ5248B	7.0	CMSZDA18V	5.0	CMLZDA18V	5.0	CMPZ5248B	7.0	CMPZ4112*	250	CMPZ4705	50	BZX84C18	5.0
19	CMSZ5249B	6.6	-	-	-	-	CMPZ5249B	6.6	CMPZ4113*	250	CMPZ4706	50	-	-
20	CMSZ5250B	6.2	CMSZDA20V	5.0	CMLZDA20V	5.0	CMPZ5250B	6.2	CMPZ4114*	250	CMPZ4707	50	BZX84C20	5.0
22	CMSZ5251B	5.6	CMSZDA22V	5.0	CMLZDA22V	5.0	CMPZ5251B	5.6	CMPZ4115*	250	CMPZ4708	50	BZX84C22	5.0
24	CMSZ5252B	5.2	CMSZDA24V	5.0	CMLZDA24V	5.0	CMPZ5252B	5.2	CMPZ4116*	250	CMPZ4709	50	BZX84C24	5.0
25	CMSZ5253B	5.0	-	-	-	-	CMPZ5253B	5.0	CMPZ4117*	250	CMPZ4710	50	-	-
27	CMSZ5254B	4.6	CMSZDA27V	2.0	CMLZDA27V	2.0	CMPZ5254B	4.6	CMPZ4118*	250	CMPZ4711	50	BZX84C27	2.0
28	CMSZ5255B	4.5	-	-	-	-	CMPZ5255B	4.5	CMPZ4119*	250	CMPZ4712	50	-	-
30	CMSZ5256B	4.2	CMSZDA30V	2.0	CMLZDA30V	2.0	CMPZ5256B	4.2	CMPZ4120*	250	CMPZ4713	50	BZX84C30	2.0
33	CMSZ5257B	3.8	CMSZDA33V	2.0	CMLZDA33V	2.0	CMPZ5257B	3.8	CMPZ4121*	250	CMPZ4714	50	BZX84C33	2.0
36	CMSZ5258B	3.4	CMSZDA36V	2.0	CMLZDA36V	2.0	CMPZ5258B	3.4	CMPZ4122*	250	CMPZ4715	50	-	-
39	CMSZ5259B	3.2	CMSZDA39V	2.0	CMLZDA39V	2.0	CMPZ5259B	3.2	CMPZ4123*	250	CMPZ4716*	50	-	-
43	CMSZ5260B	3.0	CMSZDA43V	2.0	CMLZDA43V	2.0	CMPZ5260B	3.0	CMPZ4124*	250	CMPZ4717*	50	-	-
47	CMSZ5261B	2.7	CMSZDA47V	2.0	CMLZDA47V	2.0	CMPZ5261B	2.7	-	-	-	-	-	-
51	-	-	-	-	-	-	CMPZ5262B*	2.5	-	-	-	-	BZX84C51*	2.0
56	-	-	-	-	-	-	CMPZ5263B*	2.2	-	-	-	-	-	-
60	-	-	-	-	-	-	CMPZ5264B*	2.1	-	-	-	-	-	-
62	-	-	-	-	-	-	CMPZ5265B*	2.0	-	-	-	-	-	-
68	-	-	-	-	-	-	CMPZ5266B*	1.8	-	-	-	-	-	-
75	-	-	-	-	-	-	CMPZ5267B*	1.7	-	-	-	-	-	-

\* Available on special order; please consult factory.

## Zener Diodes (continued)

**350mW**

**2.4 to 47V**

Package dimensions shown are maximum values in mm.

POWER	350mW					
CASE	3.05 x 2.49 x 1.09 SOT-23			3.0 x 3.0 x 1.2 SOT-26		
ZENER VOLTAGE	DUAL, COMMON CATHODE	@ $I_{ZT}$ (mA)	DUAL, COMMON ANODE	@ $I_{ZT}$ (mA)	INDUSTRY STANDARD	@ $I_{ZT}$ (mA)
2.4		5.0		5.0		5.0
2.7	<b>CMPZDC2V4*</b>	5.0	<b>CMPZDA2V4</b>	5.0	<b>CMXZ2V4TO*</b>	5.0
3.0	<b>CMPZDC2V7*</b>	5.0	<b>CMPZDA2V7</b>	5.0	<b>CMXZ2V7TO*</b>	5.0
3.3	<b>CMPZDC3V0*</b>	3.0	<b>CMPZDA3V0</b>	3.0	<b>CMXZ3V0TO*</b>	5.0
3.6	<b>CMPZDC3V3*</b>	3.0	<b>CMPZDA3V3</b>	3.0	<b>CMXZ3V3TO*</b>	5.0
	<b>CMPZDC3V6*</b>	5.0	<b>CMPZDA3V6</b>	5.0	<b>CMXZ3V6TO*</b>	5.0
3.9	<b>CMPZDC3V9*</b>	5.0	<b>CMPZDA3V9</b>	5.0	<b>CMXZ3V9TO*</b>	5.0
4.3	<b>CMPZDC4V3*</b>	5.0	<b>CMPZDA4V3</b>	5.0	<b>CMXZ4V3TO*</b>	5.0
4.7	<b>CMPZDC4V7*</b>	5.0	<b>CMPZDA4V7</b>	5.0	<b>CMXZ4V7TO*</b>	5.0
5.1	<b>CMPZDC5V1*</b>	5.0	<b>CMPZDA5V1</b>	5.0	<b>CMXZ5V1TO*</b>	5.0
5.6	<b>CMPZDC5V6</b>	5.0	<b>CMPZDA5V6</b>	5.0	<b>CMXZ5V6TO*</b>	5.0
6.2	<b>CMPZDC6V2*</b>	5.0	<b>CMPZDA6V2</b>	5.0	<b>CMXZ6V2TO*</b>	5.0
6.8	<b>CMPZDC6V8*</b>	5.0	<b>CMPZDA6V8</b>	5.0	<b>CMXZ6V8TO*</b>	5.0
7.5	<b>CMPZDC7V5*</b>	5.0	<b>CMPZDA7V5</b>	5.0	<b>CMXZ7V5TO*</b>	5.0
8.2	<b>CMPZDC8V2*</b>	5.0	<b>CMPZDA8V2</b>	5.0	<b>CMXZ8V2TO*</b>	5.0
9.1	<b>CMPZDC9V1*</b>	5.0	<b>CMPZDA9V1</b>	5.0	<b>CMXZ9V1TO*</b>	5.0
10	<b>CMPZDC10V*</b>	5.0	<b>CMPZDA10V</b>	5.0	<b>CMXZ10VTO*</b>	5.0
11	<b>CMPZDC11V*</b>	5.0	<b>CMPZDA11V</b>	5.0	<b>CMXZ11VTO*</b>	5.0
12	<b>CMPZDC12V*</b>	5.0	<b>CMPZDA12V</b>	5.0	<b>CMXZ12VTO*</b>	5.0
13	<b>CMPZDC13V*</b>	5.0	<b>CMPZDA13V</b>	5.0	<b>CMXZ13VTO*</b>	5.0
15	<b>CMPZDC15V*</b>	5.0	<b>CMPZDA15V</b>	5.0	<b>CMXZ15VTO*</b>	5.0
16	<b>CMPZDC16V*</b>	5.0	<b>CMPZDA16V</b>	5.0	<b>CMXZ16VTO*</b>	5.0
18	<b>CMPZDC18V*</b>	5.0	<b>CMPZDA18V</b>	5.0	<b>CMXZ18VTO*</b>	5.0
20	<b>CMPZDC20V*</b>	5.0	<b>CMPZDA20V</b>	5.0	<b>CMXZ20VTO*</b>	5.0
22	<b>CMPZDC22V*</b>	5.0	<b>CMPZDA22V</b>	5.0	<b>CMXZ22VTO*</b>	5.0
24	<b>CMPZDC24V*</b>	5.0	<b>CMPZDA24V</b>	5.0	<b>CMXZ24VTO*</b>	5.0
27	<b>CMPZDC27V</b>	2.0	<b>CMPZDA27V</b>	2.0	<b>CMXZ27VTO*</b>	2.0
30	<b>CMPZDC30V*</b>	2.0	<b>CMPZDA30V</b>	2.0	<b>CMXZ30VTO</b>	2.0
33	<b>CMPZDC33V*</b>	2.0	<b>CMPZDA33V</b>	2.0	<b>CMXZ33VTO*</b>	2.0
36	<b>CMPZDC36V*</b>	2.0	<b>CMPZDA36V</b>	2.0	<b>CMXZ36VTO*</b>	2.0
39	<b>CMPZDC39V*</b>	2.0	<b>CMPZDA39V</b>	2.0	<b>CMXZ39VTO*</b>	2.0
43	<b>CMPZDC43V*</b>	2.0	<b>CMPZDA43V</b>	2.0	<b>CMXZ43VTO*</b>	2.0
47	<b>CMPZDC47V*</b>	2.0	<b>CMPZDA47V</b>	2.0	<b>CMXZ47VTO*</b>	2.0

\* Available on special order; please consult factory.

## Zener Diodes (continued)

**500mW**

**1.8 to 75V**

Package dimensions shown are maximum values in mm.

POWER	500mW								
CASE	SOD-123				SOD-80				
ZENER VOLTAGE	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	LOW LEVEL	@ I <sub>ZT</sub> (μA)	LOW LEVEL LOW NOISE	@ I <sub>ZT</sub> (μA)	INDUSTRY STANDARD	@ I <sub>ZT</sub> (mA)	@ I <sub>ZT</sub> (mA)
1.8	—	—	CMHZ4678	50	CMHZ4614	250	—	—	—
2.0	—	—	CMHZ4679	50	CMHZ4615	250	—	—	—
2.2	—	—	CMHZ4680	50	CMHZ4616	250	—	—	—
2.4	CMHZ5221B	20	CMHZ4681	50	CMHZ4617	250	CLL5221B*	20	BZV55C2V4
2.5	CMHZ5222B	20	—	—	—	—	CLL5222B	20	—
2.7	CMHZ5223B	20	CMHZ4682	50	CMHZ4618	250	CLL5223B*	20	BZV55C2V7
2.8	CMHZ5224B	20	—	—	—	—	CLL5224B*	20	—
3.0	CMHZ5225B	20	CMHZ4683	50	CMHZ4619	250	CLL5225B	20	BZV55C3V0
3.3	CMHZ5226B	20	CMHZ4684	50	CMHZ4620	250	CLL5226B	20	BZV55C3V3
3.6	CMHZ5227B	20	CMHZ4685	50	CMHZ4621	250	CLL5227B	20	BZV55C3V6
3.9	CMHZ5228B	20	CMHZ4686	50	CMHZ4622	250	CLL5228B	20	BZV55C3V9
4.3	CMHZ5229B	20	CMHZ4687	50	CMHZ4623	250	CLL5229B	20	BZV55C4V3
4.7	CMHZ5230B	20	CMHZ4688	50	CMHZ4624	250	CLL5230B	20	BZV55C4V7
5.1	CMHZ5231B	20	CMHZ4689	50	CMHZ4625	250	CLL5231B	20	BZV55C5V1
5.6	CMHZ5232B	20	CMHZ4690	50	CMHZ4626	250	CLL5232B	20	BZV55C5V6
6.0	CMHZ5233B	20	—	—	—	—	CLL5233B	20	—
6.2	CMHZ5234B	20	CMHZ4691	50	CMHZ4627	250	CLL5234B	20	BZV55C6V2
6.8	CMHZ5235B	20	CMHZ4692	50	CMHZ4099	250	CLL5235B	20	BZV55C6V8
7.5	CMHZ5236B	20	CMHZ4693	50	CMHZ4100	250	CLL5236B	20	BZV55C7V5
8.2	CMHZ5237B	20	CMHZ4694	50	CMHZ4101	250	CLL5237B	20	BZV55C8V2
8.7	CMHZ5238B	20	CMHZ4695	50	CMHZ4102	250	CLL5238B	20	—
9.1	CMHZ5239B	20	CMHZ4696	50	CMHZ4103	250	CLL5239B	20	BZV55C9V1
10	CMHZ5240B	20	CMHZ4697	50	CMHZ4104	250	CLL5240B	20	BZV55C10
11	CMHZ5241B	20	CMHZ4698	50	CMHZ4105	250	CLL5241B	20	BZV55C11
12	CMHZ5242B	20	CMHZ4699	50	CMHZ4106	250	CLL5242B	20	BZV55C12
13	CMHZ5243B	9.5	CMHZ4700	50	CMHZ4107	250	CLL4243B	9.5	BZV55C13
14	CMHZ5244B	9.0	CMHZ4701	50	CMHZ4108	250	CLL5244B	9.0	—
15	CMHZ5245B	8.5	CMHZ4702	50	CMHZ4109	250	CLL5245B	8.5	BZV55C15
16	CMHZ5246B	7.8	CMHZ4703	50	CMHZ4110	250	CLL5246B	7.8	BZV55C16
17	CMHZ5247B	7.4	CMHZ4704	50	CMHZ4111	250	CLL5247B	7.4	—
18	CMHZ5248B	7.0	CMHZ4705	50	CMHZ4112	250	CLL5248B	7.0	BZV55C18
19	CMHZ5249B	6.6	CMHZ4706	50	CMHZ4113	250	CLL5249B	6.6	—
20	CMHZ5250B	6.2	CMHZ4707	50	CMHZ4114	250	CLL5250B	6.2	BZV55C20
22	CMHZ5251B	5.6	CMHZ4708	50	CMHZ4115	250	CLL5251B	5.6	BZV55C22
24	CMHZ5252B	5.2	CMHZ4709	50	CMHZ4116	250	CLL5252B	5.2	BZV55C24
25	CMHZ5253B	5.0	CMHZ4710	50	CMHZ4117	250	CLL5253B	5.0	—
27	CMHZ5254B	4.6	CMHZ4711	50	CMHZ4118	250	CLL5254B	4.6	BZV55C27
28	CMHZ5255B	4.5	CMHZ4712	50	CMHZ4119	250	CLL5255B	4.5	—
30	CMHZ5256B	4.2	CMHZ4713	50	CMHZ4120	250	CLL5256B	4.2	BZV55C30
33	CMHZ5257B	3.8	CMHZ4714	50	CMHZ4121	250	CLL5257B	3.8	BZV55C33
36	CMHZ5258B	3.4	CMHZ4715	50	CMHZ4122	250	CLL5258B	3.4	BZV55C36
39	CMHZ5259B	3.2	CMHZ4716	50	CMHZ4123	250	CLL5259B	3.2	BZV55C39
43	CMHZ5260B	3.0	CMHZ4717	50	CMHZ4124	250	CLL5260B	3.0	BZV55C43
47	CMHZ5261B	2.7	—	—	CMHZ4125	250	CLL5261B	2.7	BZV55C47
51	CMHZ5262B*	2.5	—	—	—	—	CLL5262B	2.5	BZV55C51
56	CMHZ5263B*	2.2	—	—	—	—	CLL5263B	2.2	BZV55C56
60	CMHZ5264B*	2.1	—	—	—	—	CLL5264B	2.1	—
62	CMHZ5265B*	2.0	—	—	—	—	CLL5265B	2.0	BZV55C62
68	CMHZ5266B*	1.8	—	—	—	—	CLL5266B	1.8	BZV55C68
75	CMHZ5267B*	1.7	—	—	—	—	CLL5267B	1.7	BZV55C75

Package dimensions shown are maximum values in mm.

\* Available on special order; please consult factory.

## Zener Diodes (continued)

1.0 to 10W

3.3 to 200V

Package dimensions shown are maximum values in mm.

POWER	1.0W		1.5W		3.0W		10W	
CASE	MELF		SMA		SMB		SMC	
ZENER VOLTAGE	GENERAL PURPOSE	@ I <sub>ZT</sub> (mA)	1.5 WATT ZENER + 200W TVS	@ I <sub>ZT</sub> (mA)	3.0 WATT ZENER	@ I <sub>ZT</sub> (mA)	HIGH POWER	@ I <sub>ZT</sub> (mA)
3.3	CLL4728A	76	CMZ5913B	113.6	CMZ5913BP	113.6	—	—
3.6	CLL4729A	69	CMZ5914B	104.2	CMZ5914BP	104.2	CMZ5334B	350
3.9	CLL4730A	64	CMZ5915B	96.1	CMZ5915BP	96.1	CMZ5335B	320
4.3	CLL4731A	58	CMZ5916B	87.2	CMZ5916BP	87.2	CMZ5336B	290
4.7	CLL4732A	53	CMZ5917B	79.8	CMZ5917BP	79.8	CMZ5337B	264
5.1	CLL4733A	49	CMZ5918B	73.5	CMZ5918BP	73.5	CMZ5338B	240
5.6	CLL4734A	45	CMZ5919B	66.9	CMZ5919BP	66.9	CMZ5339B	220
6.2	CLL4735A	41	CMZ5920B	60.5	CMZ5920BP	60.5	CMZ5340B	200
6.8	CLL4736A	37	CMZ5921B	55.1	CMZ5921BP	55.1	CMZ5342B	175
7.5	CLL4737A	34	CMZ5922B	50.0	CMZ5922BP	50.0	CMZ5343B	175
8.2	CLL4738A	31	CMZ5923B	45.7	CMZ5923BP	45.7	CMZ5344B	150
8.7	—	—	—	—	—	—	CMZ5345B	150
9.1	CLL4739A	28	CMZ5924B	41.2	CMZ5924BP	41.2	CMZ5346B	150
10	CLL4740A	25	CMZ5925B	37.5	CMZ5925BP	37.5	CMZ5347B	125
11	CLL4741A	23	CMZ5926B	34.1	CMZ5926BP	34.1	CMZ5348B	125
12	CLL4742A	21	CMZ5927B	31.2	CMZ5927BP	31.2	CMZ5349B	100
13	CLL4743A	19	CMZ5928B	28.8	CMZ5928BP	28.8	CMZ5350B	100
14	—	—	—	—	—	—	CMZ5351B	100
15	CLL4744A	17	CMZ5929B	25.0	CMZ5929BP	25.0	CMZ5352B	75
16	CLL4745A	15.5	CMZ5930B	23.4	CMZ5930BP	23.4	CMZ5353B	75
17	—	—	—	—	—	—	CMZ5354B	70
18	CLL4746A	14.0	CMZ5931B	20.8	CMZ5931BP	20.8	CMZ5355B	65
19	—	—	—	—	—	—	CMZ5356B	65
20	CLL4747A	12.5	CMZ5932B	18.7	CMZ5932BP	18.7	CMZ5357B	65
22	CLL4748A	11.5	CMZ5933B	17.0	CMZ5933BP	17.0	CMZ5358B	50
24	CLL4749A	10.5	CMZ5934B	15.6	CMZ5934BP	15.6	CMZ5359B	50
25	—	—	—	—	—	—	CMZ5360B	50
27	CLL4750A	9.5	CMZ5935B	13.9	CMZ5935BP	13.9	CMZ5361B	50
28	—	—	—	—	—	—	CMZ5362B	50
30	CLL4751A	8.5	CMZ5936B	12.5	CMZ5936BP	12.5	CMZ5363B	40
33	CLL4752A	7.5	CMZ5937B	11.4	CMZ5937BP	11.4	CMZ5364B	40
36	CLL4753A	7.0	CMZ5938B	10.4	CMZ5938BP	10.4	CMZ5365B	30
39	CLL4754A	6.5	CMZ5939B	9.6	CMZ5939BP	9.6	CMZ5366B	30
43	CLL4755A	6.0	CMZ5940B	8.7	CMZ5940BP	8.7	CMZ5367B	30
47	CLL4756A	5.5	CMZ5941B	8.0	CMZ5941BP	8.0	CMZ5368B	25
51	CLL4757A	5.0	CMZ5942B	7.3	CMZ5942BP	7.3	CMZ5369B	25
56	CLL4758A	4.5	CMZ5943B	6.7	CMZ5943BP	6.7	CMZ5370B	20
60	—	—	—	—	—	—	CMZ5371B	20
62	CLL4759A	4.0	CMZ5944B	6.0	CMZ5944BP	6.0	CMZ5372B	20
68	CLL4760A	3.7	CMZ5945B	5.5	CMZ5945BP	5.5	CMZ5373B	20
75	CLL4761A	3.3	CMZ5946B	5.0	CMZ5946BP	5.0	CMZ5374B	20
82	—	3.0	CMZ5947B	4.6	CMZ5947BP	4.6	CMZ5375B	15
87	—	—	—	—	—	—	CMZ5376B	15
91	—	2.8	CMZ5948B	4.1	CMZ5948BP	4.1	CMZ5377B	15
100	—	2.5	CMZ5949B	3.7	CMZ5949BP	3.7	CMZ5378B	12
110	—	—	CMZ5950B	3.4	CMZ5950BP	3.4	CMZ5379B	12
120	—	—	CMZ5951B	3.1	CMZ5951BP	3.1	CMZ5380B	10
130	—	—	CMZ5952B	2.9	CMZ5952BP	2.9	CMZ5381B	10
140	—	—	—	—	—	—	CMZ5382B	8.0
150	—	—	CMZ5953B	2.5	CMZ5953BP	2.5	CMZ5383B	8.0
160	—	—	CMZ5954B	2.3	CMZ5954BP	2.3	CMZ5384B	8.0
170	—	—	—	—	—	—	CMZ5385B	8.0
180	—	—	CMZ5955B	2.1	CMZ5955BP	2.1	CMZ5386B	5.0
190	—	—	—	—	—	—	CMZ5387B	5.0
200	—	—	CMZ5956B	1.9	CMZ5956BP	1.9	CMZ5388B	5.0

Package dimensions shown are maximum values in mm.



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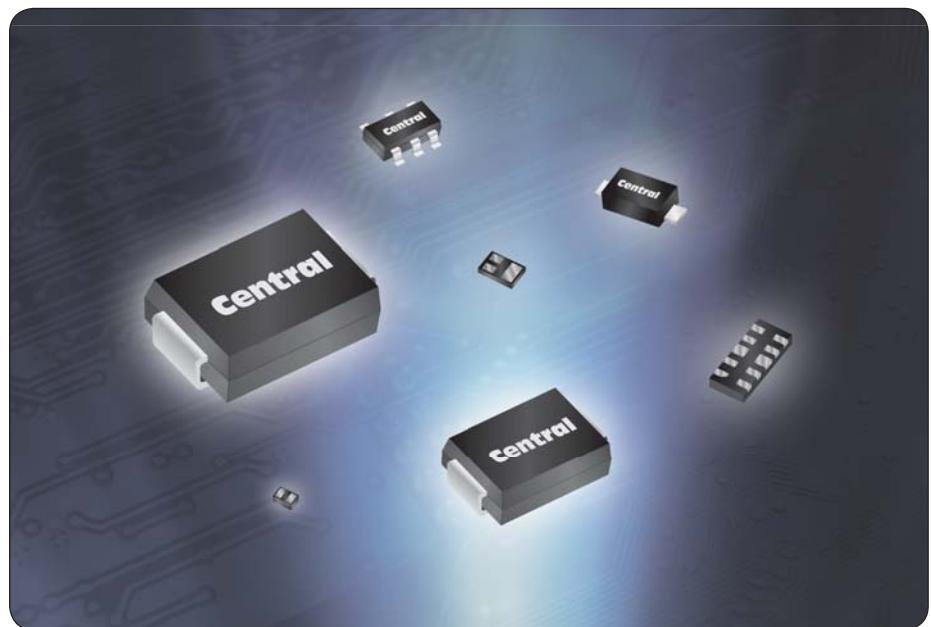


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# Protection Devices

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# Transient Voltage Suppressors (TVS)

200 to 600W

5.0 to 220V



Package dimensions shown are maximum values in mm.

