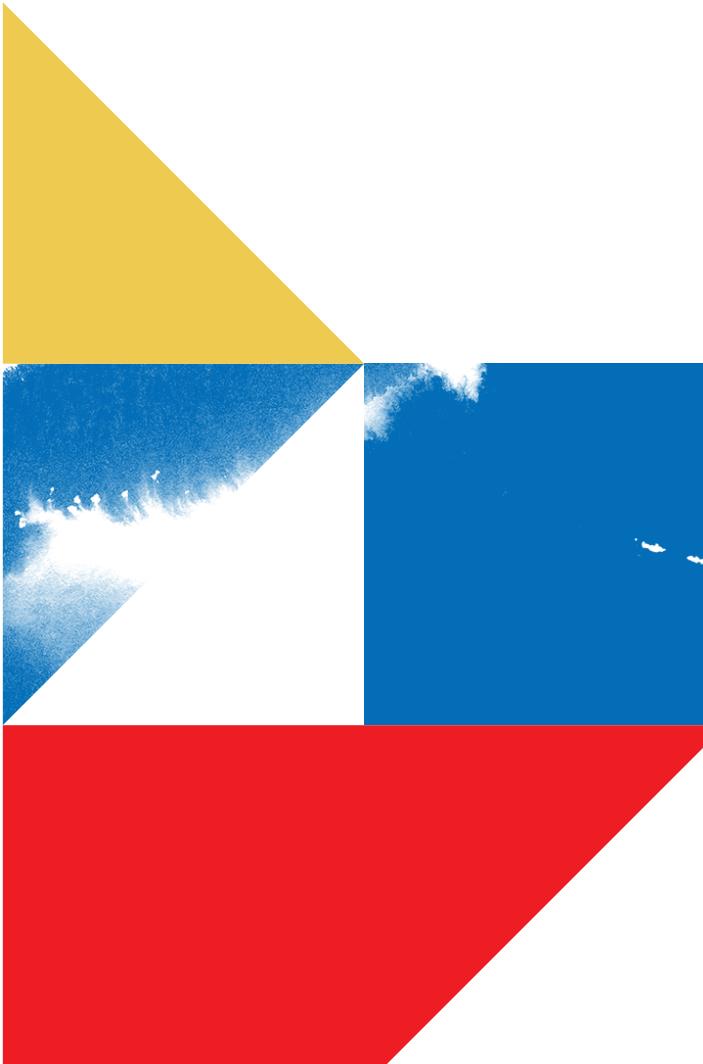


**TOSHIBA**

# Discrete Device Package Lineups



Selection  
Guide 2019



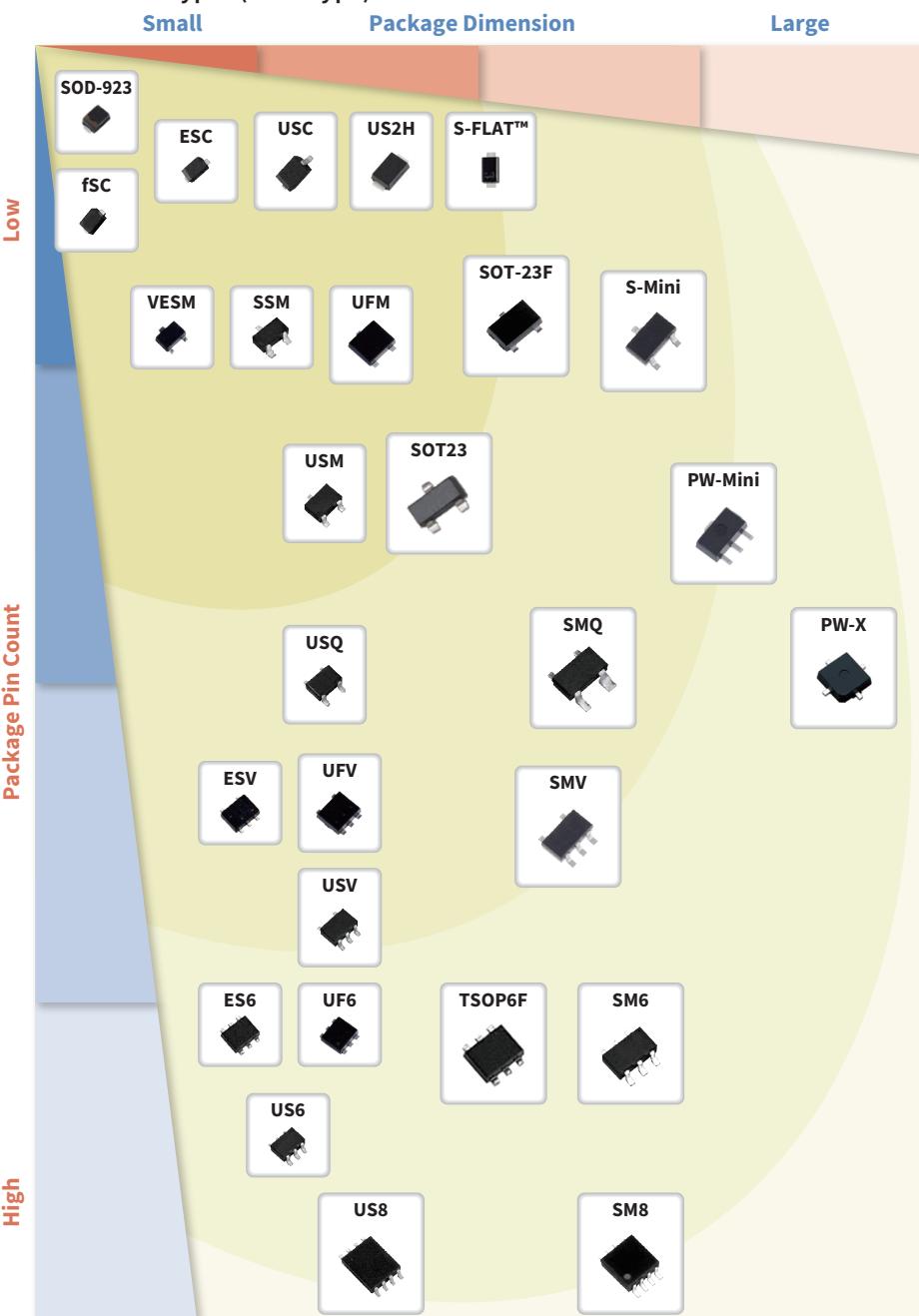