POWER	200W		400W				600W			
	CASE	SOD-123F	Control 3.95 x 1.95 x 1.08	SMAFL	Control 4.9 x 2.6 x 1.1	SMA	Control 5.59 x 2.92 x 2.62	SMB	Control 5.59 x 3.81 x 2.44	
REVERSE STAND-OFF VOLTAGE V <sub>RWM</sub>	UNI-POLAR	@ I <sub>T</sub> (mA)	UNI-POLAR	@ I <sub>T</sub> (mA)	UNI-POLAR	@ I <sub>T</sub> (mA)	UNI-POLAR	@ I <sub>T</sub> (mA)	BI-POLAR	@ I <sub>T</sub> (mA)
5.0	CMF5.0A	10	-	-	P4SMA5.0A	1.0	1SMB5.0A	10	1SMB5.0CA	10
6.0	CMF6.0A	10	-	-	P4SMA6.0A	1.0	1SMB6.0A	10	1SMB6.0CA	10
6.5	CMF6.5A	10	-	-	P4SMA6.5A	1.0	1SMB6.5A	10	1SMB6.5CA	10
7.0	CMF7.0A	10	-	-	P4SMA7.0A	1.0	1SMB7.0A	10	1SMB7.0CA	10
7.5	CMF7.5A	1.0	-	-	P4SMA7.5A	1.0	1SMB7.5A	1.0	1SMB7.5CA	1.0
8.0	CMF8.0A	1.0	-	-	P4SMA8.0A	1.0	1SMB8.0A	1.0	1SMB8.0CA	1.0
8.5	CMF8.5A	1.0	C4SMAFL8.5A	1.0	P4SMA8.5A	1.0	1SMB8.5A	1.0	1SMB8.5CA	1.0
9.0	CMF9.0A	1.0	C4SMAFL9.0A	1.0	P4SMA9.0A	1.0	1SMB9.0A	1.0	1SMB9.0CA	1.0
10	CMF10A	1.0	C4SMAFL10A	1.0	P4SMA10A	1.0	1SMB10A	1.0	1SMB10CA	1.0
11	CMF11A	1.0	C4SMAFL11A	1.0	P4SMA11A	1.0	1SMB11A	1.0	1SMB11CA	1.0
12	CMF12A	1.0	C4SMAFL12A	1.0	P4SMA12A	1.0	1SMB12A	1.0	1SMB12CA	1.0
13	CMF13A	1.0	C4SMAFL13A	1.0	P4SMA13A	1.0	1SMB13A	1.0	1SMB13CA	1.0
14	CMF14A	1.0	C4SMAFL14A	1.0	P4SMA14A	1.0	1SMB14A	1.0	1SMB14CA	1.0
15	CMF15A	1.0	C4SMAFL15A	1.0	P4SMA15A	1.0	1SMB15A	1.0	1SMB15CA	1.0
16	CMF16A	1.0	C4SMAFL16A	1.0	P4SMA16A	1.0	1SMB16A	1.0	1SMB16CA	1.0
17	CMF17A	1.0	C4SMAFL17A	1.0	P4SMA17A	1.0	1SMB17A	1.0	1SMB17CA	1.0
18	CMF18A	1.0	C4SMAFL18A	1.0	P4SMA18A	1.0	1SMB18A	1.0	1SMB18CA	1.0
20	CMF20A	1.0	C4SMAFL20A	1.0	P4SMA20A	1.0	1SMB20A	1.0	1SMB20CA	1.0
22	CMF22A	1.0	C4SMAFL22A	1.0	P4SMA22A	1.0	1SMB22A	1.0	1SMB22CA	1.0
24	CMF24A	1.0	C4SMAFL24A	1.0	P4SMA24A	1.0	1SMB24A	1.0	1SMB24CA	1.0
26	CMF26A	1.0	C4SMAFL26A	1.0	P4SMA26A	1.0	1SMB26A	1.0	1SMB26CA	1.0
28	CMF28A	1.0	C4SMAFL28A	1.0	P4SMA28A	1.0	1SMB28A	1.0	1SMB28CA	1.0
30	CMF30A	1.0	C4SMAFL30A	1.0	P4SMA30A	1.0	1SMB30A	1.0	1SMB30CA	1.0
33	CMF33A	1.0	C4SMAFL33A	1.0	P4SMA33A	1.0	1SMB33A	1.0	1SMB33CA	1.0
36	CMF36A	1.0	C4SMAFL36A	1.0	P4SMA36A	1.0	1SMB36A	1.0	1SMB36CA	1.0
40	CMF40A	1.0	C4SMAFL40A	1.0	P4SMA40A	1.0	1SMB40A	1.0	1SMB40CA	1.0
43	CMF43A	1.0	C4SMAFL43A	1.0	P4SMA43A	1.0	1SMB43A	1.0	1SMB43CA	1.0
45	CMF45A	1.0	C4SMAFL45A	1.0	P4SMA45A	1.0	1SMB45A	1.0	1SMB45CA	1.0
48	CMF48A	1.0	C4SMAFL48A	1.0	P4SMA48A	1.0	1SMB48A	1.0	1SMB48CA	1.0
51	CMF51A	1.0	C4SMAFL51A	1.0	P4SMA51A	1.0	1SMB51A	1.0	1SMB51CA	1.0
54	CMF54A	1.0	C4SMAFL54A	1.0	P4SMA54A	1.0	1SMB54A	1.0	1SMB54CA	1.0
58	CMF58A	1.0	C4SMAFL58A	1.0	P4SMA58A	1.0	1SMB58A	1.0	1SMB58CA	1.0
60	CMF60A	1.0	C4SMAFL60A	1.0	P4SMA60A	1.0	1SMB60A	1.0	1SMB60CA	1.0
64	CMF64A	1.0	C4SMAFL64A	1.0	P4SMA64A	1.0	1SMB64A	1.0	1SMB64CA	1.0
70	CMF70A	1.0	C4SMAFL70A	1.0	P4SMA70A	1.0	1SMB70A	1.0	1SMB70CA	1.0
75	CMF75A	1.0	C4SMAFL75A	1.0	P4SMA75A	1.0	1SMB75A	1.0	1SMB75CA	1.0
78	CMF78A	1.0	C4SMAFL78A	1.0	P4SMA78A	1.0	1SMB78A	1.0	1SMB78CA	1.0
85	CMF85A	1.0	C4SMAFL85A	1.0	P4SMA85A	1.0	1SMB85A	1.0	1SMB85CA	1.0
90	CMF90A	1.0	C4SMAFL90A	1.0	P4SMA90A	1.0	1SMB90A	1.0	1SMB90CA	1.0
100	CMF100A	1.0	C4SMAFL100A	1.0	P4SMA100A	1.0	1SMB100A	1.0	1SMB100CA	1.0
110	CMF110A	1.0	C4SMAFL110A	1.0	P4SMA110A	1.0	1SMB110A	1.0	1SMB110CA	1.0
120	CMF120A	1.0	C4SMAFL120A	1.0	P4SMA120A	1.0	1SMB120A	1.0	1SMB120CA	1.0
130	CMF130A	1.0	C4SMAFL130A	1.0	P4SMA130A	1.0	1SMB130A	1.0	1SMB130CA	1.0
150	CMF150A	1.0	C4SMAFL150A	1.0	P4SMA150A	1.0	1SMB150A	1.0	1SMB150CA	1.0
160	CMF160A	1.0	C4SMAFL160A	1.0	P4SMA160A	1.0	1SMB160A	1.0	1SMB160CA	1.0
170	CMF170A	1.0	C4SMAFL170A	1.0	P4SMA170A	1.0	1SMB170A	1.0	1SMB170CA	1.0
180	-	-	-	-	P4SMA180A	1.0	-	-	-	-
190	-	-	-	-	P4SMA190A	1.0	-	-	-	-
200	-	-	-	-	P4SMA200A	1.0	-	-	-	-
210	-	-	-	-	P4SMA210A	1.0	-	-	-	-
220	-	-	-	-	P4SMA220A	1.0	-	-	-	-

## Transient Voltage Suppressors (TVS continued)

1500 to 5000W

5.0 to 170V



Package dimensions shown are maximum values in mm.

POWER	1500W				3000W				5000W	
CASE	 8.13 x 6.22 x 2.62 <b>SMC</b>									
REVERSE STAND-OFF VOLTAGE $V_{RWM}$	UNI-POLAR	@ $I_T$ (mA)	BI-POLAR	@ $I_T$ (mA)	UNI-POLAR	@ $I_T$ (mA)	BI-POLAR	@ $I_T$ (mA)	UNI-POLAR	@ $I_T$ (mA)
5.0	1SMC5.0A	10	1SMC5.0CA	10	3SMC5.0A	10	3SMC5.0CA	10	-	-
6.0	1SMC6.0A	10	1SMC6.0CA	10	3SMC6.0A	10	3SMC6.0CA	10	-	-
6.5	1SMC6.5A	10	1SMC6.5CA	10	3SMC6.5A	10	3SMC6.5CA	10	-	-
7.0	1SMC7.0A	10	1SMC7.0CA	10	3SMC7.0A	10	3SMC7.0CA	10	-	-
7.5	1SMC7.5A	1.0	1SMC7.5CA	1.0	3SMC7.5A	1.0	3SMC7.5CA	1.0	-	-
8.0	1SMC8.0A	1.0	1SMC8.0CA	1.0	3SMC8.0A	1.0	3SMC8.0CA	1.0	-	-
8.5	1SMC8.5A	1.0	1SMC8.5CA	1.0	3SMC8.5A	1.0	3SMC8.5CA	1.0	-	-
9.0	1SMC9.0A	1.0	1SMC9.0CA	1.0	3SMC9.0A	1.0	3SMC9.0CA	1.0	-	-
10	1SMC10A	1.0	1SMC10CA	1.0	3SMC10A	1.0	3SMC10CA	1.0	-	-
11	1SMC11A	1.0	1SMC11CA	1.0	3SMC11A	1.0	3SMC11CA	1.0	-	-
12	1SMC12A	1.0	1SMC12CA	1.0	3SMC12A	1.0	3SMC12CA	1.0	-	-
13	1SMC13A	1.0	1SMC13CA	1.0	3SMC13A	1.0	3SMC13CA	1.0	-	-
14	1SMC14A	1.0	1SMC14CA	1.0	3SMC14A	1.0	3SMC14CA	1.0	-	-
15	1SMC15A	1.0	1SMC15CA	1.0	3SMC15A	1.0	3SMC15CA	1.0	-	-
16	1SMC16A	1.0	1SMC16CA	1.0	3SMC16A	1.0	3SMC16CA	1.0	-	-
17	1SMC17A	1.0	1SMC17CA	1.0	3SMC17A	1.0	3SMC17CA	1.0	-	-
18	1SMC18A	1.0	1SMC18CA	1.0	3SMC18A	1.0	3SMC18CA	1.0	-	-
20	1SMC20A	1.0	1SMC20CA	1.0	3SMC20A	1.0	3SMC20CA	1.0	-	-
22	1SMC22A	1.0	1SMC22CA	1.0	3SMC22A	1.0	3SMC22CA	1.0	-	-
24	1SMC24A	1.0	1SMC24CA	1.0	3SMC24A	1.0	3SMC24CA	1.0	-	-
26	1SMC26A	1.0	1SMC26CA	1.0	3SMC26A	1.0	3SMC26CA	1.0	-	-
28	1SMC28A	1.0	1SMC28CA	1.0	3SMC28A	1.0	3SMC28CA	1.0	-	-
30	1SMC30A	1.0	1SMC30CA	1.0	3SMC30A	1.0	3SMC30CA	1.0	-	-
33	1SMC33A	1.0	1SMC33CA	1.0	3SMC33A	1.0	3SMC33CA	1.0	5SMC33A	1.0
36	1SMC36A	1.0	1SMC36CA	1.0	3SMC36A	1.0	3SMC36CA	1.0	5SMC36A	1.0
40	1SMC40A	1.0	1SMC40CA	1.0	3SMC40A	1.0	3SMC40CA	1.0	5SMC40A	1.0
43	1SMC43A	1.0	1SMC43CA	1.0	3SMC43A	1.0	3SMC43CA	1.0	5SMC43A	1.0
45	1SMC45A	1.0	1SMC45CA	1.0	3SMC45A	1.0	3SMC45CA	1.0	5SMC45A	1.0
48	1SMC48A	1.0	1SMC48CA	1.0	3SMC48A	1.0	3SMC48CA	1.0	5SMC48A	1.0
51	1SMC51A	1.0	1SMC51CA	1.0	3SMC51A	1.0	3SMC51CA	1.0	5SMC51A	1.0
54	1SMC54A	1.0	1SMC54CA	1.0	3SMC54A	1.0	3SMC54CA	1.0	5SMC54A	1.0
58	1SMC58A	1.0	1SMC58CA	1.0	3SMC58A	1.0	3SMC58CA	1.0	5SMC58A	1.0
60	1SMC60A	1.0	1SMC60CA	1.0	3SMC60A	1.0	3SMC60CA	1.0	5SMC60A	1.0
64	1SMC64A	1.0	1SMC64CA	1.0	3SMC64A	1.0	3SMC64CA	1.0	5SMC64A	1.0
70	1SMC70A	1.0	1SMC70CA	1.0	3SMC70A	1.0	3SMC70CA	1.0	5SMC70A	1.0
75	1SMC75A	1.0	1SMC75CA	1.0	3SMC75A	1.0	3SMC75CA	1.0	5SMC75A	1.0
78	1SMC78A	1.0	1SMC78CA	1.0	3SMC78A	1.0	3SMC78CA	1.0	5SMC78A	1.0
85	1SMC85A	1.0	1SMC85CA	1.0	3SMC85A	1.0	3SMC85CA	1.0	5SMC85A	1.0
90	1SMC90A	1.0	1SMC90CA	1.0	3SMC90A	1.0	3SMC90CA	1.0	5SMC90A	1.0
100	1SMC100A	1.0	1SMC100CA	1.0	3SMC100A	1.0	3SMC100CA	1.0	5SMC100A	1.0
110	1SMC110A	1.0	1SMC110CA	1.0	3SMC110A	1.0	3SMC110CA	1.0	5SMC110A	1.0
120	1SMC120A	1.0	1SMC120CA	1.0	3SMC120A	1.0	3SMC120CA	1.0	5SMC120A	1.0
130	1SMC130A	1.0	1SMC130CA	1.0	3SMC130A	1.0	3SMC130CA	1.0	5SMC130A	1.0
150	1SMC150A	1.0	1SMC150CA	1.0	3SMC150A	1.0	3SMC150CA	1.0	5SMC150A	1.0
160	1SMC160A	1.0	1SMC160CA	1.0	3SMC160A	1.0	3SMC160CA	1.0	5SMC160A	1.0
170	1SMC170A	1.0	1SMC170CA	1.0	3SMC170A	1.0	3SMC170CA	1.0	5SMC170A	1.0

## Transient Voltage Suppressors (TVS continued)

600 to 1500W

6.8 to 250V



Package dimensions shown are maximum values in mm.

POWER	600W				1500W			
CASE	 5.59 x 3.81 x 2.44 <b>SMB</b>				 8.13 x 6.22 x 2.62 <b>SMC</b>			
BREAKDOWN VOLTAGE $V_{BR}$	UNI-POLAR	@ $I_T$ (mA)	BI-POLAR	@ $I_T$ (mA)	UNI-POLAR	@ $I_T$ (mA)	BI-POLAR	@ $I_T$ (mA)
6.8	P6SMB6.8A	10	P6SMB6.8CA	10	1.5SMC6.8A	10	1.5SMC6.8CA	10
7.5	P6SMB7.5A	10	P6SMB7.5CA	10	1.5SMC7.5A	10	1.5SMC7.5CA	10
8.2	P6SMB8.2A	10	P6SMB8.2CA	10	1.5SMC8.2A	10	1.5SMC8.2CA	10
9.1	P6SMB9.1A	1.0	P6SMB9.1CA	1.0	1.5SMC9.1A	1.0	1.5SMC9.1CA	1.0
10	P6SMB10A	1.0	P6SMB10CA	1.0	1.5SMC10A	1.0	1.5SMC10CA	1.0
11	P6SMB11A	1.0	P6SMB11CA	1.0	1.5SMC11A	1.0	1.5SMC11CA	1.0
12	P6SMB12A	1.0	P6SMB12CA	1.0	1.5SMC12A	1.0	1.5SMC12CA	1.0
13	P6SMB13A	1.0	P6SMB13CA	1.0	1.5SMC13A	1.0	1.5SMC13CA	1.0
15	P6SMB15A	1.0	P6SMB15CA	1.0	1.5SMC15A	1.0	1.5SMC15CA	1.0
16	P6SMB16A	1.0	P6SMB16CA	1.0	1.5SMC16A	1.0	1.5SMC16CA	1.0
18	P6SMB18A	1.0	P6SMB18CA	1.0	1.5SMC18A	1.0	1.5SMC18CA	1.0
20	P6SMB20A	1.0	P6SMB20CA	1.0	1.5SMC20A	1.0	1.5SMC20CA	1.0
22	P6SMB22A	1.0	P6SMB22CA	1.0	1.5SMC22A	1.0	1.5SMC22CA	1.0
24	P6SMB24A	1.0	P6SMB24CA	1.0	1.5SMC24A	1.0	1.5SMC24CA	1.0
27	P6SMB27A	1.0	P6SMB27CA	1.0	1.5SMC27A	1.0	1.5SMC27CA	1.0
30	P6SMB30A	1.0	P6SMB30CA	1.0	1.5SMC30A	1.0	1.5SMC30CA	1.0
33	P6SMB33A	1.0	P6SMB33CA	1.0	1.5SMC33A	1.0	1.5SMC33CA	1.0
36	P6SMB36A	1.0	P6SMB36CA	1.0	1.5SMC36A	1.0	1.5SMC36CA	1.0
39	P6SMB39A	1.0	P6SMB39CA	1.0	1.5SMC39A	1.0	1.5SMC39CA	1.0
43	P6SMB43A	1.0	P6SMB43CA	1.0	1.5SMC43A	1.0	1.5SMC43CA	1.0
47	P6SMB47A	1.0	P6SMB47CA	1.0	1.5SMC47A	1.0	1.5SMC47CA	1.0
51	P6SMB51A	1.0	P6SMB51CA	1.0	1.5SMC51A	1.0	1.5SMC51CA	1.0
56	P6SMB56A	1.0	P6SMB56CA	1.0	1.5SMC56A	1.0	1.5SMC56CA	1.0
62	P6SMB62A	1.0	P6SMB62CA	1.0	1.5SMC62A	1.0	1.5SMC62CA	1.0
68	P6SMB68A	1.0	P6SMB68CA	1.0	1.5SMC68A	1.0	1.5SMC68CA	1.0
75	P6SMB75A	1.0	P6SMB75CA	1.0	1.5SMC75A	1.0	1.5SMC75CA	1.0
82	P6SMB82A	1.0	P6SMB82CA	1.0	1.5SMC82A	1.0	1.5SMC82CA	1.0
91	P6SMB91A	1.0	P6SMB91CA	1.0	1.5SMC91A	1.0	1.5SMC91CA	1.0
100	P6SMB100A	1.0	P6SMB100CA	1.0	1.5SMC100A	1.0	1.5SMC100CA	1.0
110	P6SMB110A	1.0	P6SMB110CA	1.0	1.5SMC110A	1.0	1.5SMC110CA	1.0
120	P6SMB120A	1.0	P6SMB120CA	1.0	1.5SMC120A	1.0	1.5SMC120CA	1.0
130	P6SMB130A	1.0	P6SMB130CA	1.0	1.5SMC130A	1.0	1.5SMC130CA	1.0
150	P6SMB150A	1.0	P6SMB150CA	1.0	1.5SMC150A	1.0	1.5SMC150CA	1.0
160	P6SMB160A	1.0	P6SMB160CA	1.0	1.5SMC160A	1.0	1.5SMC160CA	1.0
170	P6SMB170A	1.0	P6SMB170CA	1.0	1.5SMC170A	1.0	1.5SMC170CA	1.0
180	P6SMB180A	1.0	P6SMB180CA	1.0	1.5SMC180A	1.0	1.5SMC180CA	1.0
200	P6SMB200A	1.0	P6SMB200CA	1.0	1.5SMC200A	1.0	1.5SMC200CA	1.0
220	P6SMB220A	1.0	P6SMB220CA	1.0	1.5SMC220A	1.0	1.5SMC220CA	1.0
250	P6SMB250A	1.0	P6SMB250CA	1.0				

Package dimensions shown are maximum values in mm.

# ESD Transient Voltage Suppressors

12W to 400W

1.5V to 9.0V

Package dimensions shown are maximum values in mm.

Central Part No.	Case Type	Description	*V <sub>ESD</sub> MAX (kV)	Peak Pulse Power 8X20μs PPK (W)	Max. Reverse Stand-Off Voltage V <sub>RWM</sub> (V)	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> MIN (V) MAX (V)	Max. Clamping Voltage 8X20μs V <sub>C</sub> @ I <sub>PP</sub> (V)	Max. Peak Pulse Current 8X20μs I <sub>PP</sub> (A)	Typical Dynamic Resistance (Note 1) R <sub>DYN</sub> (Ω)	Max. Junction Capacitance 0V DC, 1MHz C <sub>J</sub> (pF)	Max. Off-State Capacitance 0V DC, 1MHz C <sub>J</sub> (pF)
------------------	-----------	-------------	-------------------------------	------------------------------------	---	---	---	--	--	---	--

## Standard

CMATVS3V3	 1.10 x 0.65 x 0.41 SOD-923	Single	15	80	3.3	5.0	—	11	7.0	0.5	45 (TYP)	—
CMATVS5V0		Single	15	80	5.0	6.2	—	12.3	7.0	0.5	40 (TYP)	—
CMOTVS5V7	 1.80 x 0.9 x 0.8 SOD-523	Single	15	66	4.0	5.7	6.7	12	5.5	0.53	35 (TYP)	—
CTLTVS6V2	 0.65 x 0.35 x 0.32 TLM2D3D6	Single	15	35	4.0	5.8	6.6	10.7	3.0	0.54	25 (TYP)	—

## Low Capacitance

CMPESD24CA	 3.05 x 2.49 x 1.09 SOT-23	Dual, Bi-directional	20	210	24	25.4	30.3	70	3.0	1.3	9.0 (TYP)	—
CMPLC1V5		Single	>25	50	1.5	—	—	7.0 (@ I <sub>PP</sub> = 3.0A)	5.0	0.97	—	10
CMPLC1V5D		Dual	>25	50	1.5	—	—	7.0 (@ I <sub>PP</sub> = 3.0A)	5.0	0.97	—	10
CFTVS3V3B	 1.05 x 0.65 x 0.55 SOD-882	Single, Bi-directional	30	40	3.3	3.5	—	6.5	1.0	0.25	10	—
								8.0	5.0			
CTLTVS12	 0.65 x 0.35 x 0.32 TLM2D3D6	Single	30	35	9.0	10	14	18 (@ I <sub>PP</sub> = 1.8A)	1.8	0.71	—	14
CTLTVS5V0B	 0.65 x 0.35 x 0.32 TLM2D3D6	Single, Bi-directional	15	30	5.0	5.5	10	12 1.0	2.0	0.5	3.5	—
								15 2.0				

## Ultra Low Capacitance

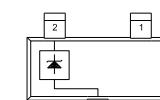
CSL05	 3.05 x 2.49 x 1.09 SOT-23	Single	>25	400	5.0	—	—	12 (@ I <sub>PP</sub> = 5.0A)	17	0.57	1.2	—
CSL05D		Dual	>25	400	5.0	—	—	12 (@ I <sub>PP</sub> = 5.0A)	17	0.57	1.2	—
CFTVS5V0BULC	 1.05 x 0.65 x 0.4 SOD-882L	Single, Bi-directional	15	14	5.0	6.0	10	14	1.0	2.94	0.35	—
CMO5V0LC	 1.80 x 0.9 x 0.8 SOD-523	Single	15	12	5.0	6.0	—	12	1.0	0.96	—	0.9

\* IEC-61000-4-2 Standard

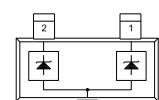
Note 1: Transmission Line Pulse (TLP) conditions: Z<sub>0</sub>=50Ω, t<sub>p</sub>=100ns

### Low Capacitance Pinouts

#### Pinout for CMPLC1V5

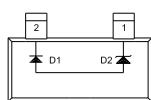


#### Pinout for CMPLC1V5D

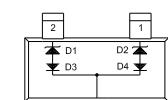


### Ultra Low Capacitance Pinouts

#### Pinout for CSL05



#### Pinout for CSL05D



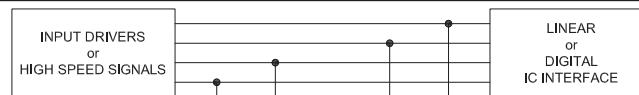
## ESD Protection Quad Line Diode Array

ELECTRICAL CHARACTERISTICS PER DIODE: ( $T_A=25^\circ C$ )

Central Part No.	Case Type	$V_R$	$V_{ESD}^*$ (Air)	$T_J, T_{stg}$		$V_F$ @ $I_F$			Reverse Leakage Current		Off State Junction Capacitance I/O to GND ( $V_R=0, f=1.0MHz$ ) $C_J$	Off State Junction Capacitance I/O to I/O ( $V_R=0, f=1.0MHz$ ) $C_J$
		MAX (V)	MAX (kV)	MAX (°C)	TYP (V)	MAX (V)	(mA)	MAX ( $\mu A$ )	(V)	MAX (pF)	MAX (pF)	
CMXESD70-4	 3.0 x 3.0 x 1.2 SOT-26	70	15	-55 to +150	0.61 0.74 0.88 1.07	0.715 0.855 1.0 1.25	1.0 10 50 150	1.0	70	1.0	0.9	

\*IEC61000-4-2

**Theory of operation:** In this configuration, when the transient voltage exceeds the sum of the diode forward voltage drop ( $V_F$ ), plus the supply voltage ( $V_{CC}$ ), the diode will direct the surge to the supply, thereby protecting the high speed data line.



LINEAR  
or  
DIGITAL  
IC INTERFACE

**LEAD CODE:**  
1) I/O 1  
2) Ground  
3) I/O 2  
4) I/O 3  
5) Supply Voltage ( $V_{CC}$ )  
6) I/O 4

**MARKING CODE:**  
CTV70

## TVS/Diode Array

ELECTRICAL CHARACTERISTICS PER DIODE: ( $T_A=25^\circ C$ )

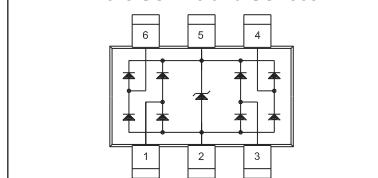
Central Part No.	Case Type	$V_I$	$V_{ESD}^*$ (Air)	Reverse Stand-off Voltage $V_{RWM}$	Reverse Breakdown Voltage pin 5 to pin 2 $V_Z @ I_Z$		Reverse Leakage Current pin 5 to pin 2 $I_R @ V_{RWM}$	Clamping Voltage 8x20μs I/O to pin 2 $V_C @ I_{PP}$		Dynamic Resistance (Note 1) $R_{DYN}$	Off State Junction Capacitance I/O to GND ( $V_R=0, f=1.0MHz$ ) $C_J$	Off State Junction Capacitance I/O to I/O ( $V_R=0, f=1.0MHz$ ) $C_J$	
		MAX (V)	MAX (kV)	MAX (V)	MIN (V)	(mA)	MAX ( $\mu A$ )	(V)	(A)	TYP ( $\Omega$ )	MAX (pF)	MAX (pF)	
CMXTVS5-4	 3.0 x 3.0 x 1.2 SOT-26	5.5	15	5.0	6.0	1.0	5.0	5.0	12	1.0	0.3	1.2	0.6
CMKTVS5-4	 2.2 x 2.3 x 1.1 SOT-363	5.5	15	5.0	6.0	1.0	3.0	5.0	14 23	1.0 5.0	0.72	3.0	1.5

ELECTRICAL CHARACTERISTICS PER DIODE: ( $T_A=25^\circ C$ )

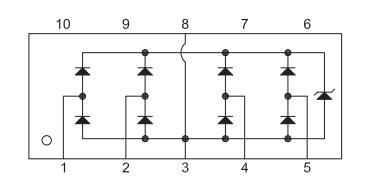
Central Part No.	Case Type	$PPK$ 8x20μs	$V_{ESD}^*$ (Air)	Reverse Stand-off Voltage $V_{RWM}$	Reverse Breakdown Voltage I/O to GND $V_Z @ 1.0mA$		Reverse Leakage Current I/O to GND $I_R @ V_R$	Clamping Voltage 8x20μs I/O to GND $V_C @ I_{PP}$		Dynamic Resistance (Note 1) $R_{DYN}$	Off State Junction Capacitance I/O to GND ( $V_R=0, f=1.0MHz$ ) $C_J$	Off State Junction Capacitance I/O to I/O ( $V_R=0, f=1.0MHz$ ) $C_J$	
		MAX (W)	MAX (kV)	MAX (V)	MIN (V)	MAX (V)	MAX ( $\mu A$ )	MAX (V)	(A)	TYP ( $\Omega$ )	MAX (pF)	MAX (pF)	
CTLTVS5-4	 2.55 x 1.05 x 0.55 TLM1031	32.5	15	5.0	6.0	9.0	1.0	5.0	12 13	1.0 2.5	0.5	0.8	0.4

Note 1: Transmission Line Pulse (TLP) conditions:  $Z_0=50\Omega$ ,  $t_p=100ns$

Pinout for CMXTVS5-4 and CMKTVS5-4 in the SOT-26 and SOT363



Pinout for CTLTVS5-4 in the TLM1031



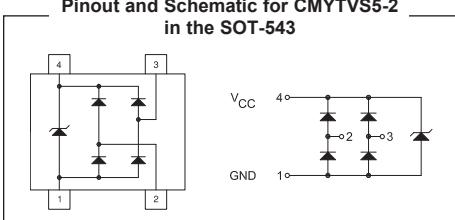
## TVS/Diode Array (continued)

ELECTRICAL CHARACTERISTICS PER DIODE: ( $T_A=25^\circ\text{C}$ )

Central Part No.	Case Type	P <sub>PK</sub> 8x20μs	V <sub>ESD*</sub> (Air)	Reverse Stand-off Voltage V <sub>RWM</sub>	Reverse Breakdown Voltage pin 4 to pin 1 V <sub>Z</sub> @ I <sub>Z</sub>		Reverse Leakage Current pin 4 to pin 1 I <sub>R</sub> @ V <sub>RWM</sub>		Clamping Voltage 8x20μs I/O to pin 1 V <sub>C</sub> @ I <sub>PP</sub>		Off State Junction Capacitance I/O to GND (V <sub>R</sub> =0, f=1.0MHz) C <sub>J</sub>	Off State Junction Capacitance I/O to I/O (V <sub>R</sub> =0, f=1.0MHz) C <sub>J</sub>
		MAX (W)	MAX (kV)	MAX (V)	MIN (V)	(mA)	MAX (μA)	(V)	MAX (V)	(A)	MAX (pF)	MAX (pF)
CMYTVS5-2	 1.7 x 1.7 x 0.6 SOT-543	60	15	5.0	6.2	1.0	1.0	5.0	12	5.0	1.2	0.6

\*IEC61000-4-2

Pinout and Schematic for CMYTVS5-2 in the SOT-543



## TVS/Zener Array

ELECTRICAL CHARACTERISTICS PER DIODE: ( $T_A=25^\circ\text{C}$ )

Package dimensions shown are maximum values in mm.

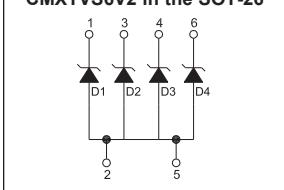
Central Part No.	Case Type	Power (8x20μs)	Breakdown Voltage		Maximum Leakage Current		Maximum Clamping Voltage (10x1000μs) V <sub>C</sub> @ I <sub>PP</sub>	Maximum Clamping Voltage (8x20μs) V <sub>C</sub> @ I <sub>PP</sub>	Dynamic Resistance (Note 1) R <sub>DYN</sub>	Maximum Capacitance @ 0V Bias	Maximum Capacitance @ 2.8V Bias	Maximum Impedance Z <sub>ZT</sub> @ 1.0mA
			V <sub>BR</sub> @ 1.0mA	I <sub>RWM</sub> @ V <sub>RWM</sub>	(μA)	(V)						
CMXTVS5V6	 3.0 x 3.0 x 1.2 SOT-26	150	5.32	5.6	5.88	2.0	3.0	8.0	3.0	12	12.5	0.29
CMXTVS6V2			5.89	6.2	6.51	0.7	4.3	9.0	2.66	12.5	12	0.36

ELECTRICAL CHARACTERISTICS PER DIODE: ( $T_A=25^\circ\text{C}$ )

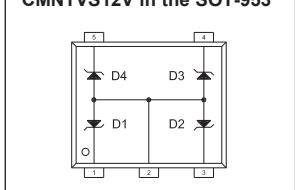
Central Part No.	Case Type	Power	Breakdown Voltage			Maximum Leakage Current		Maximum Clamping Voltage		Dynamic Resistance (Note 1) R <sub>DYN</sub>	Capacitance @ 0V Bias	Capacitance @ 3V Bias	Capacitance @ 3.3V Bias
			V <sub>BR</sub>	@ I <sub>R</sub>	I <sub>RWM</sub> @ V <sub>RWM</sub>	V <sub>C</sub> @ I <sub>PP</sub>	(V)	(A)	(V)				
CMNTVS5V0	 1.05 x 1.05 x 0.5 SOT-953	25	6.0	7.1	8.0	1.0	0.25	5.0	12.5	2.0	1.45	10	-
CMNTVS12V		18	11.4	12.0	12.7	5.0	0.5	9.0	18	1.0	2.56	10	6.0

Note 1: Transmission Line Pulse (TLP) conditions:  $Z_0=50\Omega$ ,  $t_p=100\text{ns}$

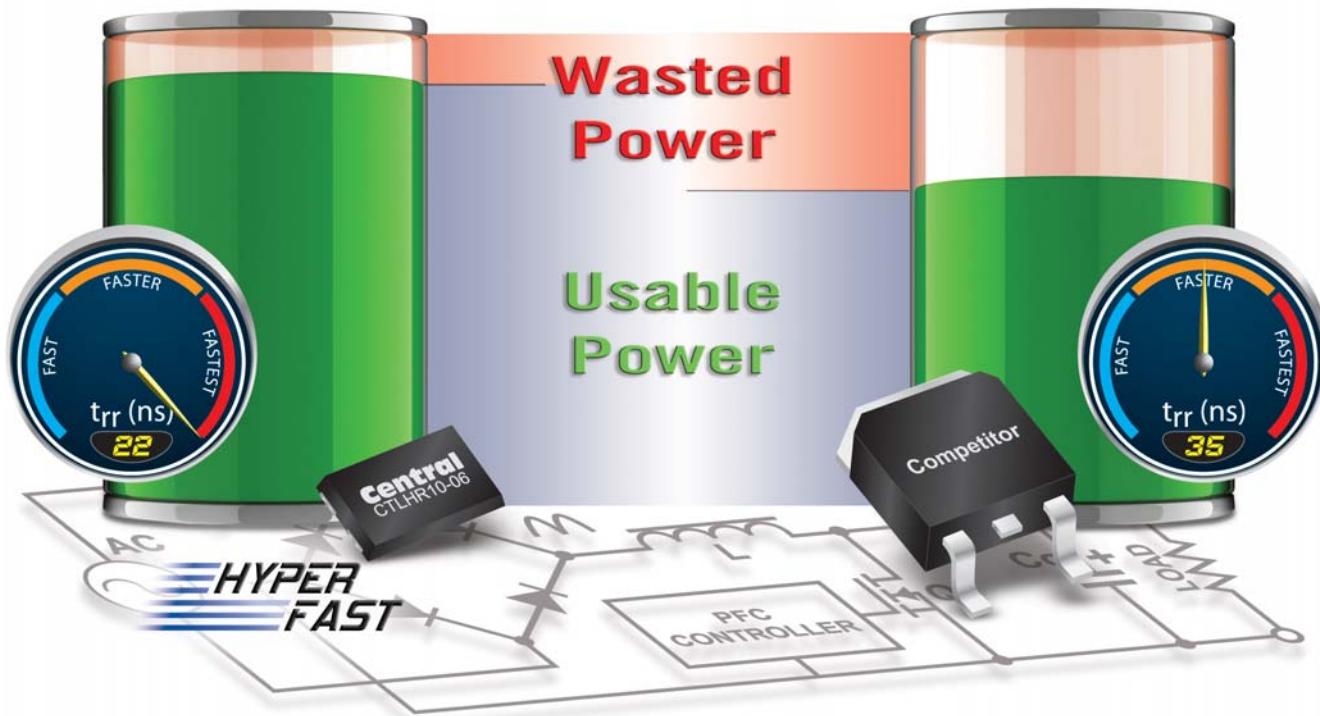
Pinout for CMXTVS5V6 and CMXTVS6V2 in the SOT-26



Pinout for CMNTVS5V0 and CMNTVS12V in the SOT-953



# Which would you prefer for your PFC Application?



## The choice is clear. Central's **600V, HyperFast Rectifiers**

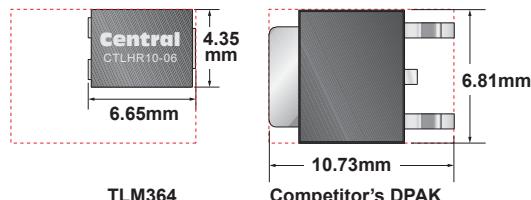
Central Semiconductor's HyperFast Rectifiers will significantly improve your power factor correction (PFC) efficiency.

### Benefits:

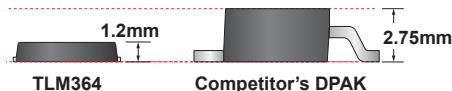
- Ultra low profile
- Industry leading switching speed
- Utilizes less board space than competitors rectifiers

### Package Advantage:

The TLM364 utilizes **60%** less board space than the DPAK



The TLM364 has a **56%** lower profile than the DPAK



### Featured Device

#### Maximum Ratings and Electrical Characteristics

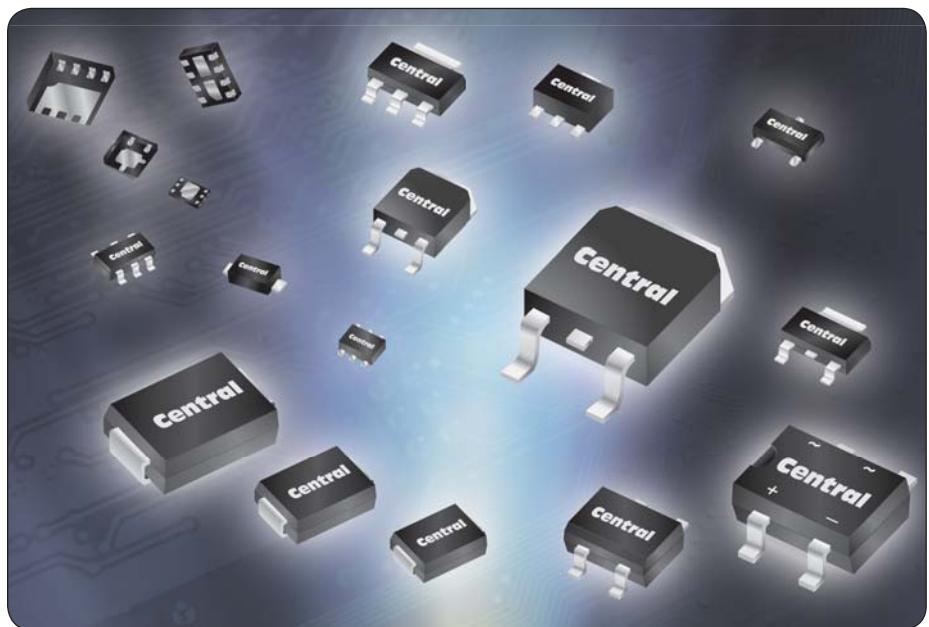
Central Item No.	V <sub>RMM</sub> (V) MAX	I <sub>O</sub> (A) MAX	t <sub>rr</sub> (ns) TYP	Package Type
CTLHR10-06	600	10 ( $T_L = 90^\circ\text{C}$ )	22	TLM364

#### Additional Hyper Fast devices

CMR5H-06	600	5.0 ( $T_L = 75^\circ\text{C}$ )	20	SMC
CHD8-06	600	8.0 ( $T_L = 100^\circ\text{C}$ )	22	DPAK

To request samples contact Central today at:  
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# Rectifiers

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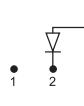
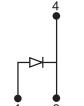
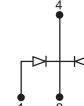
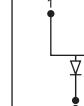
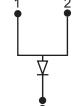
## General Purpose Rectifiers

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**1.0 to 5.0A**

**200 to 1000V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	1.0						2.0		3.0	5.0
@ $T_A$ (°C) ** $T_L$	75**	25	25	25	100**	75	50	**120	75	25
$I_{FSM}$ (AMPS)	30	10	10	10	30	30	60	70	200	150
CASE										
	3.95 x 1.95 x 1.08 SOD-123F	4.7 x 4.5 x 1.7 SOT-89	6.7 x 7.3 x 1.8 SOT-223	5.59 x 2.92 x 2.62 SMA	5.59 x 3.81 x 2.44 SMB	4.9 x 2.6 x 1.1 SMAFL	8.13 x 6.22 x 2.62 SMC	6.65 x 4.35 x 1.2 TLM364		
	SINGLE	SINGLE	SINGLE	DUAL COMMON CATHODE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE
$V_{RRM}$ (VOLTS)										
200	CMMR1-02	-	-	-	CMR1-02M	CMR1-02	CMR2-02	-	CMR3-02	-
400	CMMR1-04	CXR1-04	CZR1-04	CZR1-04C†	CMR1-04M	CMR1-04	CMR2-04	CMR2-04MFL	CMR3-04	-
600	CMMR1-06	-	-	-	CMR1-06M	CMR1-06	CMR2-06	CMR2-06MFL	CMR3-06	CTLR5-06
800	-	-	-	-	-	-	-	CMR2-08MFL	-	-
1000	CMMR1-10	-	-	-	CMR1-10M	CMR1-10	CMR2-10	CMR2-10MFL	CMR3-10	-
$V_F$ MAX @ $I_F = I_O$	1.1V	1.2V	1.2V	1.2V	1.1V	1.1V	1.1V	1.1V	1.2V	1.0V
$I_R$ MAX @ $V_{RRM}$	10µA	1.0µA	1.0µA	1.0µA	5.0µA	10µA	5.0µA	1.0µA	5.0µA	5.0µA
PINOUT										

† Dual Common Cathode (Ratings Per Diode)

## Fast Recovery Rectifiers

**1.0A  
200 to 1000V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	1.0	
$@ T_A$ ( $^{\circ}$ C) $^{**}T_L$	75**	120**
$I_{FSM}$ (AMPS)	30	30
CASE	 3.95 x 1.95 x 1.08 SOD-123F	 5.59 x 2.92 x 2.62 SMA
	SINGLE	SINGLE
$V_{RRM}$ (VOLTS)		
200	CMMR1F-02	CMR1F-02M
400	CMMR1F-04	CMR1F-04M
600	CMMR1F-06	CMR1F-06M
800	CMMR1F-08	—
1000	—	CMR1F-10M
$V_F$ MAX @ $I_F = I_O$	1.3V	1.3V
$I_R$ MAX @ $V_{RRM}$	10 $\mu$ A	5.0 $\mu$ A
$t_{rr}$ (200V)	150ns	150ns
$t_{rr}$ (400V)	150ns	150ns
$t_{rr}$ (600V)	250ns	250ns
$t_{rr}$ (800V)	500ns	—
$t_{rr}$ (1000V)	—	500ns
PINOUT		

## Ultra Fast Recovery Rectifiers

**1.0 to 3.0A**

**100 to 1300V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	1.0					2.0	3.0	
@ $T_A$ ( $^{\circ}$ C) * $T_C$ ** $T_L$	90**	75	75	75	120**	50	75	75
$I_{FSM}$ (AMPS)	30	30	30	30	30	50	100	150
CASE	 3.95 x 1.95 x 1.08 SOD-123F	 5.59 x 2.92 x 2.62 SMA	 5.59 x 3.81 x 2.44 SMB	 5.5 x 3.7 x 1.1 SMBFL	 5.59 x 3.81 x 2.44 SMB	 8.13 x 6.22 x 2.62 SMC		
	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE
$V_{RRM}$ (VOLTS)								
100	—	CMR1U-01M	—	CMR1U-01	—	CMR2U-01	CMR3U-01M	CMR3U-01
200	CMMR1U-02	CMR1U-02M	—	CMR1U-02	CMR1U-02FL	CMR2U-02	CMR3U-02M	CMR3U-02
400	CMMR1U-04	CMR1U-04M	—	CMR1U-04	CMR1U-04FL	CMR2U-04	CMR3U-04M	CMR3U-04
600	CMMR1U-06	CMR1U-06M	—	CMR1U-06	CMR1U-06FL	CMR2U-06	CMR3U-06M	CMR3U-06
800	CMMR1U-08	—	—	—	—	—	—	—
1000	—	CMR1U-10M	—	CMR1U-10	—	—	CMR3U-10M	CMR3U-10
1300	—	—	CMR1U-13M	—	—	—	—	—
$V_F$ MAX @ $I_F = I_O$								
100	—	1.0V	—	1.0V	—	1.0V	1.0V	1.0V
200	1.0V	1.0V	—	1.0V	1.0V	1.0V	1.0V	1.0V
400	1.4V	1.25V	—	1.25V	1.3V	1.25V	1.25V	1.25V
600	1.7V	1.4V	—	1.4V	1.7V	1.4V	1.4V	1.4V
800	1.7V	—	—	—	—	—	—	—
1000	—	1.7V	—	1.7V	—	—	1.7V	1.7V
1300	—	—	1.9V	—	—	—	—	—
$I_R$ MAX @ $V_{RRM}$	1.0 $\mu$ A	5.0 $\mu$ A	5.0 $\mu$ A	5.0 $\mu$ A	1.0 $\mu$ A	10 $\mu$ A	5.0 $\mu$ A	5.0 $\mu$ A
$t_{rr}$ (100V)	—	35ns	—	50ns	—	50ns	50ns	50ns
$t_{rr}$ (200V)	50ns	35ns	—	50ns	50ns	50ns	50ns	50ns
$t_{rr}$ (400V)	50ns	50ns	—	50ns	50ns	50ns	50ns	50ns
$t_{rr}$ (600V)	100ns	75ns	—	100ns	100ns	50ns	100ns	100ns
$t_{rr}$ (800V)	100ns	—	—	—	—	—	—	—
$t_{rr}$ (1000V)	—	100ns	—	100ns	—	—	100ns	100ns
$t_{rr}$ (1300V)	—	—	75ns	—	—	—	—	—
PINOUT								

## Ultra Fast Recovery Rectifiers (continued)

**4.0 to 16A  
200 to 800V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	4.0	5.0	6.0	8.0	10	16
@ $T_A$ ( $^{\circ}$ C) $*T_C$	130*	55	130*	100*	100*	100*
$I_{FSM}$ (AMPS)	70	175	70	125	100	125
CASE	DPAK 10.73 x 6.81 x 2.75	SMC 8.13 x 6.22 x 2.62	DPAK 10.73 x 6.81 x 2.75	D <sup>2</sup> PAK 16.6 x 10.4 x 4.8	DPAK 10.73 x 6.81 x 2.75	D <sup>2</sup> PAK 16.6 x 10.4 x 4.8
$V_{RRM}$ (VOLTS)	SINGLE	SINGLE	DUAL COMMON CATHODE	SINGLE	SINGLE	DUAL COMMON CATHODE
200	CUD3-02	CMR5U-02	CUD6-02C	CUDD8-02	CUD10-02	CUDD16-02C
400	—	CMR5U-04	—	CUDD8-04	CUD10-04	CUDD16-04C
600	—	—	—	—	CUD10-06	—
800	—	CMR5U-08	—	CUDD8-08	—	CUDD16-08C
$V_F$ MAX @ $I_F = I_O$	—	—	—	—	—	—
200	1.25V @ 12A	1.0V	1.25† @ 10A	0.975V	0.95V	0.975V† @ 8.0A
400	—	1.3V	—	1.3V	1.3V	1.3V† @ 8.0A
600	—	—	—	—	1.7V	—
800	—	1.7V	—	1.5V	—	1.5V† @ 8.0A
$I_R$ MAX @ $V_{RRM}$	20µA	10µA	20µA †	5µA	10µA	5µA†
$t_{rr}$ (200V)	35ns	50ns	35ns†	25ns	35ns	25ns†
$t_{rr}$ (400V)	—	50ns	—	25ns	35ns	25ns†
$t_{rr}$ (600V)	—	—	—	—	35ns	—
$t_{rr}$ (800V)	—	100ns	—	50ns	—	50ns†
PINOUT						

† Electrical Characteristic Per Diode

## Super Fast Recovery Rectifiers

**1.0 to 3.0A**

**100 to 600V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	1.0		2.0	3.0
$@ T_A$ ( $^{\circ}$ C) ** $T_L$	110**	25	110**	75**
$I_{FSM}$ (AMPS)	30	30	50	100
CASE	SOD-123F  3.95 x 1.95 x 1.08	SMB  5.59 x 3.81 x 2.44	SMC  8.13 x 6.22 x 2.62	
$V_{RRM}$ (VOLTS)	SINGLE	SINGLE	SINGLE	SINGLE
100	—	CMR1S-01	—	CMR3S-01
200	CMMR1S-02	CMR1S-02	CMR2S-02	CMR3S-02
400	—	—	CMR2S-04	CMR3S-04
600	—	—	CMR2S-06	CMR3S-06
$V_F$ MAX @ $I_F = I_O$				
100	—	0.95V	—	0.95V
200	0.95V	0.95V	0.95V	0.95V
400	—	—	1.25V	1.25V
600	—	—	1.70V	1.70V
$I_R$ MAX @ $V_{RRM}$	10 $\mu$ A	5.0 $\mu$ A	1.0 $\mu$ A	5.0 $\mu$ A
$t_{rr}$	35ns	35ns	30ns	35ns
PINOUT				

## Hyper Fast Recovery Rectifiers

**1.0 to 10A  
400V, 600V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	1.0	5.0	8.0	10
@ $T_A$ ( $^{\circ}$ C) * $T_C$ ** $T_L$	**120	**75	*100	**90
$I_{FSM}$ (AMPS)	30	100	100	150
CASE	SMAFL	SMC	DPAK	TLM364
	4.9 x 2.6 x 1.1	8.13 x 6.22 x 2.62	10.73 x 6.81 x 2.75	6.65 x 4.35 x 1.2
$V_{RRM}$ (VOLTS)				
400	CMR1H-04MFL	—	—	—
600	—	CMR5H-06	CHD8-06	CTLHR10-06
$V_F$ TYP @ $I_F = I_O$	1.1V	1.55V	1.9V	1.6V
$V_F$ MAX @ $I_F = I_O$	1.25V	1.7V	2.2V	1.7V
$I_R$ MAX @ $V_{RRM}$	1.0 $\mu$ A	1.0 $\mu$ A	10 $\mu$ A	10 $\mu$ A
$t_{rr}$ TYP	20ns	20ns	22ns	22ns
$t_{rr}$ MAX	25ns	22ns	25ns	25ns
PINOUT				

# Schottky Rectifiers

**1.0A  
20 to 100V**

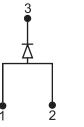
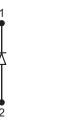
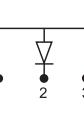
Package dimensions shown are maximum values in mm.