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# 1. Small Signal Devices

## Package Lineups

Surface Mount Type (Lead Type)



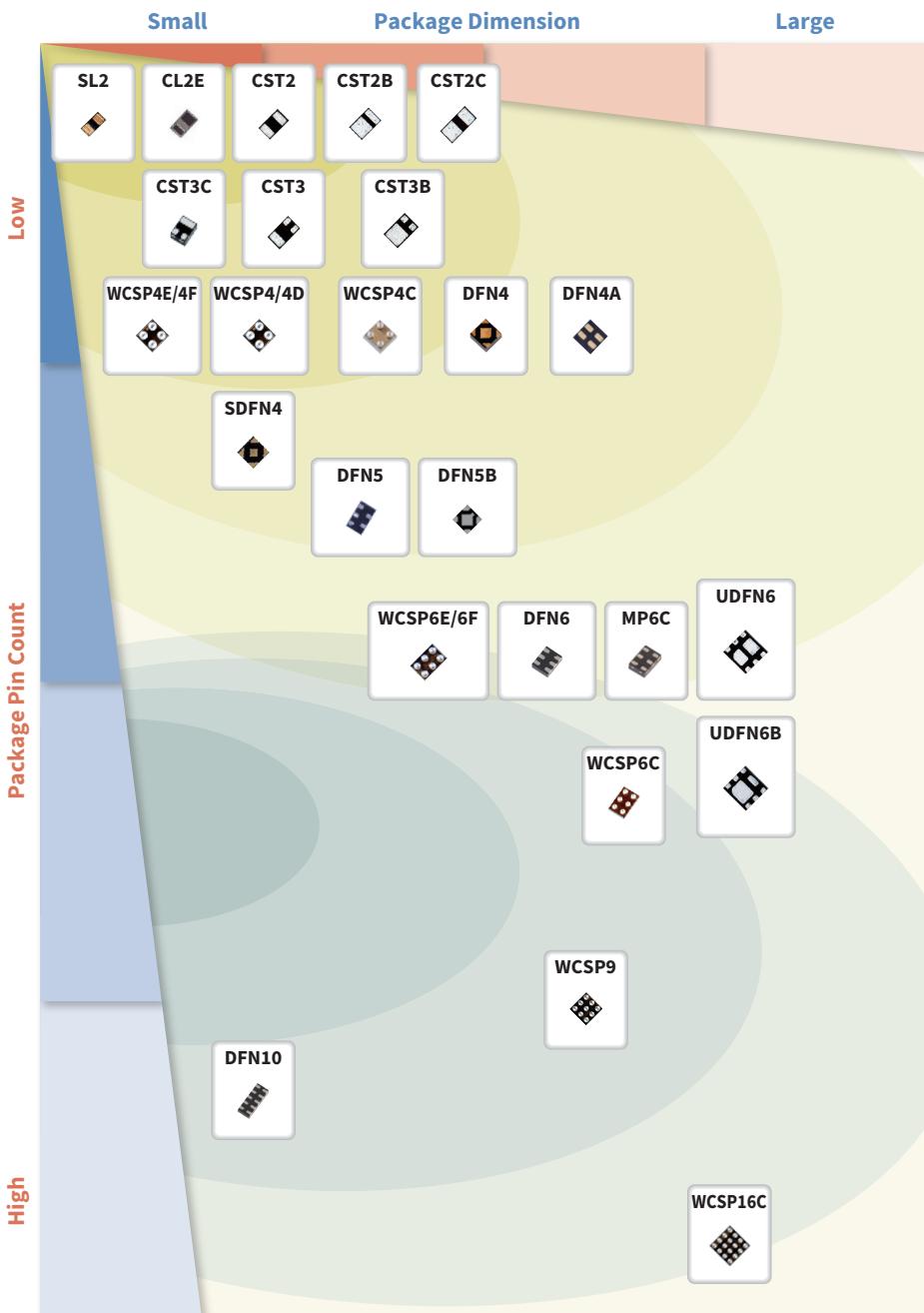
## Surface Mount Type (Lead Type)