1.0								
I <sub>O</sub> (AMPS)	25	25	25	25	25	110**	75**	25††
@ T <sub>A</sub> (°C) **T <sub>L</sub> ††T <sub>J</sub>	25	25	25	25	25	110**	75**	25††
I <sub>FSM</sub> (AMPS)	10	10	10	6.0	10	20	30	50
CASE	TLM322S  LOW V <sub>F</sub>  2.05 x 2.05 x 0.6	TLM832DS  Tiny leadless module™  3.05 x 2.05 x 1.05	TLM832DS  Tiny leadless module™  3.05 x 2.05 x 1.05	TLM621H  Tiny leadless module™  2.15 x 1.65 x 0.4	SOT-563  Control  1.7 x 1.7 x 0.6	SOD-323FL  Control  1.95 x 1.4 x 0.85	SOD-123F  Control  3.95 x 1.95 x 1.08	LOW V <sub>F</sub>
	SINGLE	DUAL ISOLATED	DUAL ISOLATED	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE
V <sub>RRM</sub> (VOLTS)								
20	—	—	—	—	—	—	CMMRH1-20	—
30	—	—	—	—	—	—	CMIDSH1-3	—
40	CTLSH1-40M322S	CTLSH1-40M832DS	—	CTLSH1-40M621H	CMLSH1-40	CMIDSH1-4	CMMRH1-40	CMMRH1-40L
50	—	—	CTLSH1-50M832DS	—	—	—	—	—
60	—	—	—	—	—	CMIDSH1-6	CMMRH1-60	—
100	—	—	—	—	—	—	CMMRH1-100	—
V <sub>F</sub> MAX @ I <sub>F</sub> = I <sub>O</sub>								
20	—	—	—	—	—	—	0.45V	—
30	—	—	—	—	—	0.52V	0.45V	—
40	0.55V	0.55V	—	0.60V	0.55V	0.58V	0.55V	0.45V
50			0.55V			—	—	—
60	—	—	—	—	—	0.68V	0.70V	—
100	—	—	—	—	—	—	0.85V	—
I <sub>R</sub> MAX @ V <sub>RRM</sub>	50µA @ 15V	50µA @ 15V	500µA	50µA @ 15V	50µA @ 15V	100µA	500µA	500µA
PINOUT	3 1 2	8 7 6 5 D1 1 2 3 4	6 5 4 1 2 3	6 5 4 1 2 3	1 2			

## Schottky Rectifiers (continued)

**1.0A  
20 to 200V**

Package dimensions shown are maximum values in mm.

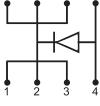
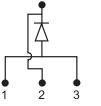
1.0									
I <sub>O</sub> (AMPS)									
@ T <sub>A</sub> (°C) **T <sub>L</sub> ††T <sub>J</sub>	25	25	25	75**	25	75	25	25	
I <sub>FSM</sub> (AMPS)	12	20	20	30	30	30	10	30	
CASE	 3.00 x 2.50 x 1.0 SOT-23F			<b>LOW</b> V <sub>F</sub>	<b>LOW</b> V <sub>F</sub>	 5.59 x 2.92 x 2.62 SMA	 5.59 x 3.81 x 2.44 SMB	 4.7 x 4.5 x 1.7 SOT-89	 5.59 x 2.92 x 2.62 SMA
	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE		
V <sub>RRM</sub> (VOLTS)									
20	-	-	-	CMSH1-20M	CMSH1-20ML	CMSH1-20	-	-	
30	-	-	-	-	-	-	-	-	
40	CMPSH1-4	CMPSH1-4L	CMPSH1-4LE	CMSH1-40M	CMSH1-40ML	CMSH1-40	CXSH-4	CMSH1-40HE	
60	-	-	-	CMSH1-60M†	-	CMSH1-60	-	CMSH1-60HE	
80	-	-	-	-	-	-	-	CMSH1-80HE	
100	-	-	-	CMSH1-100M†	-	CMSH1-100	-	CMSH1-100HE	
150	-	-	-	-	-	-	-	CMSH1-150HE	
200	-	-	-	-	-	-	-	CMSH1-200HE	
V <sub>F</sub> MAX @ I <sub>F</sub> = I <sub>O</sub>									
20	-	-	-	0.50V	0.38V	0.55V	-	-	
30	-	-	-	-	-	-	-	-	
40	0.55V	0.39V	0.4V	0.50V	0.40V	0.55V	0.55V	0.70V	
60	-	-	-	0.70V	-	0.70V	-	0.74V	
80	-	-	-	-	-	-	-	0.80V	
100	-	-	-	0.85V	-	0.85V	-	0.80V	
150	-	-	-	-	-	-	-	0.90V	
200	-	-	-	-	-	-	-	0.90V	
I <sub>R</sub> MAX @ V <sub>RRM</sub>	100µA @ 30V	1.5mA @ 30V	900µA @ 40V	500µA	500µA	500µA	1.0mA	50µA	
PINOUT									

† T<sub>L</sub> = 100°C for 60V & 100V

## Schottky Rectifiers (continued)

**2.0A  
20 to 100V**

Package dimensions shown are maximum values in mm.

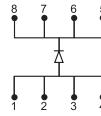
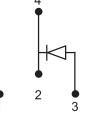
2.0							
I <sub>O</sub> (AMPS)							
@ T <sub>A</sub> (°C) **T <sub>L</sub> ††T <sub>J</sub>	25	25††	75**	55	105**	25	125**
I <sub>FSM</sub> (AMPS)	15	50	50	50	50	10	50
CASE	 3.1 x 2.1 x 1.0 TLM832	 3.95 x 1.95 x 1.08 SOD-123F	 5.59 x 2.92 x 2.62 SMA	 5.59 x 3.81 x 2.44 SMB	<b>LOW V<sub>F</sub></b>	 6.7 x 7.3 x 1.8 SOT-223	 4.9 x 2.6 x 1.1 SMAFL
V <sub>RRM</sub> (VOLTS)	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE
20	-	-	CMSH2-20M	CMSH2-20	CMSH2-20L	-	-
40	CTLSH2-40M832	CMMSH2-40	CMSH2-40M	CMSH2-40	CMSH2-40L	CZSH-4	CMSH2-40FL
60	-	-	CMSH2-60M	CMSH2-60	-	-	-
100	-	-	CMSH2-100M	CMSH2-100	-	-	-
V <sub>F</sub> MAX @ I <sub>F</sub> = I <sub>O</sub>							
20	-	-	0.55V	0.50V	0.40V	-	-
40	0.50V	0.50V	0.55V	0.50V	0.40V	0.60V	0.50V
60	-	-	0.70V	0.70V	-	-	-
100	-	-	0.85V	0.85V	-	-	-
I <sub>R</sub> MAX @ V <sub>RRM</sub>	200µA	500µA	500µA	500µA	500µA	1.0mA	100µA
PINOUT							

† T<sub>L</sub> = 100°C for 60V & 100V

## Schottky Rectifiers (continued)

### 3.0A 20 to 200V

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	3.0								
@ $T_A$ ( $^{\circ}$ C) * $T_C$ ** $T_L$	25	25	75**	75**	75	120*	125**	125**	110**
$I_{FSM}$ (AMPS)	25	25	80	80	150	75 50†	80	80	80
CASE	 <b>LOW V<sub>F</sub></b>  <b>LOW V<sub>F</sub></b>  3.1 x 3.1 x 1.0 TLM833	 <b>LOW V<sub>F</sub></b>  3.15 x 3.15 x 1.0 TLM833S	 5.59 x 2.92 x 2.62 SMA	 5.59 x 3.81 x 2.44 SMB	 8.13 x 6.22 x 2.62 SMC	 10.73 x 6.81 x 2.75 DPAK	 5.5 x 3.7 x 1.1 SMBFL	 5.59 x 3.81 x 2.44 SMB	 4.9 x 2.6 x 1.1 SMAFL
	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE
$V_{RRM}$ (VOLTS)									
20	—	—	CMSH3-20MA	CMSH3-20M	CMSH3-20	—	—	—	—
30	CTLSH3-30M833	CTLSH3-30M833S	—	—	—	—	—	—	—
40	—	—	CMSH3-40MA	CMSH3-40M	CMSH3-40	CSHD3-40	CMSH3-40FL	—	—
60	—	—	CMSH3-60MA	CMSH3-60M	CMSH3-60	CSHD3-60	—	—	—
100	—	—	CMSH3-100MA	CMSH3-100M	CMSH3-100	CSHD3-100	—	CMSH3-100MHV	CMSH3-100MFL
150	—	—	—	—	—	—	—	CMSH3-150MHV	CMSH3-150MFL
200	—	—	—	—	—	—	—	CMSH3-200MHV	CMSH3-200MFL
$V_F$ MAX @ $I_F = I_O$									—
20	—	—	0.50V	0.55V	0.50V	—	—	—	—
30	0.45V	0.45V	—	—	—	—	—	—	—
40	—	—	0.50V	0.55V	0.50V	0.65V	0.50V	—	—
60	—	—	0.70V	0.75V	0.70V	0.75V	—	—	—
100	—	—	0.85V	0.85V	0.80V	0.85V	—	0.8V	0.8V
150	—	—	—	—	—	—	—	0.9V	0.9V
200	—	—	—	—	—	—	—	0.9V	0.9V
$I_R$ MAX @ $V_{RRM}$	1.0mA	1.0mA	500 $\mu$ A	500 $\mu$ A	500 $\mu$ A	30 $\mu$ A†	100 $\mu$ A	50 $\mu$ A	50 $\mu$ A
PINOUT									

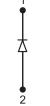
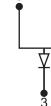
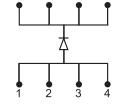
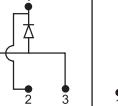
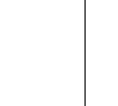
† 60V & 100V Devices

## Schottky Rectifiers (continued)

**4.0A to 5.0A**

**20 to 200V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	4.0		5.0						
$@ T_A$ (°C) $*T_C$ $**T_L$	90**	125**	25	125**	75	75	75	75**	120*
$I_{FSM}$ (AMPS)	150	100	50	100	125	125	75	100	80
CASE	LOW $V_F$  8.13 x 6.22 x 2.62 SMC	 tiny leadless module™ <b>TLM</b> Control 6.65 x 4.35 x 1.2 TLM364	 tiny leadless module™ <b>TLM</b> Control 3.15 x 3.15 x 1.0 TLM833S	HIGH DENSITY™ SCHOTTKY <b>LOW <math>V_F</math></b> Control 5.5 x 3.7 x 1.1 SMBFL	 Control 8.13 x 6.22 x 2.62 SMC	 Control 6.7 x 7.3 x 1.8 SOT-223	 Control 10.73 x 6.81 x 2.75 DPAK	LOW $V_F$	
	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	DUAL COMMON CATHODE	SINGLE	SINGLE
$V_{RRM}$ (VOLTS)									
20	CMSH3-20L	-	-	-	CMSH5-20	-	-	-	-
25	-	-	-	-	-	-	-	-	CSHD5-25L
40	CMSH3-40L	-	CTLSH5-40M833S	CMSH5-40FL	CMSH5-40	CZSH5-40	CZSH5-40C	CSHD5-40	-
60	-	-	-	-	CMSH5-60	-	-	CSHD5-60	-
100	-	-	-	-	CMSH5-100	-	-	CSHD5-100	-
150	-	-	-	-	-	-	-	-	-
200	-	CTLSH4-200M364	-	-	-	-	-	-	-
$V_F$ MAX @ $I_F = I_O$									
20	0.42V	-	-	-	0.55V	-	-	-	-
25	-	-	-	-	-	-	-	-	0.47V
40	0.44V	-	0.52V	0.46V	0.55V	0.55V	0.55V	0.55V	-
60	-	-	-	-	0.75V	-	-	0.75V	-
100	-	-	-	-	0.85V	-	-	0.85V	-
150	-	-	-	-	-	-	-	-	-
200	-	0.84V	-	-	-	-	-	-	-
$I_R$ MAX @ $V_{RRM}$	500µA	1.0µA	200µA	100µA	3.0mA	3.0mA	3.0mA	200µA	500µA
PINOUT									

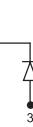
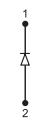
† 60V & 100V Devices

## Schottky Rectifiers (continued)

**5.0A to 8.0A**

**20 to 200V**

Package dimensions shown are maximum values in mm.

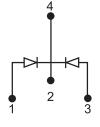
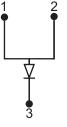
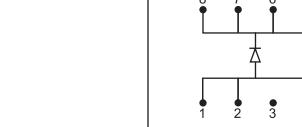
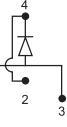
$I_O$ (AMPS)	5.0		6.0		8.0			
@ $T_A$ (°C) * $T_C$ ** $T_L$	75**	125**	75	120*	115**	75**	100*	125**
$I_{FSD}$ (AMPS)	100	150	75	75 50†	150	85	150	280
CASE								
	8.13 x 6.22 x 2.62 SMC	6.65 x 4.35 x 1.2 TLM364	6.7 x 7.3 x 1.8 SOT-223	10.73 x 6.81 x 2.75 DPAK	8.13 x 6.22 x 2.62 SMC	10.73 x 6.81 x 2.75 DPAK	16.6 x 10.4 x 4.8 D2PAK	6.65 x 4.35 x 1.2 TLM364
	SINGLE	SINGLE	DUAL COMMON CATHODE	DUAL COMMON CATHODE		SINGLE	SINGLE	SINGLE
$V_{RRM}$ (VOLTS)								
20	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
40	-	-	-	CSHD6-40C	CMSH8-40	-	CSHDD8-40	-
60	-	-	-	CSHD6-60C	-	CSHD8-60	CSHDD8-60	CTLSH8-60M364
100	CMSH5-100HV	CTLSH5-100M364	CZSH6-100C	CSHD6-100C	-	CSHD8-100	CSHDD8-100	-
150	CMSH5-150HV	-	-	-	-	-	-	-
200	CMSH5-200HV	-	-	-	-	CSHD8-200	-	-
$V_F$ MAX @ $I_F = I_O$								
20	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
40	-	-	-	0.85V Per Leg	0.55V	-	0.65V	-
60	-	-	-	0.9V Per Leg	-	0.75V	0.75V	0.54V
100	0.80V	0.80V	1.0V Per Leg	1.1V Per Leg	-	0.8V	0.85V	-
150	0.90V	-	-	-	-	-	-	-
200	0.90V	-	-	-	-	0.9V	-	-
$I_R$ MAX @ $V_{RRM}$	50µA	15µA	10µA	30µA†	500µA	50µA	100µA	0.6mA
PINOUT								

† 60V & 100V Devices

## Schottky Rectifiers (continued)

**10A  
40 to 100V**

Package dimensions shown are maximum values in mm.

10						
I <sub>O</sub> (AMPS)						
@ T <sub>A</sub> (°C) *T <sub>C</sub> **T <sub>L</sub>	100*	75	110** †90**	100**	25	120*
I <sub>FSM</sub> (AMPS)	100	125	275 †300	300	250	200
CASE	10.73 x 6.81 x 2.75 DPAK	6.7 x 7.3 x 1.8 SOT-223C	LOW V <sub>F</sub>  6.65 x 4.35 x 1.2 TLM364	 6.1 x 5.1 x 1.025 TLM856	 10.73 x 6.81 x 2.75 DPAK	
V <sub>RRM</sub> (VOLTS)	DUAL COMMON CATHODE	DUAL COMMON CATHODE	SINGLE	SINGLE	SINGLE	SINGLE
40	–	CZSH10-40CN	–	–	–	–
45	–	–	CTLSH10-45L	CTLSH10-45M364	–	CSHD10-45L
60	–	–	–	–	CTLSH10-60M856	–
100	CSHD10-100C	–	CTLSH10-100L	–	–	–
V <sub>F</sub> MAX @ I <sub>O</sub> = I <sub>O</sub>						
40	–	0.60V Per Leg	–	–	–	–
45	–	–	0.47V	0.55V	–	0.75V
60	–	–	–	–	0.67V	–
100	0.9V (TYP)	–	0.68V	–	–	–
I <sub>R</sub> MAX @ V <sub>RRM</sub>	50µA	3.0mA	250µA	50µA	500µA	100µA
100	50µA	–	150µA	–	–	–
PINOUT						

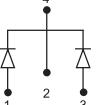
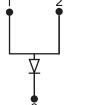
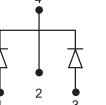
†100V Devices

## Schottky Rectifiers (continued)

**12 to 16A**

**40 to 200V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	12	15	16
@ $T_A$ (°C) * $T_C$ ** $T_L$	75*	**120	75*
$I_{FSM}$ (AMPS)	100	275	150
CASE	 10.73 x 6.81 x 2.75 DPAK	 6.65 x 4.35 x 1.2 TLM364	 16.6 x 10.4 x 4.8 D2PAK
	DUAL COMMON CATHODE	SINGLE	DUAL COMMON CATHODE
$V_{RRM}$ (VOLTS)			
30	—	CTLSH15-30M364	—
40	—	—	CSHDD16-40C
60	CSHD12-60C	CTLSH15-60M364	CSHDD16-60C
100	—	—	CSHDD16-100C
200	—	—	CSHDD16-200C
$V_F$ MAX @ $I_F = I_O$			
30	—	0.56V	—
40	—	—	0.84V Per Leg
60	0.75V @ 6.0A	0.59V	0.95V Per Leg
100	—	—	1.1V Per Leg
200	—	—	1.2V Per Leg
$I_R$ MAX @ $V_{RRM}$	50µA	100µA	50µA
60	—	200µA	—
100	—	—	50µA
PINOUT			

†100V Devices

## Silicon Carbide (SiC) Schottky Rectifiers

**10A**

**650V**

Package dimensions shown are maximum values in mm.

$I_F$ (AMPS)	10
@ $T_A$ (°C) * $T_C$ ** $T_L$	135*
$I_{FSM}$ (AMPS)	60
CASE	 10.73 x 6.81 x 2.75 DPAK
	SINGLE
$V_{RRM}$ (VOLTS)	
650	CSICD10-650
$V_F$ MAX @ $I_F = I_O$	1.7V @ 25°C 2.5V @ 175°C
$I_R$ MAX @ $V_{RRM}$	125µA
PINOUT	

Also Available CSIC10-1200, 1200V, 10A device in TO-220-2 package  
(see page 64)



Also available in bare die form.  
Process CPC01

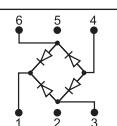
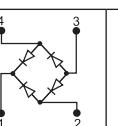
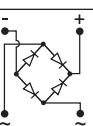
## Bridge Rectifiers

**Single Phase, Full Wave**

**0.14 to 1.0A**

**40 to 1000V**

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	0.14		0.5	1.0				
@ $T_A$ ( $^{\circ}$ C)	25	25	40	25	25	50	40	40
$I_{FMS}$ (AMPS)	—	—	30	20	20	50	50	50
CASE	 2.2 x 2.3 x 1.1 SOT-363	 3.04 x 2.50 x 1.14 SOT-143	<b>HD BRIDGE</b>  4.9 x 7.0 x 2.7 HD DIP			 8.51 x 10.41 x 2.49 SMDIP		
	GENERAL PURPOSE	GENERAL PURPOSE	GENERAL PURPOSE	SCHOTTKY	LOW $V_F$ SCHOTTKY	GENERAL PURPOSE	FAST RECOVERY	ULTRA FAST RECOVERY
$V_{RRM}$ (VOLTS)								
40	—	—	—	—	<b>CBRHDSH1-40L</b>	—	—	—
60	CMKBR-6F	CMFBR-6F	—	—	<b>CBRHDSH1-60</b>	—	—	—
100	—	—	<b>CBRHD-01</b>	<b>CBRHD-100</b>	<b>CBRHD-100</b>	—	—	<b>CBR1U-D010S</b>
200	—	—	<b>CBRHD-02</b>	—	<b>CBRHD-200</b>	<b>CBR1-D020S</b>	<b>CBR1F-D020S</b>	<b>CBR1U-D020S</b>
400	—	—	<b>CBRHD-04</b>	—	—	<b>CBR1-D040S</b>	<b>CBR1F-D040S</b>	—
600	—	—	<b>CBRHD-06</b>	—	—	<b>CBR1-D060S</b>	<b>CBR1F-D060S</b>	—
1000	—	—	<b>CBRHD-10*</b>	—	—	<b>CBR1-D100S</b>	<b>CBR1F-D100S*</b>	—
$V_F$ MAX @ $I_F$ (40V)	—	—	—	—	0.44V	—	—	—
$V_F$ MAX @ $I_F$ (60V)	1.0V @ 20mA	1.0V @ 20mA	—	—	0.6V	—	—	—
$V_F$ MAX @ $I_F$ (100V)	—	—	1.0V @ 0.4A	0.75V @ 1.0A	0.75V	—	—	1.05V @ 1.0A
$V_F$ MAX @ $I_F$ (200V-1000V)	—	—	1.0V @ 0.4A	—	0.9V	1.1V @ 1.0A	1.3V @ 1.0A	1.05V @ 1.0A
$I_R$ MAX @ $V_{RRM}$ (40V)	—	—	—	—	50µA	—	—	—
$I_R$ MAX @ $V_{RRM}$ (60V)	10nA @ 50V	10nA @ 50V	—	—	20µA	—	—	—
$I_R$ MAX @ $V_{RRM}$ (100V)	—	—	5.0µA	10µA	10µA	—	—	5µA
$I_R$ MAX @ $V_{RRM}$ (200V - 1000V)	—	—	5.0µA	—	50µA	10µA	5.0µA	5µA
$t_{rr}$ (60V)	1.0µs typ.	1.0µs typ.	—	—	—	—	—	—
$t_{rr}$ (100 - 400V)	—	—	—	—	—	—	200ns	50ns
$t_{rr}$ (600V)	—	—	—	—	—	—	300ns	—
$t_{rr}$ (1000V)	—	—	—	—	—	—	500ns	—
PINOUT								

\* Available on special order; please consult factory.

## Bridge Rectifiers (continued)

### Single Phase, Full Wave

1.0 to 2.0A

40 to 1000V

Package dimensions shown are maximum values in mm.

$I_O$ (AMPS)	1.0		2.0				
$@ T_A$ ( $^{\circ}$ C)	25	25	50**	25	25	25	25
$I_{FSM}$ (AMPS)	30	30	50	30	50	50	110
CASE				<b>HD BRIDGE</b>			
	LPDIP 6.7 x 5.15 x 1.45			HD DIP 4.9 x 7.0 x 2.7		SMDIP 8.51 x 10.41 x 2.49	
	SCHOTTKY	GENERAL PURPOSE	SCHOTTKY	SCHOTTKY	SCHOTTKY	GENERAL PURPOSE	SCHOTTKY
$V_{RRM}$ (VOLTS)							
40	CBRLDSH1-40	—	CBRLDSH2-40	CBRHDSH2-40	—	—	CBRSDSH2-40
60	—	—	CBRLDSH2-60	—	—	—	CBRSDSH2-60
100	—	—	CBRLDSH2-100	—	CBRHDSH2-100	—	CBRSDSH2-100
200	—	CBRLD1-02	—	—	—	CBR2-D020S	—
400	—	CBRLD1-04	—	—	—	CBR2-D040S	—
600	—	CBRLD1-06	—	—	—	CBR2-D060S	—
800	—	CBRLD1-08	—	—	—	CBR2-D080S	—
1000	—	CBRLD1-10	—	—	—	CBR2-D100S	—
$V_F$ MAX @ $I_F$ (40V)	500mV @ 1.0A	—	500mV @ 2.0A	0.5V @ 2.0A	—	—	450mV @ 2.0A
$V_F$ MAX @ $I_F$ (60V)	—	—	700mV @ 2.0A	—	—	—	600mV @ 2.0A
$V_F$ MAX @ $I_F$ (100V)	—	—	840mV @ 2.0A	—	0.84V @ 2.0A	—	700mV @ 2.0A
$V_F$ MAX @ $I_F$ (200V - 1000V)	—	1.0V @ 1.0A	—	—	—	1.1V @ 2.0A	—
$I_R$ MAX @ $V_{RRM}$ (40V)	100 $\mu$ A	—	100 $\mu$ A	50 $\mu$ A	—	—	70 $\mu$ A
$I_R$ MAX @ $V_{RRM}$ (60V)	—	—	500 $\mu$ A	—	—	—	70 $\mu$ A
$I_R$ MAX @ $V_{RRM}$ (100V)	—	—	4.0 $\mu$ A	—	4.0 $\mu$ A	—	50 $\mu$ A
$I_R$ MAX @ $V_{RRM}$ (200V - 1000V)	—	10 $\mu$ A	—	—	—	5.0 $\mu$ A	—
PINOUT							

\* Available on special order; please consult factory.

# Silicon Carbide Schottky Rectifiers

Central Semiconductor's silicon carbide Schottky rectifiers are designed for systems where energy efficiency and thermal performance are critical design elements.