Package	Pin Count	Dimension W x L (mm)	Products						Page
			MOSFETs	Diodes	LDO Regulators	Linear ICs	Transistors	RF Devices (Radio-Frequency Devices)	
fSC (SOD-923)	2	1.0 x 0.6						✓	8
SOD-923	2	1.0 x 0.6	✓						8
ESC (SOD-523)	2	1.6 x 0.8	✓					✓	8
USC (SOD-323)	2	2.5 x 1.25	✓					✓	8
US2H (SOD-323HE)	2	2.5 x 1.4	✓						8
S-FLAT	2	1.6 x 3.5						✓	8
VESM (SOT-723)	3	1.2 x 1.2	✓	✓			✓	✓	9
SSM (SOT-416)	3	1.6 x 1.6	✓	✓			✓	✓	9
UFM (SOT-323F)	3	2.0 x 2.1	✓				✓	✓	9
USM (SOT-323)	3	2.0 x 2.1	✓	✓			✓	✓	9
SOT23 (SOT-23)	3	2.9 x 2.4	✓	✓			✓		9
SOT-23F	3	2.9 x 2.4	✓			✓		✓	9
S-Mini (SOT-346)	3	2.9 x 2.5	✓	✓			✓	✓	10
PW-Mini	3	4.6 x 4.2						✓	10
USQ (SOT-343)	4	2.0 x 2.1		✓				✓	10
SMQ (SOT-24)	4	2.9 x 2.9		✓				✓	10
PW-X	4	6.1 x 6.3						✓	10
ESV (SOT-553)	5	1.6 x 1.6	✓	✓	✓		✓		10
UFV (SOT-353F)	5	2.0 x 2.1	✓	✓	✓	✓			11
USV (SOT-353)	5	2.0 x 2.1	✓	✓		✓	✓		11
SMV (SOT-25)	5	2.9 x 2.8		✓	✓	✓	✓		11
ES6 (SOT-563)	6	1.6 x 1.6	✓	✓				✓	11
UF6 (SOT-363F)	6	2.0 x 2.1	✓						11
US6 (SOT-363)	6	2.0 x 2.1	✓	✓				✓	11
SM6 (SOT-26)	6	2.9 x 2.8		✓				✓	12
TSOP6F (SOT-26F)	6	2.9 x 2.8	✓						12
US8 (SOT-765)	8	2.0 x 3.1				✓			12
SM8 (SOT-505)	8	2.9 x 4.0				✓			12

### Note

Linear ICs : Load Switch ICs , Power Multiplexer ICs , Operational Amplifier ICs , Comparator ICs , Magnetic Sensors