[www.centralsemi.com/sic](http://www.centralsemi.com/sic)

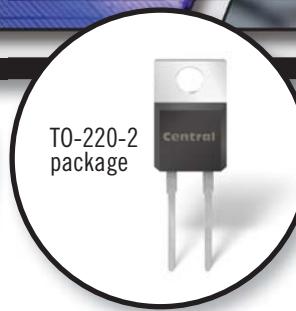


## Features / Benefits:

- High voltage capability
- High temperature capability
- Temperature independent switching performance
- Thermal efficiency
- System efficiency gains

## Applications:

- Power inverters
- Industrial motor drives
- Switch-mode power supplies
- Power factor correction
- Output rectification



## Silicon Carbide Schottky Rectifiers

Part Number	I <sub>O</sub> MAX (A)	V <sub>RRM</sub> MAX (V)	T <sub>J</sub> , T <sub>stg</sub> MAX T <sub>C</sub> = 25°C (°C)	V <sub>F</sub> @ I <sub>F</sub> = I <sub>O</sub> MAX (V)	I <sub>R</sub> @ V <sub>RRM</sub> MAX (μA)	Case Type
CSICD10-650	10	650	175	1.7	125	DPAK
CSIC10-1200	10	1200	175	1.8	400	TO-220-2

## Extreme temperature conditions

### 250°C Silicon Carbide Schottky Rectifiers

CSIC10-1200HT	10	1200	250	1.7	100	TO-257
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## Bare Die

Process CPC01	10	1200	*225	1.8	400	Bare Die
Process CPC02	10	1200	*175	1.7	250	Bare Die
Process CPC03	10	650	*175	1.7	125	Bare Die

\*T<sub>A</sub> = 25°C



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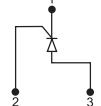
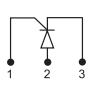
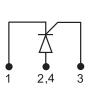
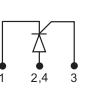
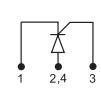
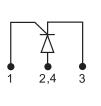


# Thyristors

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TRIACs .....	68-69

**0.2 to 4.0A  
100 to 800V**

Package dimensions shown are maximum values in mm.

$I_T$ (AMPS)	0.2	0.8			2.0	4.0	
$@ T_C / ^T_A$ (°C)	25	60	25	25	60	85	25
$I_{TSM}$ (AMPS)	7.5	10	10	10	10	30	15
CASE	SOT-23  3.05 x 2.49 x 1.09	SOT-89  4.7 x 4.5 x 1.7	 6.7 x 7.3 x 1.8			 10.73 x 6.81 x 2.75	DPAK
$V_{RRM}$ (VOLTS)							
100	–	–	–	–	–	–	MCR703A
200	–	–	–	–	–	–	MCR704A
300	–	–	–	–	–	–	–
400	CMPS5064	–	CZS5064	–	–	–	MCR706A
600	–	CS89M	–	CS223M	CS223-2M	CS223-4M	MCR708A
800	–	CS89N*	–	–	CS223-2N*	CS223-4N*	–
$I_{GT}$	200µA	200µA	200µA	200µA	200µA	200µA	75µA
$V_{GT}$	0.8V	0.8V	0.8V	0.8V	0.8V	0.8V	0.8V
$I_H$	5.0mA	5.0mA	5.0mA	5.0mA	2.0mA	2.0mA	2.0mA
PINOUT							

\* Available on request. Please consult factory.

**4.0 to 25A**

**400 to 800V**

Package dimensions shown are maximum values in mm.

$I_T$ (AMPS)	4.0		8.0		12	16	25
$@ T_C$ ( $^{\circ}$ C)	25	85	90	90	90	90	90
$I_{TSM}$ (AMPS)	15	30	80	80	120	160	250
CASE	 10.73 x 6.81 x 2.75					 16.6 x 10.4 x 4.8	
$V_{RRM}$ (VOLTS)							
400	MCR716	—	—	—	—	—	—
600	MCR718	CSD-4M	CSD-8M	CSDD-8M	CSDD-12M	CSDD-16M	CSDD-25M
800	—	CSD-4N*	CSD-8N*	CSDD-8N*	CSDD-12N*	CSDD-16N*	CSDD-25N*
$I_{GT}$	75 $\mu$ A	200 $\mu$ A	15mA	15mA	15mA	15mA	30mA
$V_{GT}$	0.8V	0.8V	1.5V	1.5V	1.5V	1.5V	1.5V
$I_H$	2.0mA	2.0mA	20mA	20mA	20mA	20mA	50mA
PINOUT							

\* Available on request. Please consult factory.

**2.0 to 4.0A**

**400 to 800V**

Package dimensions shown are maximum values in mm.

$I_T$ (AMPS)	2.0		4.0
@ $T_C$ (°C)	50	80	80
$I_{TSM}$ (AMPS)	20	10	40
CASE	 4.7 x 4.5 x 1.7		 6.7 x 7.3 x 1.8
$V_{RRM}$ (VOLTS)			
400	—	—	—
600	CQ89-2M	CQ223-2M	CQ223-4M
800	CQ89-2N*	CQ223-2N*	CQ223-4N*
$I_{GT\text{ QI}}$	5.0mA	5.0mA	5.0mA
$I_{GT\text{ QII}}$	5.0mA	5.0mA	5.0mA
$I_{GT\text{ QIII}}$	5.0mA	5.0mA	5.0mA
$I_{GT\text{ QIV}}$	8.0mA	8.0mA	9.0mA
$V_{GT\text{ QI-QIII}}$	1.8V	1.8V	1.75V
$V_{GT\text{ QIV}}$	1.8V	1.8V	1.75V
$I_H$	5.0mA	5.0mA	5.0mA
PINOUT			

\* Available on request. Please consult factory.

**4.0 to 25A**
**600 to 800V**

Package dimensions shown are maximum values in mm.

$I_T$ (AMPS)	4.0	8.0		12		16	25
@ $T_C$ (°C) * $T_J$	80	25**	90	90	25	90	90
$I_{TSM}$ (AMPS)	40	70	90	125	100	170	210
CASE	DPAK		D <sup>2</sup> PAK				
$V_{RRM}$ (VOLTS)		THREE QUADRANT			THREE QUADRANT		
600	CQD-4M	CQD-8M3	CQDD-8M	CQDD-12M	CQDD-12M3	CQDD-16M	CQDD-25M
800	CQD-4N*	–	CQDD-8N*	CQDD-12N*	–	CQDD-16N*	CQDD-25N*
$I_{GT\text{ QI}}$	5.0mA	50mA	20mA	20mA	50mA	25mA	30mA
$I_{GT\text{ QII}}$	5.0mA	50mA	20mA	20mA	50mA	25mA	30mA
$I_{GT\text{ QIII}}$	5.0mA	50mA	20mA	20mA	50mA	25mA	30mA
$I_{GT\text{ QIV}}$	9.0mA	–	50mA	50mA	–	75mA	60mA
$V_{GT\text{ QI-QIII}}$	1.75V	1.3V	1.5V	1.5V	1.3V	1.5V	1.5V
$V_{GT\text{ QIV}}$	1.75V	–	2.5V	2.5V	–	2.5V	2.5V
$I_H$	5.0mA	50mA	25mA	25mA	50mA	25mA	50mA
PINOUT							

\* Available on request. Please consult factory.



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## Multi Discrete Modules (MDMs)

Integrating different device types into a single package often facilitates assembly cost reductions. MOSFETs and diodes, MOSFETs and rectifiers, transistors and rectifiers, and other custom combinations are available.

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<b>Low V<sub>CESAT</sub> Small Signal Transistor and Low V<sub>F</sub> Schottky Diode</b>	73

# MDM™ Multi Discrete Module



**SOT-563 Case**

1.7 x 1.7 x 0.6



3.1 x 2.1 x 1.0

**TLM832D Case**



Package dimensions shown are maximum values in mm.

## N-Channel MOSFET and Low V<sub>F</sub> Schottky Diode

TYPE NO.	CASE	DESCRIPTION	N-Channel MOSFET							Low V <sub>F</sub> Schottky Diode							
			BV <sub>DSS</sub> (V) MIN	I <sub>D</sub> (mA) MAX	r <sub>DS(ON)</sub> (Ω) MAX	I <sub>D</sub> (A)	@	V <sub>GS</sub> (V)	V <sub>GS(th)</sub> (V)	MIN	MAX	t <sub>on</sub> , t <sub>off</sub> (ns) MAX	V <sub>RRM</sub> (V) MAX	I <sub>F</sub> (mA) MAX	V <sub>F</sub> (V) MAX	@	I <sub>F</sub> (mA)
CMLM0205	SOT-563	<b>Combination:</b> N-Channel MOSFET and Low V <sub>F</sub> Schottky diode	60	280	2.0 3.0	0.5 0.05	@	10 5.0	1.0	2.5	20	+	40	500	0.27 0.35 0.47	10 100 500	50
CMLM0574	SOT-563	<b>Combination:</b> N-Channel MOSFET and Low V <sub>F</sub> Schottky diode	30	450	0.46 0.56 0.73	0.2 0.1 0.075	@	4.5 2.5 1.8	0.5	1.0	- / -	+	40	500	0.27 0.35 0.47	10 100 500	50
CMLM0575	SOT-563	<b>Combination:</b> N-Channel MOSFET and Low V <sub>F</sub> Schottky diode	20	650	0.23 0.275 0.7	0.6 0.5 0.35	@	4.5 2.5 1.8	0.5	1.1	10, 25 (TYP)	+	40	500	0.27 0.35 0.47	10 100 500	50
CTLM7110-M832D	TLM832D	<b>Combination:</b> N-Channel MOSFET and Low V <sub>F</sub> Schottky diode	20	1000	0.10 0.14 0.25	0.5 0.5 0.1	@	4.5 2.5 1.5	0.5	1.2	25, 140 (TYP)	+	40	1000	0.29 0.36 0.45 0.55	10 100 500 1000	-

## P-Channel MOSFET and Low V<sub>F</sub> Schottky Diode

TYPE NO.	CASE	DESCRIPTION	P-Channel MOSFET							Low V <sub>F</sub> Schottky Diode							
			BV <sub>DSS</sub> (V) MIN	I <sub>D</sub> (mA) MAX	r <sub>DS(ON)</sub> (Ω) MAX	I <sub>D</sub> (A)	@	V <sub>GS</sub> (V)	V <sub>GS(th)</sub> (V)	MIN	MAX	t <sub>on</sub> , t <sub>off</sub> (ns) MAX	V <sub>RRM</sub> (V) MAX	I <sub>F</sub> (mA) MAX	V <sub>F</sub> (V) MAX	@	I <sub>F</sub> (mA)
CMLM0584	SOT-563	<b>Combination:</b> P-Channel MOSFET and Low V <sub>F</sub> Schottky diode	30	450	1.1 2.0 3.3	0.43 0.2 0.1	@	4.5 2.5 1.8	0.5	1.0	- / -	+	40	500	0.27 0.35 0.47	10 100 500	50
CMLM0585	SOT-563	<b>Combination:</b> P-Channel MOSFET and Low V <sub>F</sub> Schottky diode	20	650	0.36 0.5 0.8	0.35 0.3 0.15	@	4.5 2.5 1.8	0.5	1.0	38, 48 (TYP)	+	40	500	0.27 0.35 0.47	10 100 500	50
CMLM0305	SOT-563	<b>Combination:</b> P-Channel MOSFET and Low V <sub>F</sub> Schottky diode	50	280	2.0 2.5 3.0	0.05 0.05 0.05	@	5.0 2.5 1.8	0.75	1.2	-	+	40	500	0.27 0.35 0.47	10 100 500	50
CMLM0305T	SOT-563	<b>Combination:</b> P-Channel MOSFET and Low V <sub>F</sub> Schottky diode	50	280	1.5 1.9 2.3	0.05 0.05 0.05	@	5.0 2.5 1.8	0.75	1.2	-	+	40	500	0.27 0.35 0.47	10 100 500	50
CMLM8205	SOT-563	<b>Combination:</b> P-Channel MOSFET and Low V <sub>F</sub> Schottky diode	50	280	2.5 3.0	0.5 0.05	@	10 5.0	1.0	2.5	20	+	40	500	0.27 0.35 0.47	10 100 500	50
CTLM8110-M832D	TLM832D	<b>Combination:</b> P-Channel MOSFET and Low V <sub>F</sub> Schottky diode	20	860	0.150 0.142 0.200 0.240	0.95 0.77 0.67 0.2	@	4.5 4.5 2.5 1.8	0.45	1.0	20, 25 (TYP)	+	40	1000	0.45	500	-

## MDM™ Multi Discrete Module (continued)



**SOT-563 Case**

1.7 x 1.7 x 0.6



3.1 x 2.1 x 1.0

**TLM832D Case**



Package dimensions shown are maximum values in mm.

### Low $V_{CE(SAT)}$ Small Signal Transistor and Low $V_F$ Schottky Diode

TYPE NO.	CASE	DESCRIPTION	Low $V_{CE(SAT)}$ Small Signal Transistor						Low $V_F$ Schottky Diode					
			$BV_{CBO}$ (V) MIN	$BV_{CEO}$ (V) MIN	$BV_{EBO}$ (V) MIN	$V_{CE(SAT)}$ (V)		@ $I_C$ (mA)		$V_{RRM}$ (V) MAX	$I_F$ (mA) MAX	$V_F$ (V) MAX	$I_F$ (mA)	$C_T$ (pF) MAX
CMLM0405	SOT-563	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose NPN transistor and Low $V_F$ Schottky diode	60	40	6.0	0.057 0.090		0.1 0.2		10 50	+ 40	0.27 0.35 0.47	10 100 500	50
CMLM0605	SOT-563	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose PNP transistor and Low $V_F$ Schottky diode	60	40	6.0	0.05 0.10		0.1 0.2		10 50	+ 40	0.27 0.35 0.47	10 100 500	50
CMLM0705	SOT-563	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose PNP transistor and Low $V_F$ Schottky diode	60	60	5.0	0.113 0.280		0.2 0.7		150 500	+ 40	0.27 0.35 0.47	10 100 500	50
CMLM2205	SOT-563	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose NPN transistor and Low $V_F$ Schottky diode	100	45	6.0	0.09 0.12		0.15 0.50		150 500	+ 40	0.27 0.35 0.47	10 100 500	50
CMLM3405	SOT-563	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose NPN transistor and Low $V_F$ Schottky diode	40	25	6.0	0.250		0.45		1000	+ 40	0.27 0.35 0.47	10 100 500	50
CMLM7405	SOT-563	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose PNP transistor and Low $V_F$ Schottky diode	40	25	6.0	0.275		0.45		1000	+ 40	0.27 0.35 0.47	10 100 500	50
CTLM1034-M832D	TLM832D	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose NPN transistor and Low $V_F$ Schottky diode	40	25	6.0	0.250		0.45		1000	+ 40	0.29 0.36 0.45 0.55	10 100 500 1000	—
CTLM1074-M832D	TLM832D	<b>Combination:</b> Low $V_{CE(SAT)}$ General Purpose PNP transistor and Low $V_F$ Schottky diode	40	25	6.0	0.275		0.45		1000	+ 40	0.29 0.36 0.45 0.55	10 100 500 1000	—

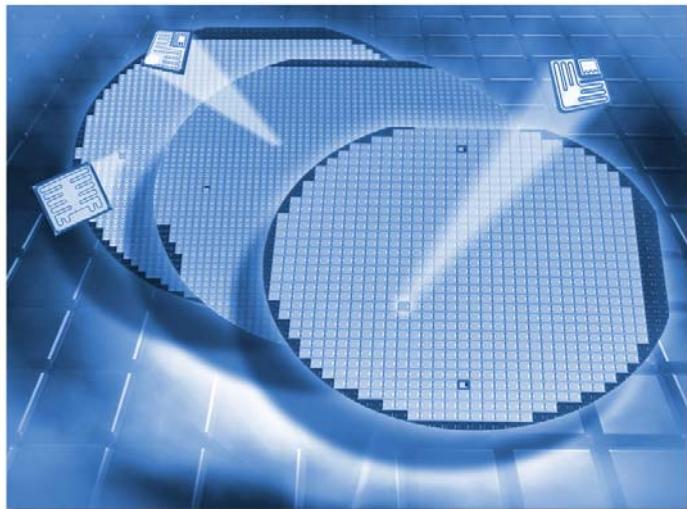
Services



# Up-screening for bare die

Central offers a broad range of up-screening options for Bare die.

[www.centralsemi.com/baredie](http://www.centralsemi.com/baredie)



## Up-screening options available:

- MIL-PRF-38534 equivalent screening for Class K and Class H
- MIL-PRF-19500 equivalent screening for Class KC and Class HC
- Customer-specific screening

## Bare die applications:

- Solar
- Smart Wearables
- Medical
- Industrial
- Mil/Aero

Require custom die?



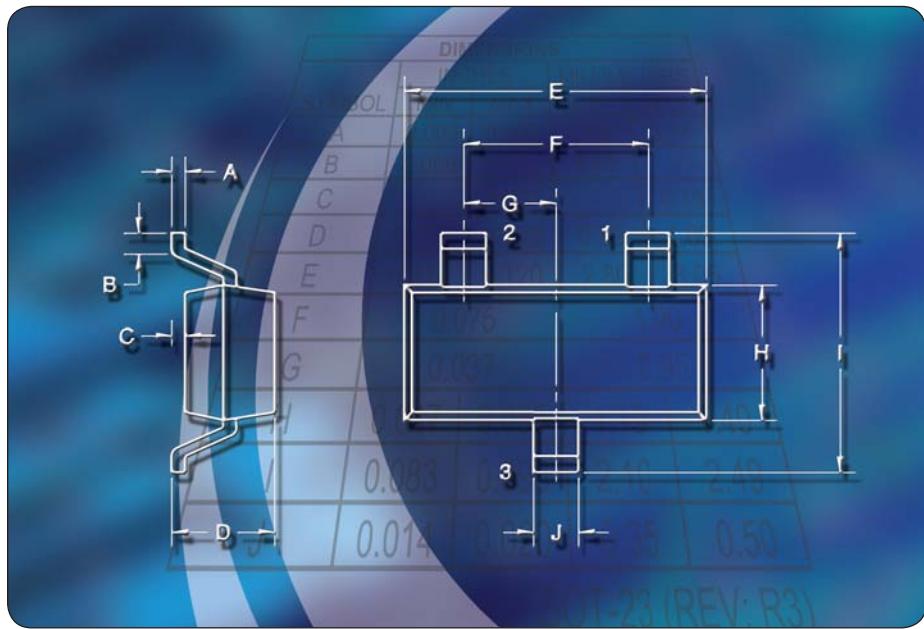
Challenges  
welcome

[www.centralsemi.com/justask](http://www.centralsemi.com/justask)



**Central**<sup>TM</sup>  
Semiconductor Corp.

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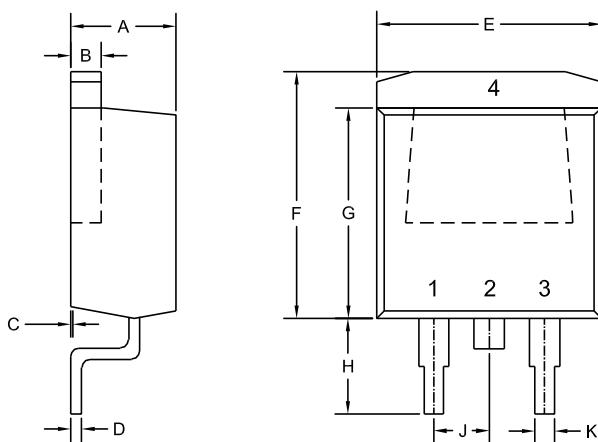


## Package Mechanical Specifications

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## Package Mechanical Specifications

### D<sup>2</sup>PAK

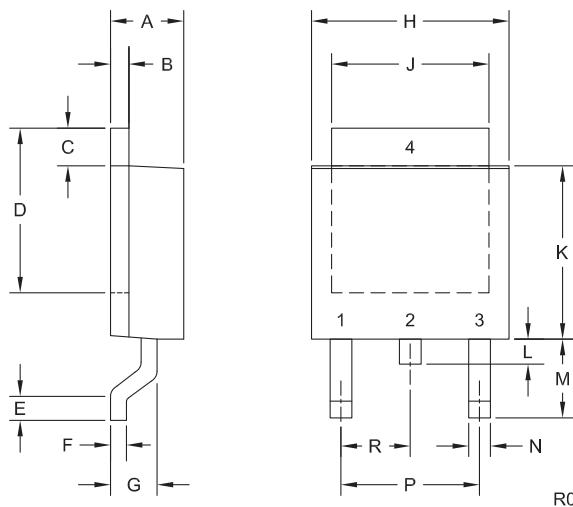


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.163	0.189	4.14	4.80
B	0.045	0.055	1.14	1.40
C	0.000	0.010	0.00	0.25
D	0.012	0.028	0.30	0.70
E	0.386	0.409	9.80	10.40
F	0.378	0.417	9.60	10.60
G	0.335	0.358	8.50	9.10
H	0.197	0.236	5.00	6.00
J	0.093	0.108	2.35	2.75
K	0.030	0.035	0.75	0.90

D2PAK (REV: R2)

R2

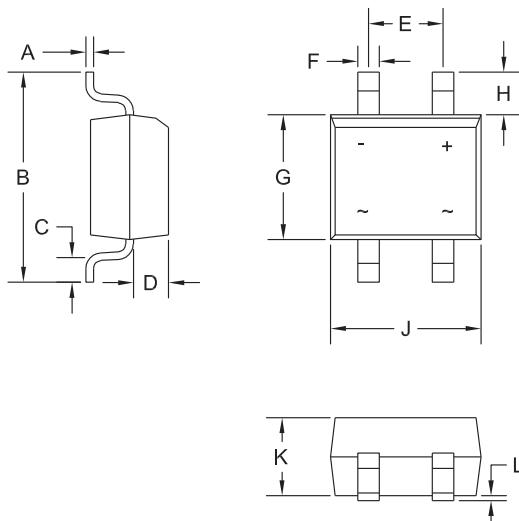
### DPAK



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.083	0.108	2.10	2.75
B	0.016	0.032	0.40	0.81
C	0.035	0.063	0.89	1.60
D	0.203	0.228	5.15	5.79
E	0.020	-	0.51	-
F	0.018	0.024	0.45	0.60
G	0.051	0.071	1.30	1.80
H	0.248	0.268	6.30	6.81
J	0.197	0.217	5.00	5.50
K	0.209	0.245	5.30	6.22
L	0.025	0.040	0.64	1.02
M	0.090	0.115	2.30	2.91
N	0.012	0.045	0.30	1.14
P	0.180	-	4.60	-
R	0.090	-	2.30	-

DPAK (REV: R0)

### HD DIP



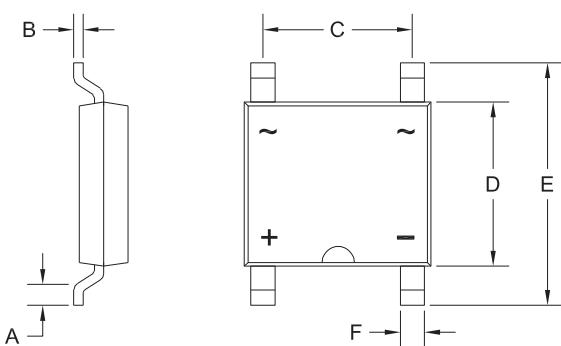
SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.006	0.014	0.15	0.35
B	-	0.275	-	7.00
C	0.027	0.043	0.70	1.10
D	0.035	0.051	0.90	1.30
E	0.090	0.106	2.30	2.70
F	0.019	0.031	0.50	0.80
G	0.150	0.165	3.80	4.20
H	0.051	0.067	1.30	1.70
J	0.177	0.193	4.50	4.90
K	0.090	0.106	2.30	2.70
L	0.000	0.008	0.00	0.20

HD DIP (REV: R2)

R2

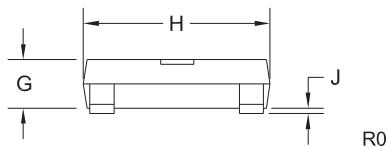
## Package Mechanical Specifications (continued)

### LPDIP

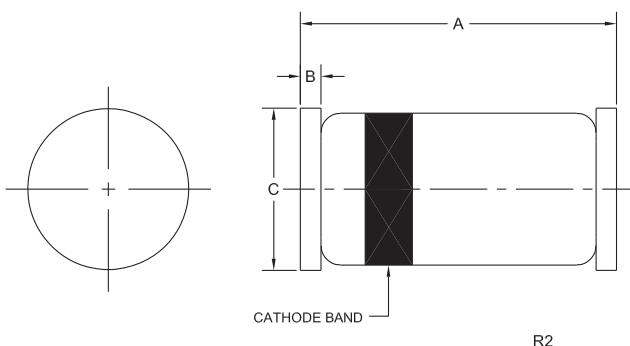


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.019	0.028	0.50	0.70
B	0.007	0.012	0.20	0.30
C	0.153	0.162	3.90	4.10
D	0.167	0.179	4.25	4.55
E	0.248	0.264	6.30	6.70
F	0.023	0.028	0.60	0.70
G	0.045	0.058	1.15	1.45
H	0.190	0.203	4.85	5.15
J	0.002	0.006	0.05	0.15

LPDIP (REV: R0)



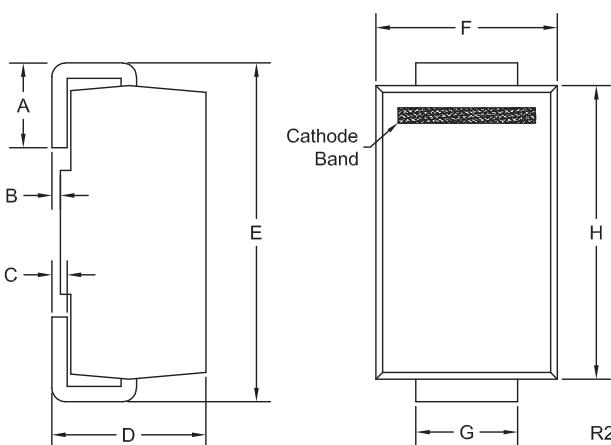
### MELF



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.185	0.217	4.70	5.50
B	0.012	0.022	0.30	0.56
C (DIA)	0.094	0.110	2.40	2.80

MELF (REV:R2)

### SMA

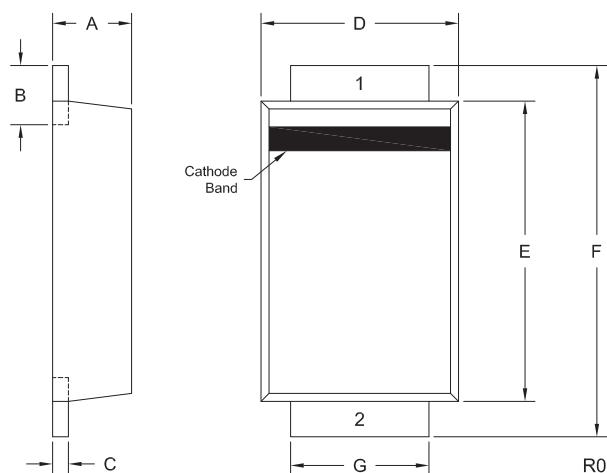


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.030	0.060	0.76	1.52
B	0.004	0.008	0.10	0.20
C	0.006	0.012	0.15	0.30
D	0.078	0.103	1.98	2.62
E	0.188	0.220	4.78	5.59
F	0.090	0.115	2.29	2.92
G	0.050	0.070	1.27	1.78
H	0.157	0.181	3.99	4.60

SMA (REV: R2)

## Package Mechanical Specifications (continued)

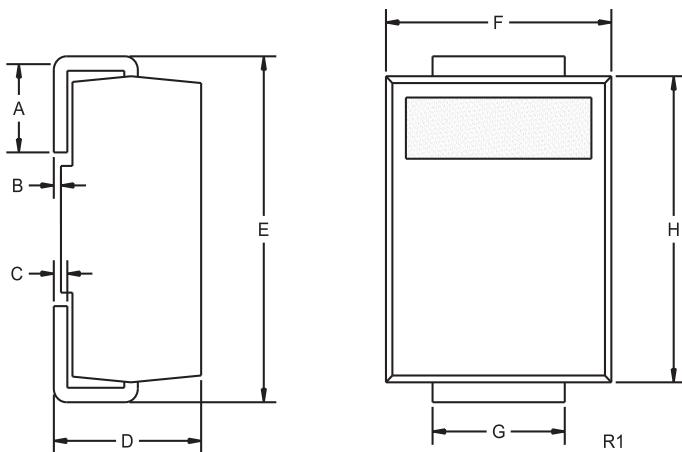
### SMAFL



SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	0.035	0.044	0.90	1.10
B	0.021	0.038	0.55	0.95
C	0.006	0.010	0.15	0.25
D	0.094	0.103	2.40	2.60
E	0.145	0.154	3.70	3.90
F	0.177	0.193	4.50	4.90
G	0.065	0.073	1.65	1.85

SMAFL (REV: R0)

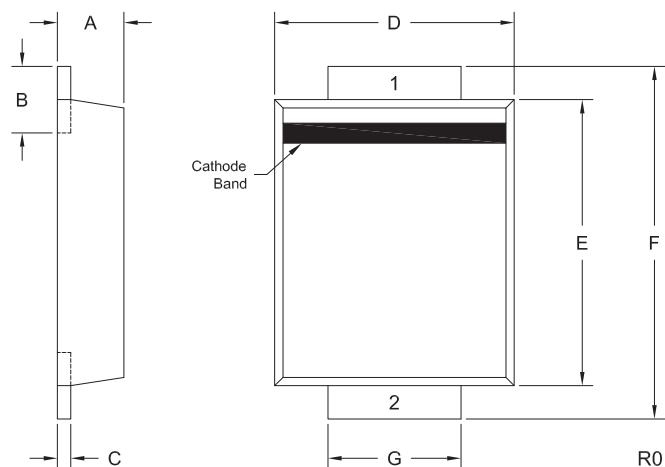
### SMB



SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	0.030	0.060	0.76	1.52
B	0.004	0.008	0.10	0.20
C	0.006	0.012	0.15	0.30
D	0.086	0.096	2.18	2.44
E	0.200	0.220	5.08	5.59
F	0.130	0.150	3.30	3.81
G	0.077	0.083	1.96	2.11
H	0.160	0.180	4.06	4.57

SMB (REV: R1)

### SMBFL

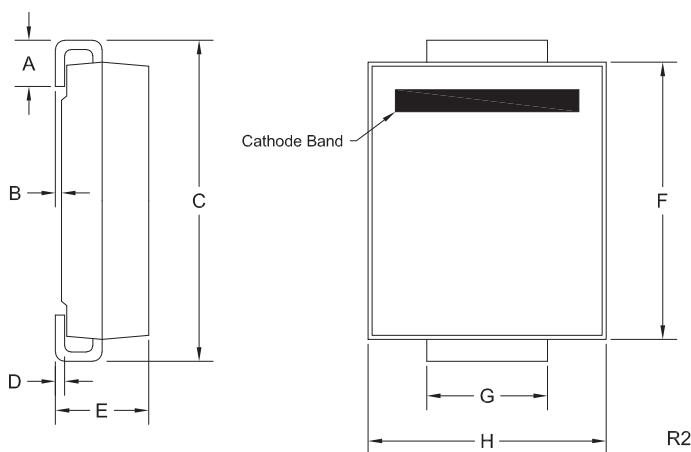


SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	0.035	0.044	0.90	1.10
B	0.031	0.048	0.80	1.20
C	0.006	0.010	0.15	0.25
D	0.137	0.146	3.50	3.70
E	0.161	0.178	4.10	4.50
F	0.200	0.217	5.10	5.50
G	0.074	0.083	1.90	2.10

SMBFL (REV: R0)

## Package Mechanical Specifications (continued)

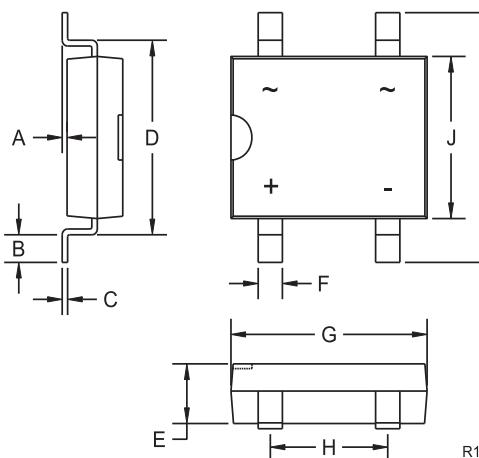
SMC



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.030	0.060	0.76	1.52
B	0.002	0.008	0.05	0.20
C	0.305	0.320	7.75	8.13
D	0.006	0.012	0.15	0.31
E	0.079	0.103	2.00	2.62
F	0.260	0.280	6.60	7.11
G	0.108	0.128	2.75	3.25
H	0.220	0.245	5.59	6.22

SMC (REV: R2)

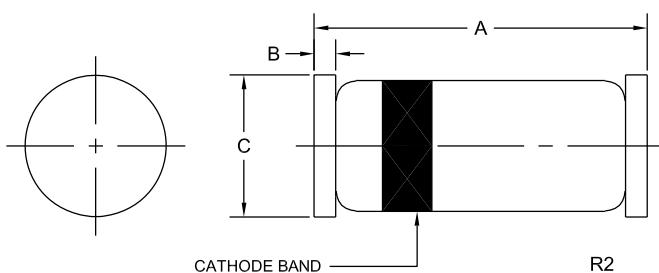
SMDIP



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.008	0.10	0.20
B	0.040	0.060	1.02	1.52
C	0.009		0.23	
D	0.290	0.310	7.37	7.87
E	0.086	0.098	2.18	2.49
F	0.038	0.042	0.97	1.07
G	0.316	0.335	8.03	8.51
H	0.195	0.205	4.95	5.21
J	0.245	0.255	6.22	6.48
K	0.360	0.410	9.14	10.41

SMDIP (REV: R1)

SOD-80

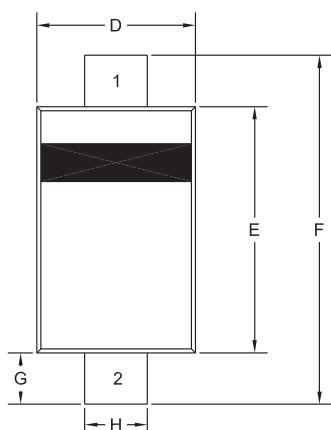
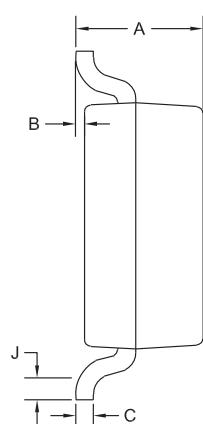


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.130	0.146	3.30	3.71
B	0.014		0.35	
C (DIA)	0.049	0.067	1.25	1.70

SOD-80 (REV:R2)

## Package Mechanical Specifications (continued)

SOD-123

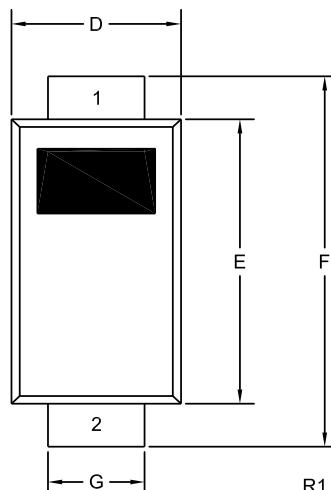
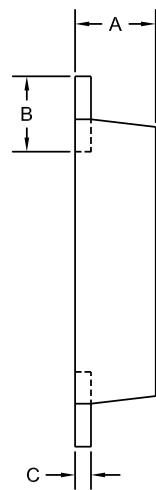


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.037	0.053	0.95	1.35
B	0.000	0.005	0.00	0.12
C	-	0.008	-	0.20
D	0.055	0.071	1.40	1.80
E	0.098	0.110	2.50	2.80
F	0.142	0.154	3.60	3.90
G	0.016	-	0.40	-
H	0.020	0.028	0.50	0.70
J	0.010	-	0.25	-

SOD-123 (REV:R5)

R5

SOD-123F

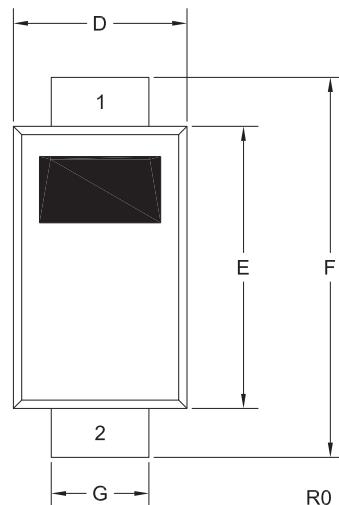
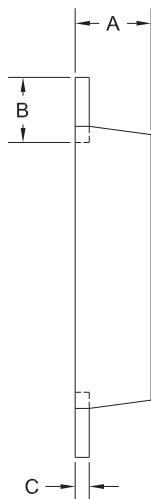


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.035	0.043	0.88	1.08
B	0.020	0.031	0.50	0.80
C	0.004	0.008	0.10	0.20
D	0.065	0.077	1.65	1.95
E	0.104	0.116	2.65	2.95
F	0.140	0.156	3.55	3.95
G	0.030	0.041	0.75	1.05

SOD-123F (REV:R1)

R1

SOD-123FL



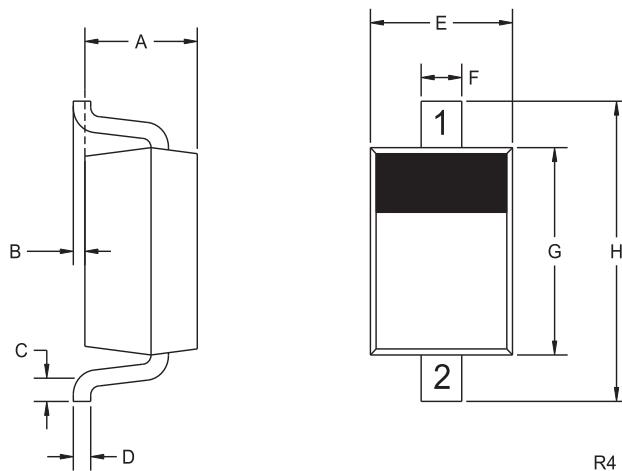
SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.024	0.031	0.60	0.80
B	0.020	0.028	0.50	0.70
C	0.003	0.007	0.08	0.18
D	0.059	0.067	1.50	1.70
E	0.094	0.110	2.40	2.80
F	0.130	0.146	3.30	3.70
G	0.031	0.039	0.80	1.00

SOD-123FL (REV:R0)

R0

## Package Mechanical Specifications (continued)

SOD-323

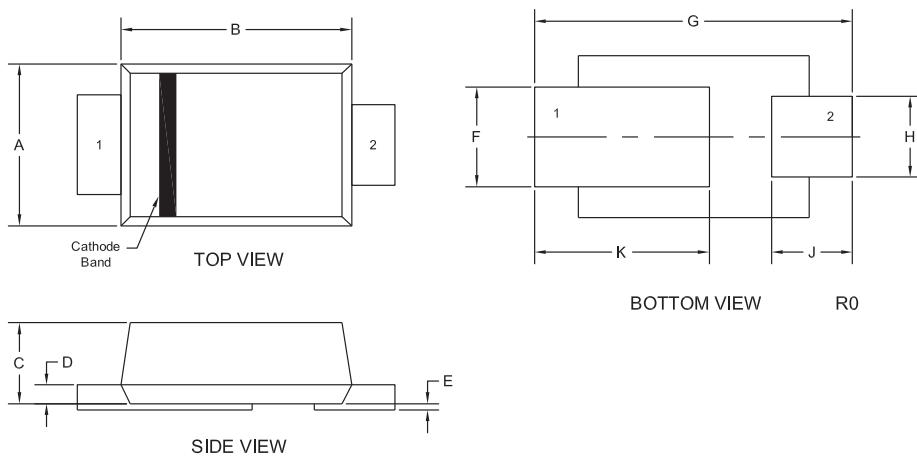


SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.031	0.039	0.80	1.00
B	0.000	0.004	0.00	0.10
C	0.008	-	0.20	-
D	0.004	0.007	0.11	0.19
E	0.045	0.053	1.15	1.35
F	-	0.014	-	0.35
G	0.063	0.071	1.60	1.80
H	0.094	0.102	2.40	2.60

SOD-323 (REV: R4)

R4

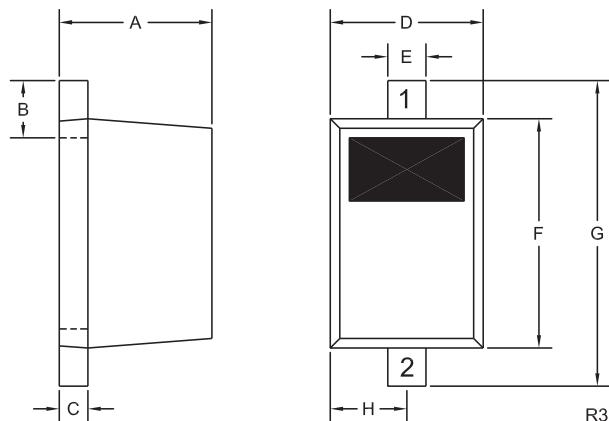
SOD-323FL



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.047	0.055	1.20	1.40
B	0.068	0.077	1.75	1.95
C	0.021	0.030	0.55	0.75
D	0.004	0.008	0.10	0.20
E	-	0.004	-	0.10
F	0.025	0.038	0.65	0.95
G	0.090	0.107	2.30	2.70
H	0.017	0.030	0.45	0.75
J	0.015	0.032	0.40	0.80
K	0.045	0.061	1.15	1.55

SOD-323FL (REV:R0)

SOD-523

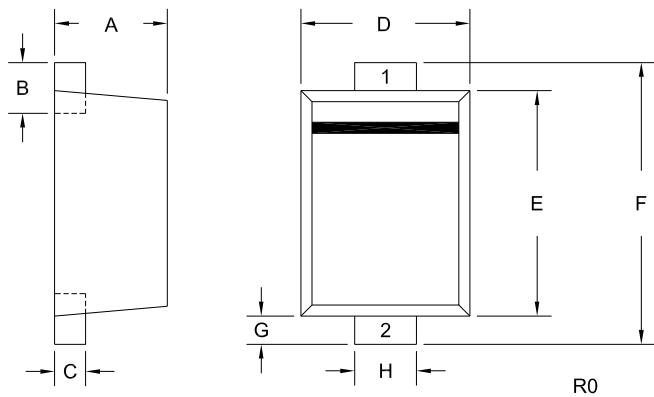


SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.020	0.031	0.50	0.80
B	0.008	0.016	0.20	0.40
C	0.002	0.008	0.05	0.20
D	0.028	0.035	0.70	0.90
E	0.008	0.014	0.20	0.35
F	0.039	0.055	1.00	1.40
G	0.055	0.071	1.40	1.80
H	0.016	-	0.40	-

SOD-523 (REV: R3)

## Package Mechanical Specifications (continued)

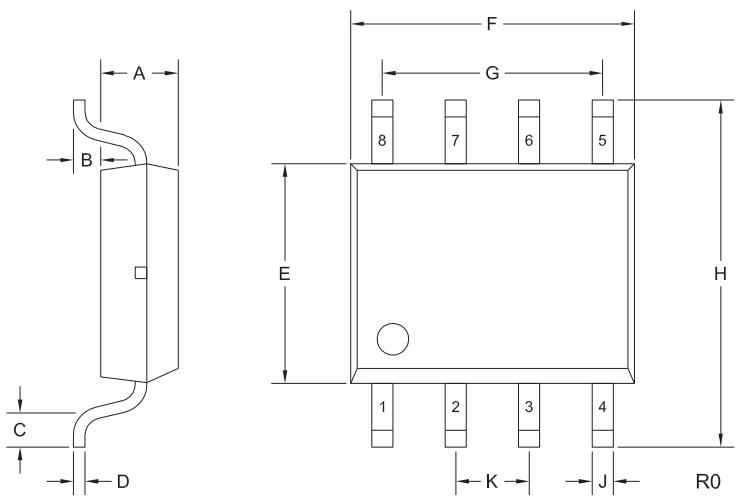
SOD-923



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.015	0.016	0.39	0.41
B	0.004	0.010	0.10	0.26
C	0.003	0.006	0.08	0.14
D	0.022	0.026	0.55	0.65
E	0.030	0.033	0.75	0.85
F	0.035	0.043	0.90	1.10
G	0.002	0.006	0.05	0.15
H	0.007	0.011	0.17	0.27

SOD-923 (REV: R0)

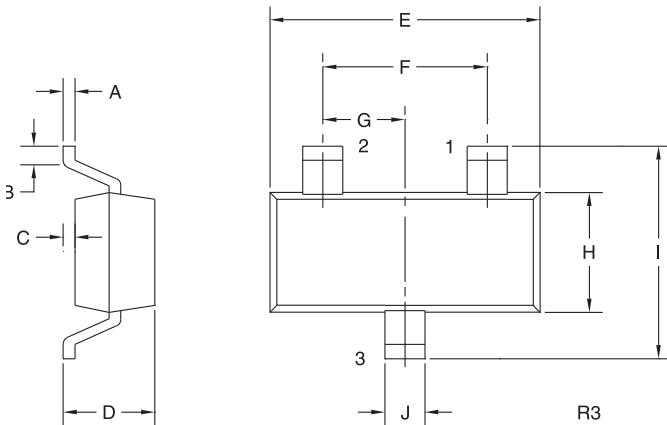
SOIC-8



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.049	0.057	1.24	1.44
B	0.000	0.011	0.00	0.27
C	0.018	-	0.46	-
D	0.006	0.011	0.16	0.27
E	0.145	0.154	3.70	3.90
F	0.189	0.198	4.81	5.01
G	0.150	-	3.81	-
H	0.231	0.244	5.88	6.18
J	0.013	0.021	0.35	0.52
K	0.050	-	1.27	-

SOIC-8 (REV: R0)

SOT-23

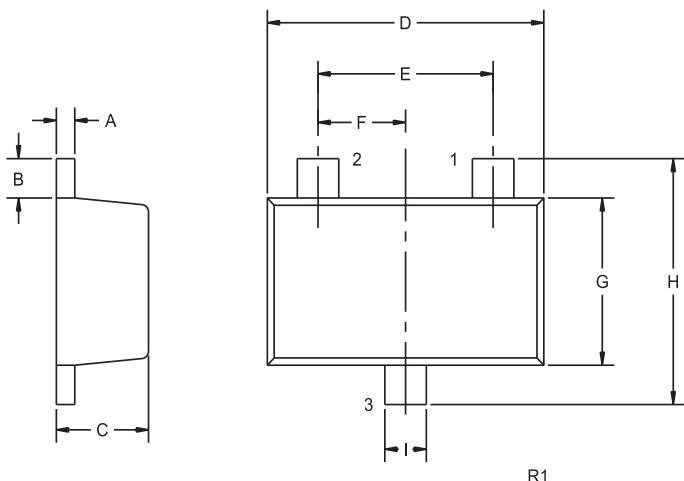


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.003	0.007	0.08	0.18
B	0.006	-	0.15	-
C	-	0.005	-	0.13
D	0.035	0.043	0.89	1.09
E	0.110	0.120	2.80	3.05
F	0.075	-	1.90	-
G	0.037	-	0.95	-
H	0.047	0.055	1.19	1.40
I	0.083	0.098	2.10	2.49
J	0.014	0.020	0.35	0.50

SOT-23 (REV: R3)

## Package Mechanical Specifications (continued)

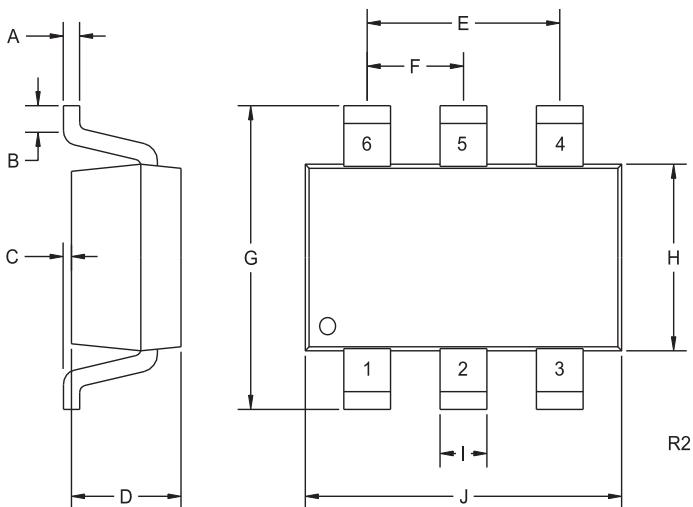
SOT-23F



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.008	0.10	0.20
B	0.012	0.020	0.30	0.50
C	0.031	0.039	0.80	1.00
D	0.110	0.118	2.80	3.00
E	0.075		1.90	
F	0.037		0.95	
G	0.059	0.067	1.50	1.70
H	0.091	0.098	2.30	2.50
I	0.014	0.018	0.35	0.45

SOT-23F (REV: R1)

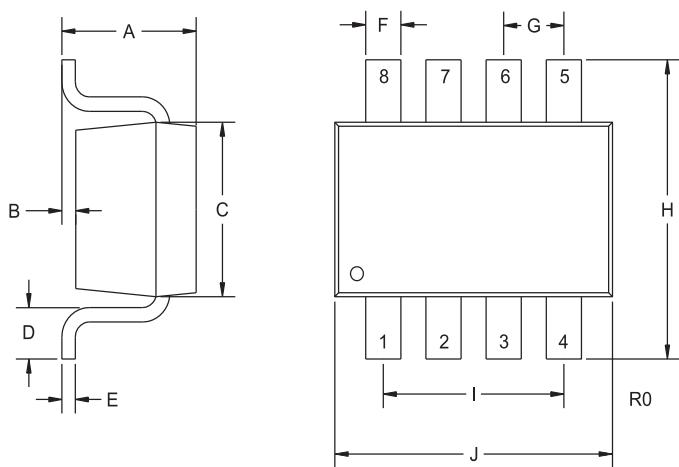
SOT-26



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.007	0.11	0.19
B	0.016	-	0.40	-
C	-	0.004	-	0.10
D	0.039	0.047	1.00	1.20
E	0.074	0.075	1.88	1.92
F	0.037	0.038	0.93	0.97
G	0.102	0.118	2.60	3.00
H	0.059	0.067	1.50	1.70
I	0.016		0.41	
J	0.110	0.118	2.80	3.00

SOT-26 (REV: R2)

SOT-28

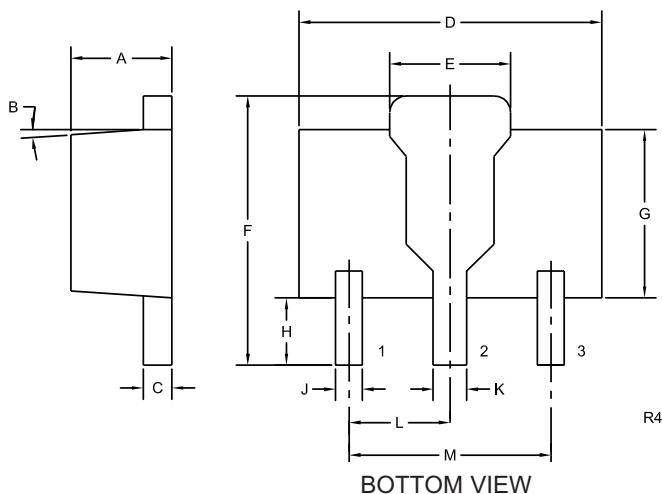


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.035	0.057	0.90	1.45
B	0.000	0.006	0.00	0.15
C	0.059	0.069	1.50	1.75
D	0.014	0.022	0.35	0.55
E	0.004	0.008	0.09	0.20
F	0.009	0.015	0.22	0.38
G	0.026		0.65	
H	0.102	0.118	2.60	3.00
I	0.077		1.95	
J	0.110	0.118	2.80	3.00

SOT-28 (REV: R0)

## Package Mechanical Specifications (continued)

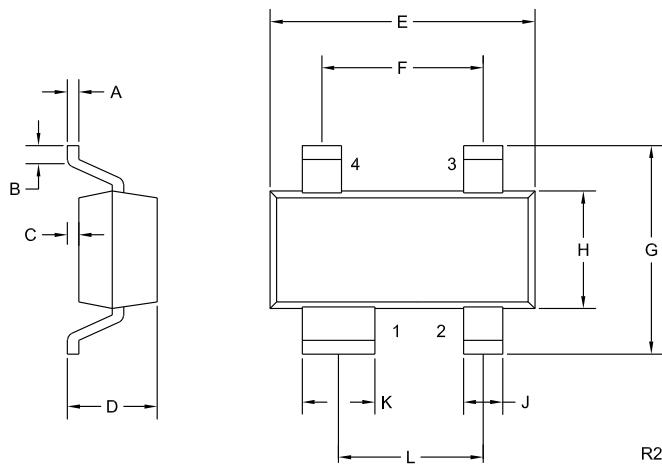
SOT-89



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.055	0.067	1.40	1.70
B	4°		4°	
C	0.014	0.018	0.35	0.46
D	0.173	0.185	4.40	4.70
E	0.064	0.074	1.62	1.87
F	0.146	0.177	3.70	4.50
G	0.090	0.106	2.29	2.70
H	0.028	0.051	0.70	1.30
J	0.014	0.019	0.36	0.48
K	0.017	0.023	0.44	0.58
L	0.059		1.50	
M	0.118		3.00	

SOT-89 (REV: R4)

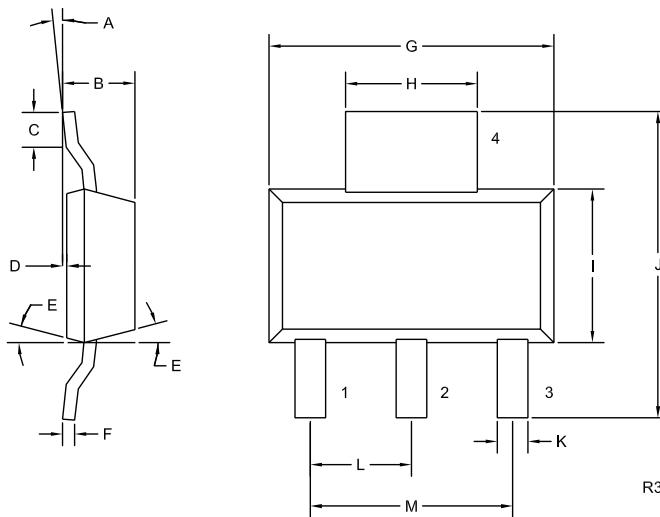
SOT-143



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.003	0.006	0.08	0.15
B	0.006	-	0.15	-
C	-	0.005	-	0.13
D	-	0.045	-	1.14
E	0.110	0.120	2.79	3.04
F	0.075		1.90	
G	-	0.098	-	2.50
H	0.047	0.055	1.19	1.40
J	0.014	0.020	0.36	0.50
K	0.030	0.037	0.76	0.93
L	0.067		1.70	

SOT-143 (REV: R2)

SOT-223

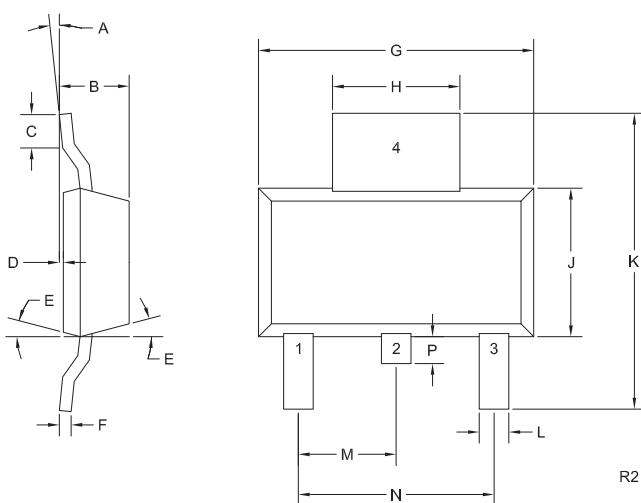


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0°	10°	0°	10°
B	0.059	0.071	1.50	1.80
C	0.018	--	0.45	—
D	0.000	0.004	0.00	0.10
E	15°		15°	
F	0.009	0.014	0.23	0.35
G	0.248	0.264	6.30	6.70
H	0.114	0.122	2.90	3.10
I	0.130	0.146	3.30	3.70
J	0.264	0.287	6.70	7.30
K	0.024	0.033	0.60	0.85
L	0.091		2.30	
M	0.181		4.60	

SOT-223 (REV: R3)

## Package Mechanical Specifications (continued)

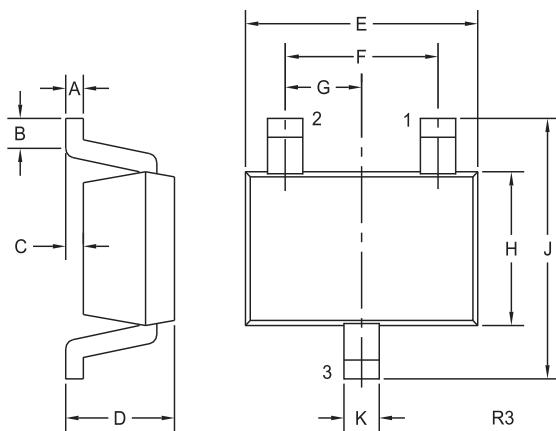
SOT-223C



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0°	10°	0°	10°
B	0.059	0.071	1.50	1.80
C	0.018	-	0.45	-
D	0.000	0.004	0.00	0.10
E	15°		15°	
F	0.009	0.014	0.23	0.35
G	0.248	0.264	6.30	6.70
H	0.114	0.122	2.90	3.10
J	0.130	0.146	3.30	3.70
K	0.264	0.287	6.70	7.30
L	0.024	0.033	0.60	0.85
M	0.091		2.30	
N	0.181		4.60	
P	-	0.025	-	0.64

SOT-223C (REV: R2)

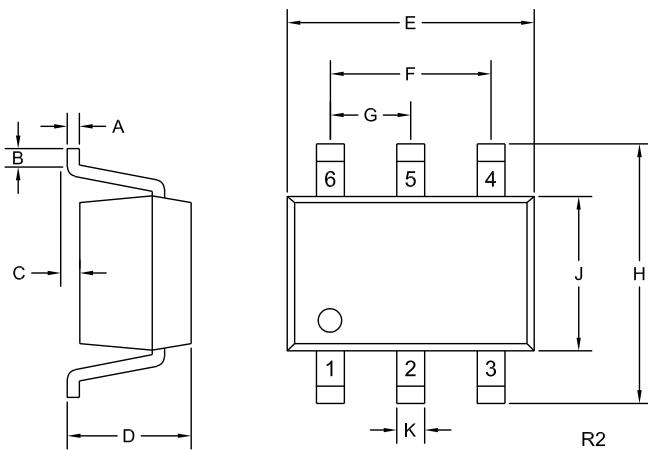
SOT-323



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.002	0.008	0.05	0.20
B	0.004	-	0.10	-
C	-	0.004	-	0.10
D	0.031	0.043	0.80	1.10
E	0.071	0.087	1.80	2.20
F	0.051		1.30	
G	0.026		0.65	
H	0.045	0.053	1.15	1.35
J	0.079	0.087	2.00	2.20
K	0.008	0.016	0.20	0.40

SOT-323 (REV: R3)

SOT-363



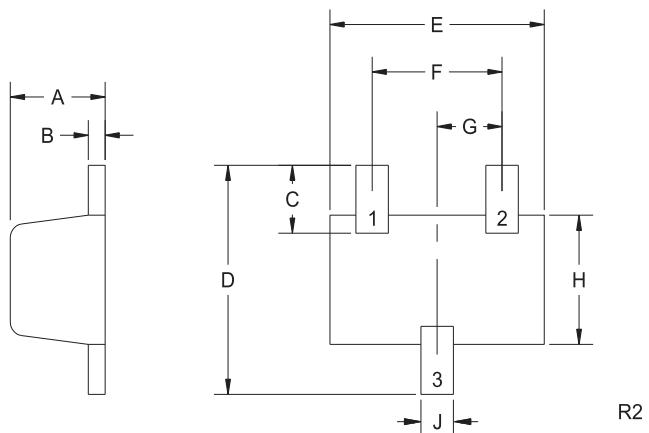
SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.010	0.10	0.25
B	0.005	-	0.12	-
C	0.000	0.004	0.00	0.10
D	0.031	0.043	0.80	1.10
E	0.071	0.087	1.80	2.20
F	0.051		1.30	
G	0.026		0.65	
H	0.075	0.091	1.90	2.30
J	0.043	0.055	1.10	1.40
K	0.006	0.012	0.15	0.30

SOT-363 (REV: R2)

## Package Mechanical Specifications (continued)

SOT-523

BOTTOM VIEW

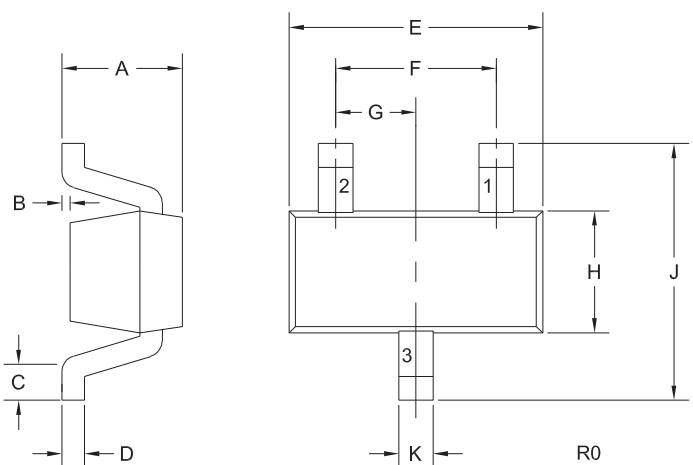


SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	0.023	0.031	0.58	0.78
B	0.002	0.008	0.04	0.20
C	0.013	0.021	0.34	0.54
D	0.059	0.067	1.50	1.70
E	0.059	0.067	1.50	1.70
F	0.035	0.043	0.90	1.10
G	0.020	0.050		
H	0.031	0.039	0.78	0.98
J	0.010	0.014	0.25	0.35

SOT-523 (REV: R2)

R2

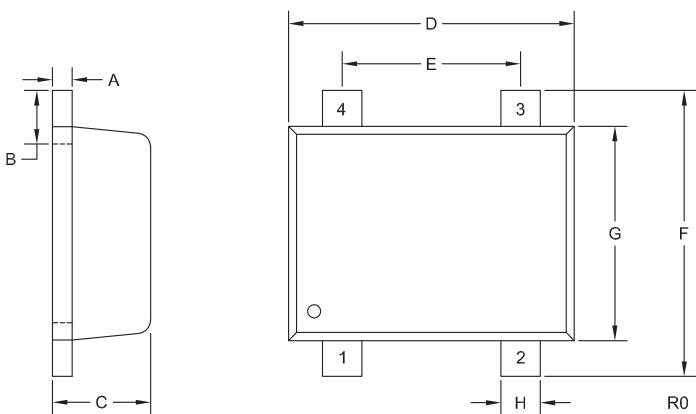
SOT-523W



SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	-	0.031	-	0.80
B	0.000	0.004	0.00	0.10
C	0.006	0.012	0.15	0.30
D	0.005	0.006	0.13	0.15
E	0.058	0.066	1.48	1.68
F	0.039	1.00		
G	0.020	0.50		
H	0.026	0.034	0.66	0.86
J	0.059	0.067	1.50	1.70
K	0.007	0.009	0.19	0.24

SOT-523W (REV: R0)

SOT-543

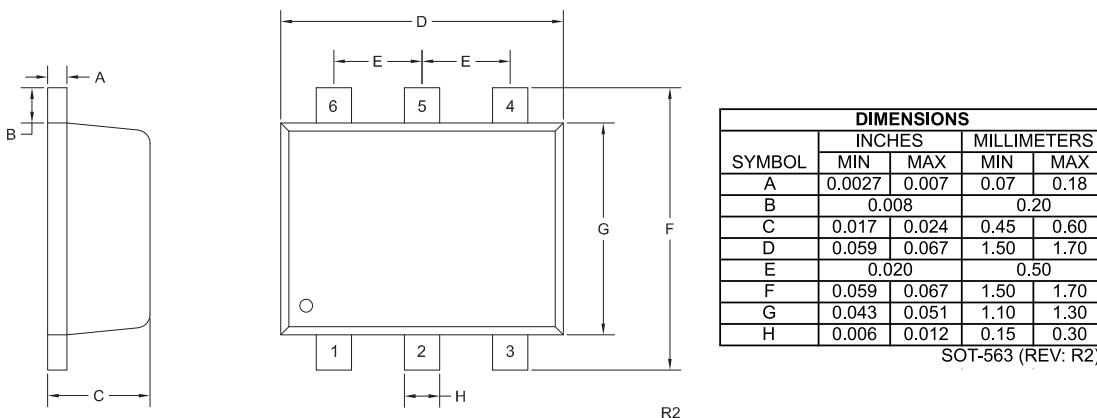


SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	0.002	0.007	0.07	0.17
B	0.004	0.012	0.10	0.30
C	0.019	0.024	0.50	0.60
D	0.059	0.067	1.50	1.70
E	0.035	0.044	0.90	1.10
F	0.059	0.067	1.50	1.70
G	0.044	0.052	1.10	1.30
H	0.006	0.011	0.17	0.27

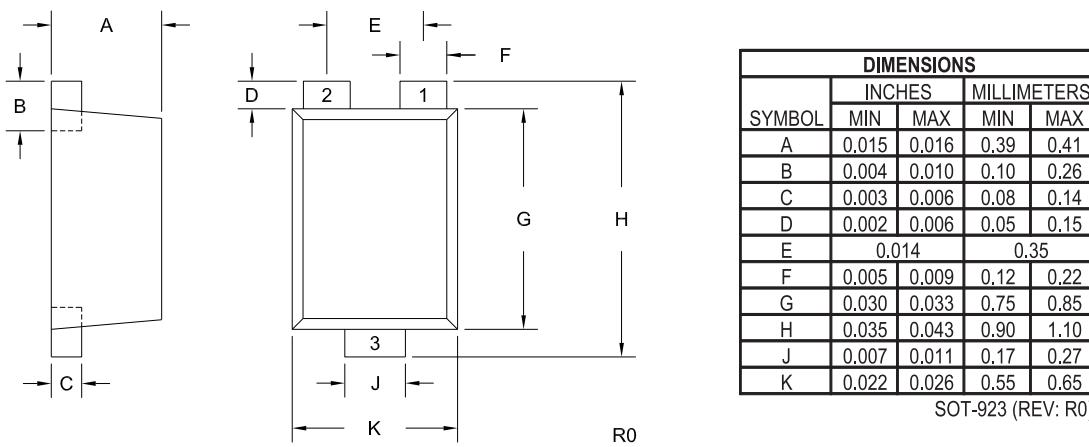
SOT-543 (REV: R0)

## Package Mechanical Specifications (continued)

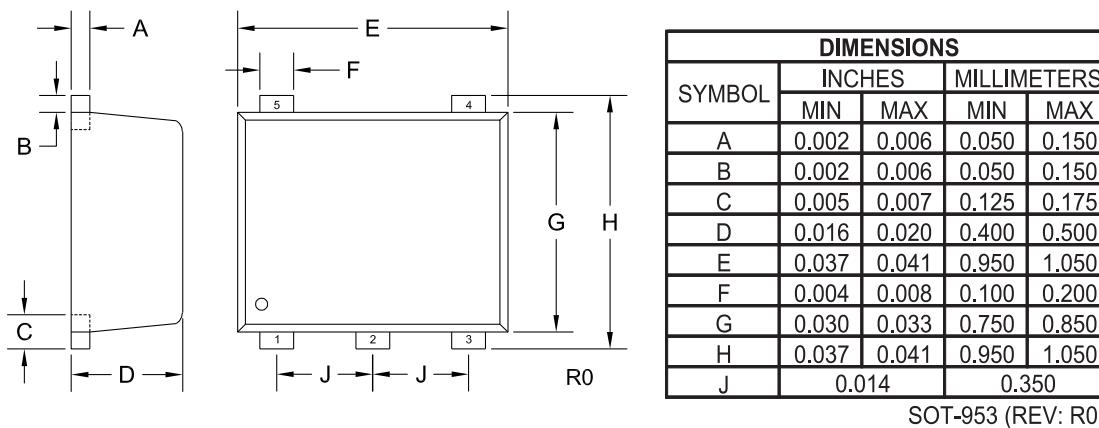
SOT-563



SOT-923

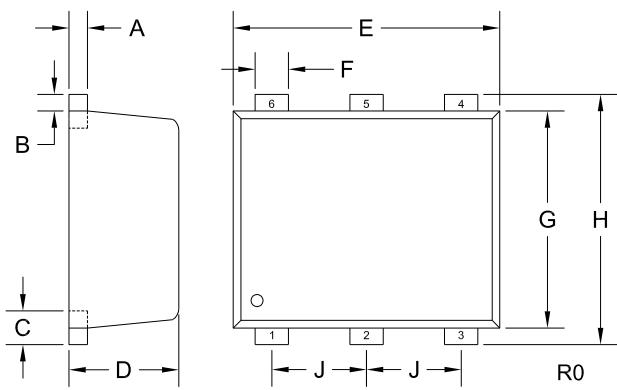


SOT-953



## Package Mechanical Specifications (continued)

SOT-963

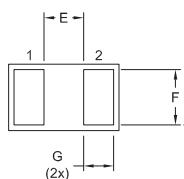
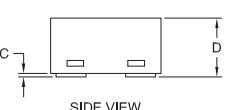
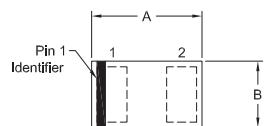


SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	0.002	0.006	0.050	0.150
B	0.002	0.006	0.050	0.150
C	0.005	0.007	0.125	0.175
D	0.016	0.020	0.400	0.500
E	0.037	0.041	0.950	1.050
F	0.004	0.008	0.100	0.200
G	0.030	0.033	0.750	0.850
H	0.037	0.041	0.950	1.050
J	0.014		0.350	

SOT-963 (REV: R0)

## Leadless Packages, Mechanical Specifications

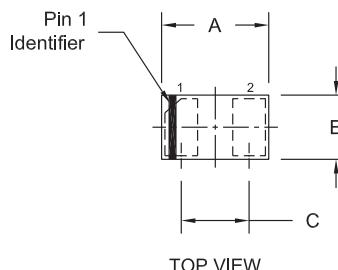
SOD-882



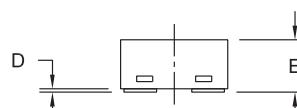
SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.037	0.042	0.95	1.05
B	0.022	0.026	0.55	0.65
C	0.000	0.002	0.00	0.05
D	0.017	0.022	0.45	0.55
E	0.014		0.36	
F	0.017	0.022	0.45	0.55
G	0.008	0.013	0.22	0.32

SOD-882 (REV:R2)

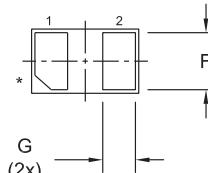
SOD-882L



TOP VIEW



SIDE VIEW



BOTTOM VIEW R2

SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.037	0.041	0.95	1.05
B	0.022	0.026	0.55	0.65
C	0.026		0.65	
D	0.000	0.002	0.00	0.05
E	0.012	0.016	0.30	0.40
F	0.018	0.022	0.45	0.55
G	0.008	0.012	0.20	0.30

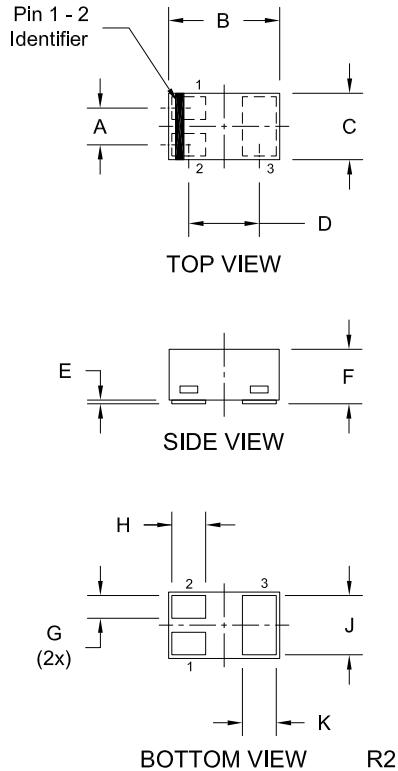
SOD-882L (REV:R2)

**Central**<sup>TM</sup>  
Semiconductor Corp.

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## Leadless Packages, Mechanical Specifications (continued)

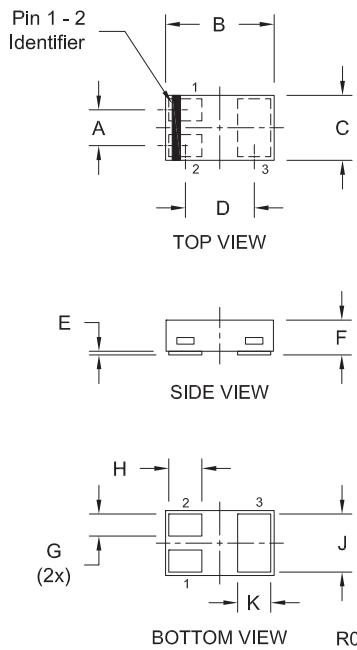
SOT-883L



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.014		0.35	
B	0.037	0.041	0.95	1.05
C	0.022	0.026	0.55	0.65
D	0.026		0.65	
E	0.000	0.002	0.00	0.05
F	0.012	0.016	0.30	0.40
G	0.005	0.007	0.13	0.18
H	0.008	0.012	0.20	0.30
J	0.018	0.022	0.45	0.55
K	0.008	0.012	0.20	0.30

SOT-883L (REV:R2)

SOT-883VL

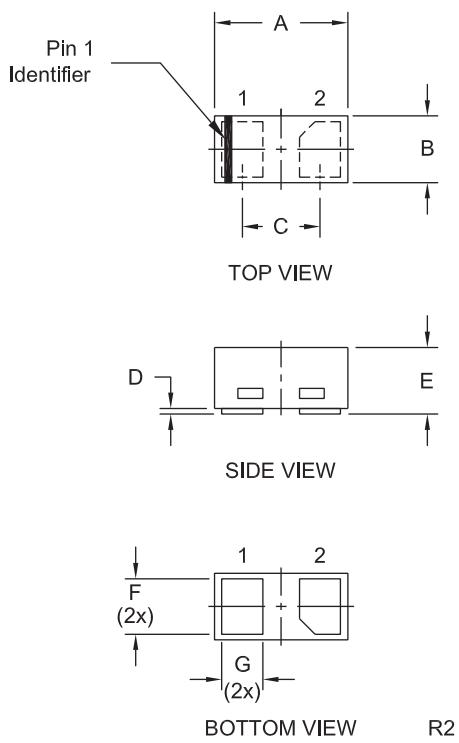


SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.014		0.35	
B	0.037	0.041	0.95	1.05
C	0.022	0.026	0.55	0.65
D	0.026		0.65	
E	0.000	0.002	0.00	0.05
F	0.012	0.013	0.30	0.32
G	0.004	0.008	0.10	0.20
H	0.008	0.012	0.20	0.30
J	0.018	0.022	0.45	0.55
K	0.008	0.012	0.20	0.30

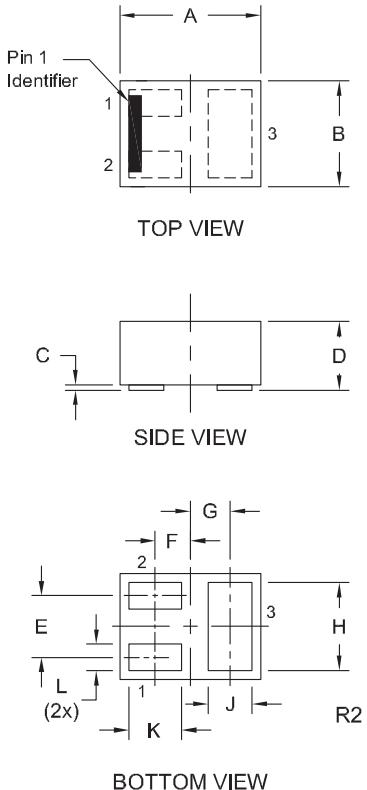
SOT-883VL (REV:R0)

## Leadless Packages, Mechanical Specifications (continued)

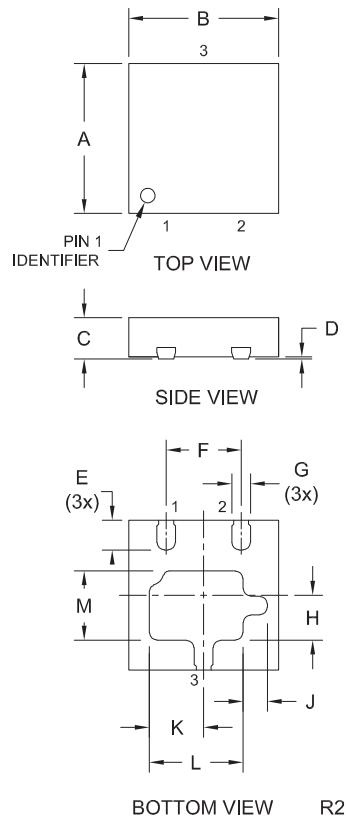
TLM2D3D6



TLM3D6D8



TLM322S



DIMENSIONS					
SYMBOL	INCHES		MILLIMETERS		
	MIN	MAX	MIN	MAX	
A	0.022	0.026	0.55	0.65	
B	0.010	0.014	0.25	0.35	
C	0.014		0.35		
D	0.000	0.002	0.00	0.05	
E	0.011	0.013	0.28	0.32	
F	0.008	0.012	0.20	0.30	
G	0.005	0.009	0.13	0.24	

TLM2D3D6 (REV: R2)

SYMBOL	INCHES		MILLIMETERS		
	MIN	MAX	MIN	MAX	
A	0.029	0.034	0.75	0.85	
B	0.021	0.026	0.55	0.65	
C	0.000	0.002	0.00	0.05	
D	0.012	0.016	0.31	0.40	
E	0.014		0.35		
F	0.008		0.20		
G	0.009		0.225		
H	0.017	0.022	0.45	0.55	
J	0.008	0.012	0.20	0.30	
K	0.010	0.014	0.25	0.35	
L	0.004	0.008	0.10	0.20	

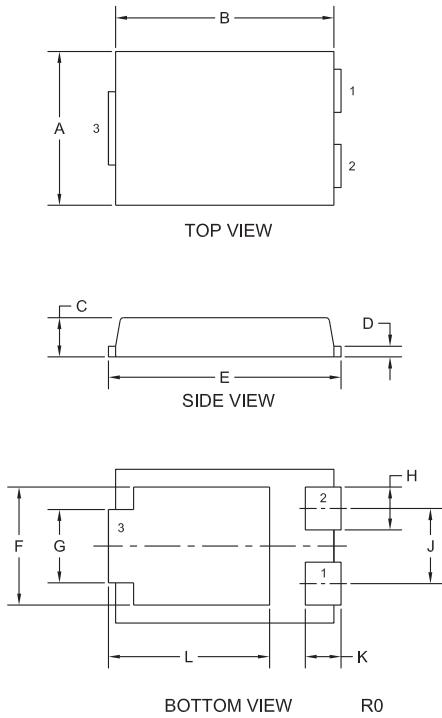
TLM3D6D8 (REV: R2)

SYMBOL	INCHES		MILLIMETERS		
	MIN	MAX	MIN	MAX	
A	0.076	0.081	1.95	2.05	
B	0.076	0.081	1.95	2.05	
C	0.019	0.024	0.50	0.60	
D	0.000	0.002	0.00	0.05	
E	0.011	0.020	0.30	0.50	
F	0.039		1.00		
G	0.007	0.012	0.18	0.30	
H	0.017	0.028	0.45	0.70	
J	0.008	0.017	0.22	0.43	
K	0.024	0.033	0.62	0.83	
L	0.043	0.054	1.10	1.35	
M	0.030	0.041	0.77	1.03	

TLM322S (REV:R2)

## Leadless Packages, Mechanical Specifications (continued)

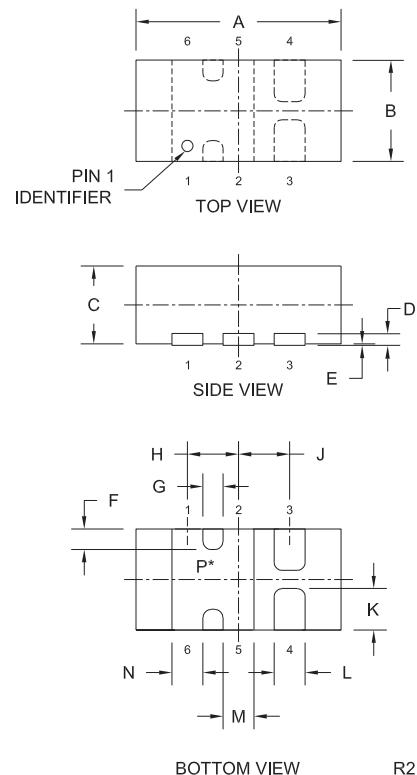
TLM364



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.167	0.172	4.25	4.35
B	0.238	0.243	6.05	6.15
C	0.039	0.048	1.00	1.20
D	0.009	0.014	0.25	0.35
E	0.250	0.262	6.35	6.65
F	0.128	0.136	3.25	3.45
G	0.076	0.085	1.95	2.15
H	0.044	0.052	1.10	1.30
J	0.083		2.10	
K	0.035	0.044	0.90	1.10
L	0.171	0.183	4.35	4.65

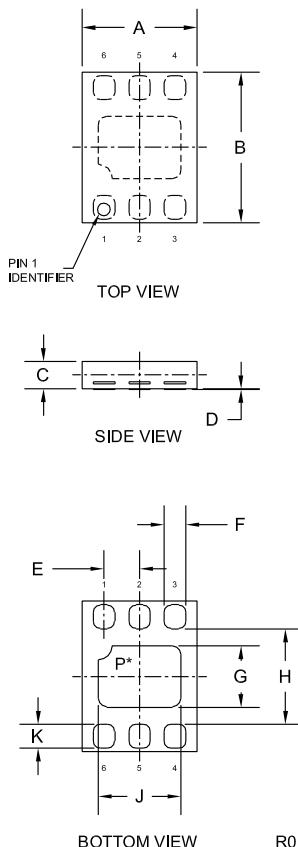
TLM364 (REV:R0)

TLM621



Exposed pad P connects pins 1, 2, 5, and 6

TLM621H



\*Exposed pad P internally connected to pins 3 and 4

SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.073	0.085	1.850	2.150
B	0.033	0.045	0.850	1.150
C	0.028	0.031	0.700	0.800
D	0.006		0.150	
E	0.000	0.002	0.000	0.050
F	0.008		0.200	
G	0.010		0.250	
H	0.020		0.500	
J	0.020		0.500	
K	0.012	0.020	0.300	0.500
L	0.007	0.012	0.180	0.300
M	0.007	0.012	0.180	0.300
N	0.007	0.012	0.180	0.300

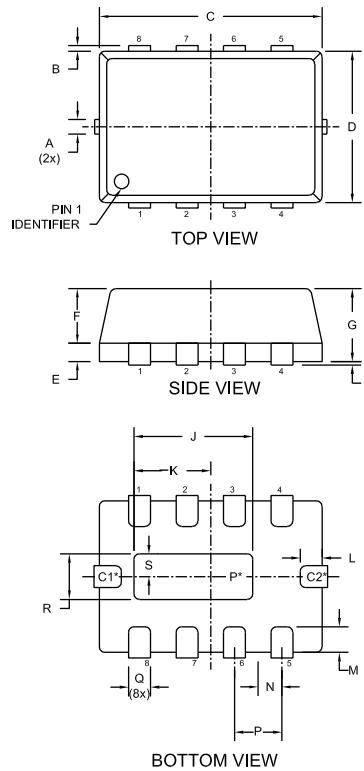
TLM621 (REV: R2)

SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.053	0.065	1.35	1.65
B	0.073	0.085	1.85	2.15
C	0.012	0.016	0.30	0.40
D	0.000	0.002	0.00	0.05
E	0.020		0.50	
F	0.008	0.012	0.20	0.30
G	0.027	0.035	0.69	0.89
H	0.053	0.057	1.35	1.45
J	0.039	0.047	0.99	1.19
K	0.011	0.015	0.28	0.38

TLM621H (REV:R0)

## Leadless Packages, Mechanical Specifications (continued)

TLM832

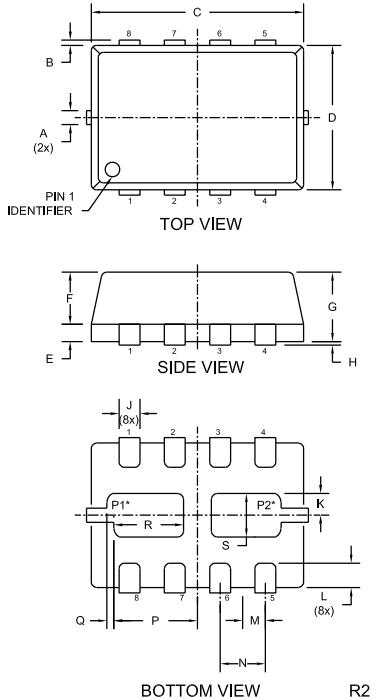


- \* Note:
- Exposed pad P internally connected to pins 1, 2, 3, 6, 7, 8
- Exposed metallized connection C1 internally connected to pins 1, 2, 3, 6, 7, 8
- Exposed metallized connection C2 internally connected to pin 5

DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.007	0.012	0.170	0.300
B	-	0.005	-	0.125
C	0.114	0.122	2.900	3.100
D	0.075	0.083	1.900	2.100
E	0.006	0.010	0.150	0.250
F	0.026	0.030	0.650	0.750
G	0.031	0.039	0.800	1.000
H	0.000	0.002	0.000	0.050
J	0.059	0.067	1.500	1.700
K	0.036	0.044	0.910	1.110
L	0.008	0.018	0.200	0.450
M	0.008	0.018	0.200	0.450
N	0.013		0.325	
P	0.026		0.650	
Q	0.009	0.013	0.240	0.340
R	0.017	0.025	0.430	0.630
S	0.006	0.014	0.160	0.360

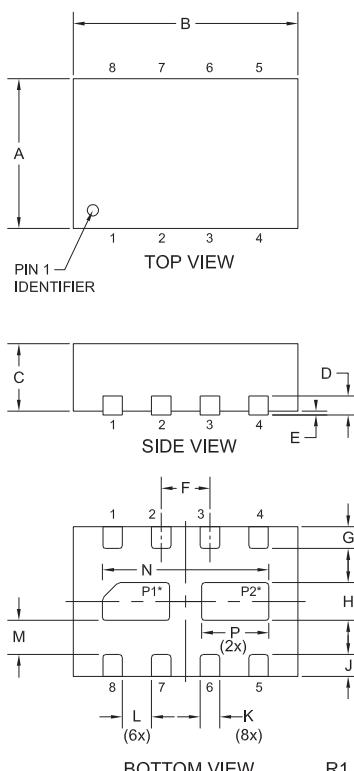
TLM832 (REV: R2)

TLM832D



- \* Note:
- Exposed pad P1 common to pins 7 and 8
  - Exposed pad P2 common to pins 5 and 6

TLM832DS



\* Exposed pad P1 common to pins 7 and 8  
Exposed pad P2 common to pins 5 and 6

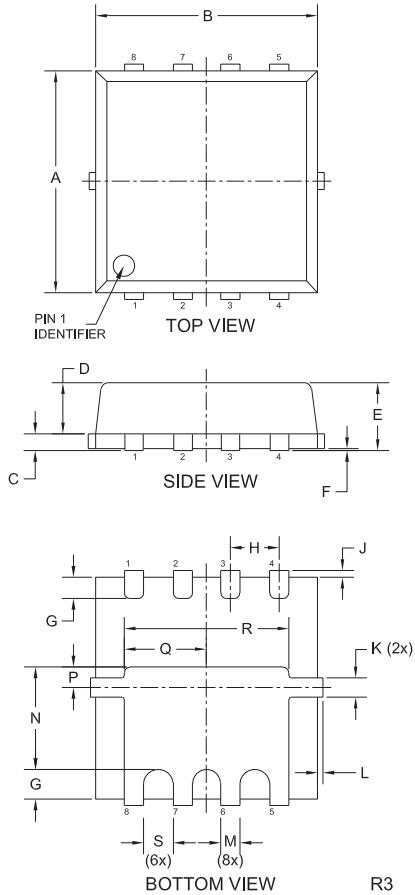
SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.077	0.081	1.95	2.05
B	0.116	0.120	2.95	3.05
C	0.031	0.039	0.80	1.00
D	0.006	0.010	0.16	0.25
E	0.000	0.002	0.00	0.05
F	0.026		0.65	
G	0.008	0.016	0.19	0.40
H	0.014	0.024	0.35	0.61
J	0.008	0.016	0.19	0.40
K	0.008	0.012	0.21	0.31
L	0.013	0.017	0.34	0.44
M	0.006	--	0.15	—
N	0.087		2.22	
P	0.029	0.039	0.74	1.00

TLM832DS (REV:R1)

TLM832D (REV: R2)

## Leadless Packages, Mechanical Specifications (continued)

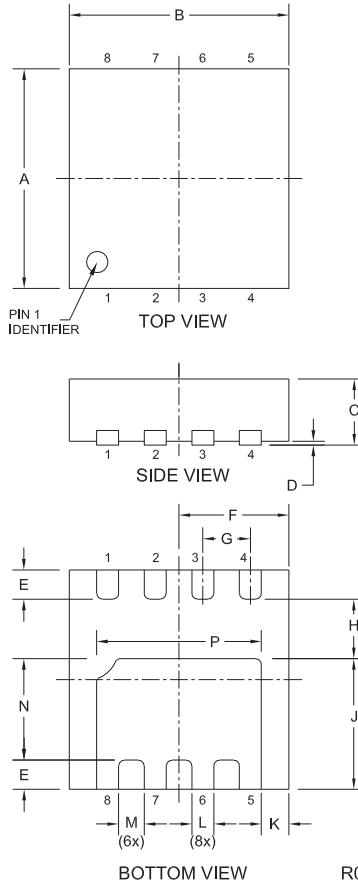
TLM833



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.114	0.122	2.90	3.10
B	0.114	0.122	2.90	3.10
C	0.006	0.010	0.15	0.25
D	0.026	0.030	0.65	0.75
E	0.031	0.039	0.80	1.00
F	0.000	0.002	0.00	0.05
G	0.008	0.018	0.20	0.45
H	0.026		0.65	
J	--	0.005	--	0.125
K	0.007	0.012	0.17	0.30
L	--	0.005	--	0.125
M	0.011	0.015	0.29	0.39
N	0.049	0.057	1.25	1.45
P	0.006	0.014	0.15	0.35
Q	0.040	0.048	1.01	1.21
R	0.085	0.093	2.16	2.36
S	0.012	0.016	0.30	0.40

TLM833 (REV:R3)

TLM833S

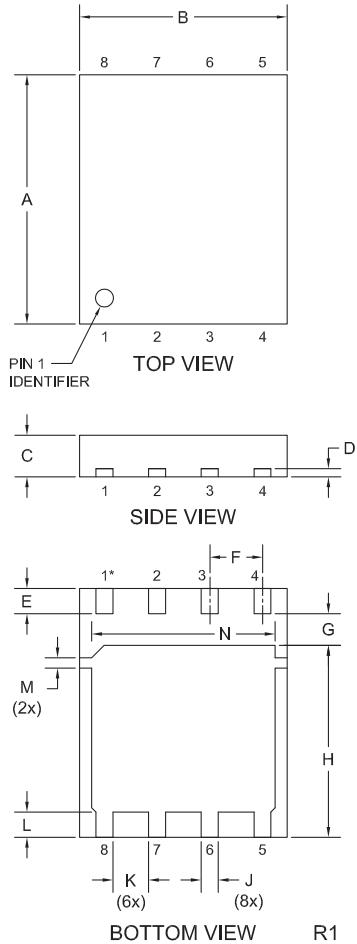


SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.112	0.124	2.85	3.15
B	0.112	0.124	2.85	3.15
C	0.031	0.039	0.80	1.00
D	0.000	0.002	0.00	0.05
E	0.012	0.020	0.30	0.50
F	0.056	0.062	1.43	1.57
G	0.026		0.65	
H	0.030	0.033	0.75	0.85
J	0.065	0.073	1.65	1.85
K	0.012	0.016	0.30	0.40
L	0.010	0.014	0.25	0.35
M	0.012	0.016	0.30	0.40
N	0.047	0.057	1.20	1.45
P	0.081	0.091	2.07	2.32

TLM833S (REV:R0)

## Leadless Packages, Mechanical Specifications (continued)

TLM856

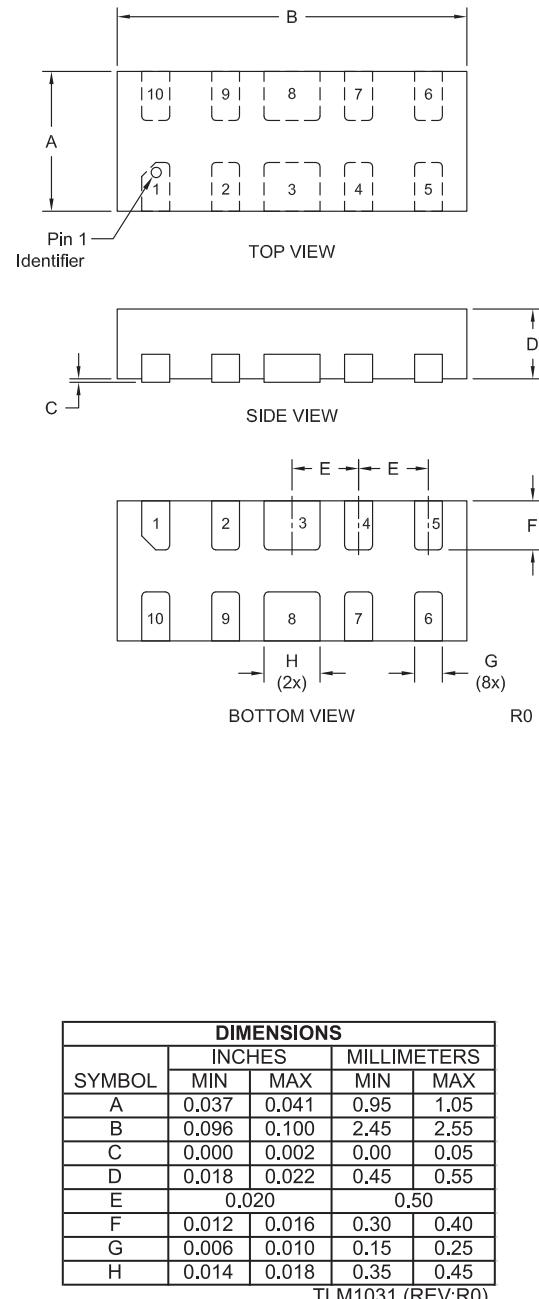


\* Pins 1, 2, and 3 are internally connected

SYMBOL	DIMENSIONS			
	INCHES	MILLIMETERS	MIN	MAX
A	0.232	0.240	5.90	6.10
B	0.193	0.201	4.90	5.10
C	0.037	0.040	0.95	1.025
D	0.008		0.20	
E	0.022	0.026	0.56	0.66
F	0.050		1.27	
G	0.028	0.032	0.71	0.81
H	0.180	0.184	4.58	4.68
J	0.014	0.018	0.36	0.46
K	0.034		0.86	
L	0.022	0.026	0.56	0.66
M	0.008	0.012	0.20	0.30
N	0.172	0.176	4.37	4.47

TLM856 (REV:R1)

TLM1031



TLM1031 (REV:R0)



# Vision Statement

We aspire to be the  
preferred  
manufacturer of the most  
innovative  
discrete semiconductors  
in the industry



## QUALITY POLICY

- ◆ Our definition of quality is **Complete Customer Satisfaction**.
- ◆ We are dedicated to manufacturing **Competitively Priced, Quality Products** delivered on time and professionally serviced.
- ◆ We define **Excellence** as surpassing our customers' expectations.
- ◆ Our perpetual challenge is the pursuit of **Achieving Excellence** in everything we do, and we strive to accomplish this by utilizing **Ongoing Training for Continuous Improvement** in all areas.
- ◆ We recognize that customer satisfaction results in **Repeat Business**.



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## Services



## Product Support

Central's sales-operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom packing
- Custom bar coding for shipments

## Designer Support/Services

Central's engineering team is ready to discuss your design challenges. Just ask.

- Quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

# CERTIFICATE

TUV Rheinland of North America, Inc.  
1300 Massachusetts Avenue, Suite 103, Boxborough, MA 01719



Hereby certifies that

**Central™**  
**Semiconductor Corp.**

**145 Adams Avenue  
Hauppauge, NY 11788, USA**

has established and maintains a quality management system for the

## Design and Manufacture of Discrete Semiconductors

An audit was performed and documented in Report No 7654.  
Proof has been furnished that the requirements according to

**ISO 9001:2008**

are fulfilled.

Further clarification regarding the scope of this certificate and the applicability of  
ISO 9001:2008 requirements may be obtained by contacting TRNA.

Certificate Registration No.

**74 300 7654**

Certificate Issue Date  
**December 03, 2015**

Revised 11/20/2015  
Certification Decision: 11/19/2015



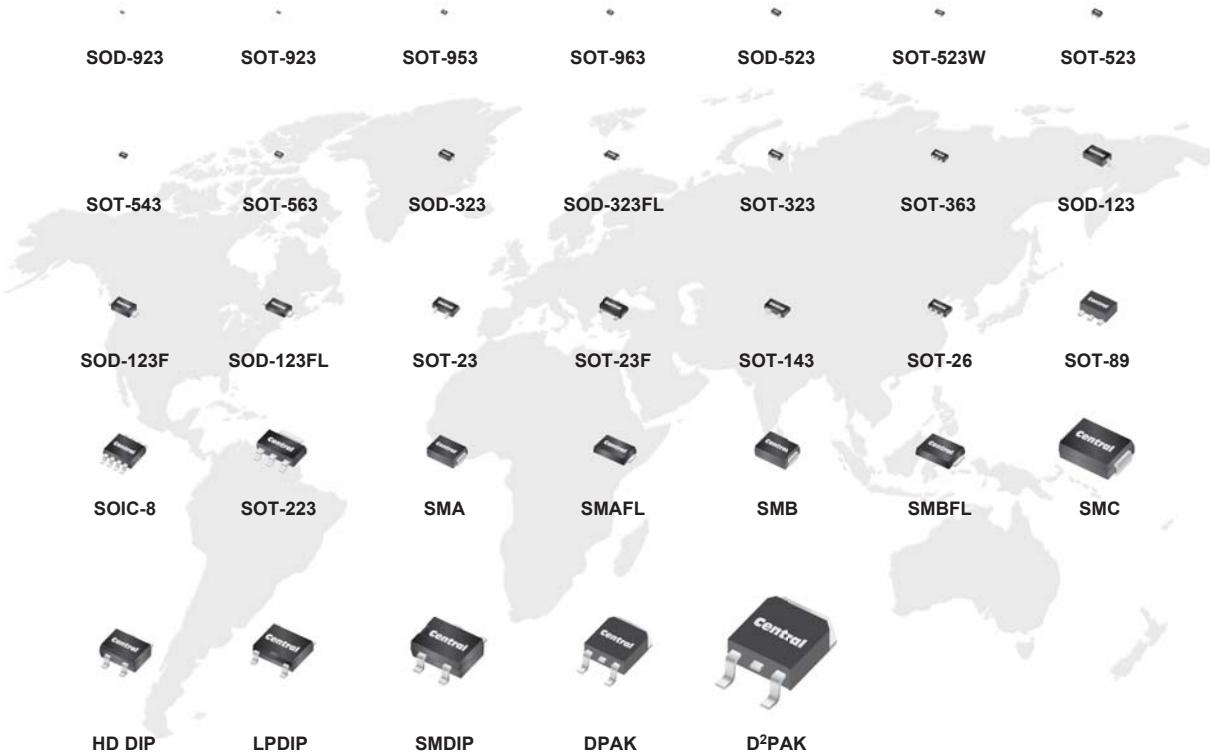
Certificate Expiration Date  
**December 02, 2018**

  
JJ McCann, JH  
Certification of Management Systems

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**Central™**  
**Semiconductor Corp.**

**Surface Mount Packages**  
(Actual Size)



**TLM™ Tiny Leadless Module**

Bottom View

TLM2D3D6      TLM621      TLM621H      TLM1031

TLM322S      TLM832DS      TLM833S      TLM364



**TLP™ Tiny Leadless Package**

Bottom View

SOD-882      SOD-882L

SOT-883L      SOT-883VL



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