## Surface Mount Type (Leadless Type)



## Surface Mount Type (Leadless Type)

Package	Pin Count	Dimension W x L (mm)	Products						Page
			MOSFETs	Diodes	LDO Regulators	Linear ICs	Transistors	RF Devices (Radio-Frequency Devices)	
SL2 (SOD-962)	2	0.62 x 0.32	✓					✓	13
CL2E	2	1.0 x 0.6	✓						13
CST2 (SOD-882)	2	1.0 x 0.6	✓					✓	13
CST2B	2	1.2 x 0.8	✓						13
CST2C (SOD-963)	2	1.6 x 0.8	✓						13
CST3C	3	0.8 x 0.6	✓						13
CST3 (SOT-883)	3	1.0 x 0.6	✓	✓				✓	14
CST3B	3	1.2 x 0.8	✓						14
WCSP4E	4	0.645 x 0.645			✓				14
WCSP4F	4	0.645 x 0.645			✓				14
WCSP4	4	0.79 x 0.79			✓				14
WCSP4D	4	0.79 x 0.79				✓			14
SDFN4	4	0.8 x 0.8		✓					15
WCSP4C	4	0.9 x 0.9				✓			15
DFN4	4	1.0 x 1.0			✓				15
DFN4A	4	1.2 x 1.2				✓			15
DFN5B	5	1.2 x 1.2			✓				15
DFN5	5	1.3 x 0.8		✓					15
WCSP6E	6	1.2 x 0.8				✓			16
WCSP6F	6	1.2 x 0.8			✓				16
DFN6	6	1.25 x 1.0		✓					16
MP6C	6	1.45 x 1.0				✓			16
WCSP6C	6	1.5 x 1.0	✓			✓			16
UDFN6 (SOT-1118)	6	2.0 x 2.0	✓						16
UDFN6B (SOT-1220)	6	2.0 x 2.0	✓						17
WCSP9	9	1.5 x 1.5				✓			17
DFN10	10	2.5 x 1.0		✓					17
WCSP16C	16	1.9 x 1.9				✓			17

### Note

Linear ICs : Load Switch ICs , Power Multiplexer ICs , Operational Amplifier ICs , Comparator ICs , Magnetic Sensors

## Dimensional Outline

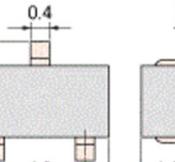
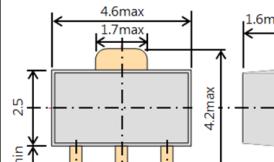
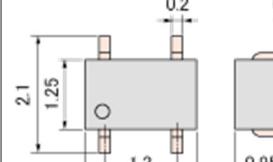
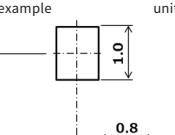
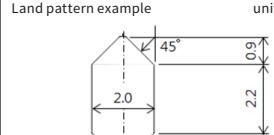
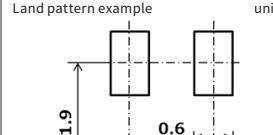
### Surface Mount Type (Lead Type)

FSC (SOD-923) (1.0x0.6)		SOD-923 (1.0x0.6)			ESC (SOD-523) (1.6x0.8)			
Package dimension	unit : mm	Package dimension	unit : mm	Package dimension	unit : mm			
Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm			
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
2	0.6 mg	10,000 p/reel	2	0.55 mg	10,000 p/reel	2	1.4 mg	8,000 p/reel
Reel dimension		Reel dimension		Tape width		Reel dimension		Tape width
Diameter	Width	Diameter	Width	Diameter	Width	Diameter	Width	Tape width
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

USC (SOD-323) (2.5x1.25)			US2H (SOD-323HE) (2.5x1.4)			S-FLAT™ (1.6x3.5)		
Package dimension	unit : mm	Package dimension	unit : mm	Package dimension	unit : mm	Package dimension	unit : mm	
Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm			
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
2	4.5 mg	3,000 p/reel	2	5.4 mg	3,000 p/reel	2	13 mg	3,000 p/reel
Reel dimension		Reel dimension		Tape width		Reel dimension		Tape width
Diameter	Width	Diameter	Width	Diameter	Width	Diameter	Width	Tape width
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

VESM (SOT-723) (1.2x1.2)			SSM (SOT-416) (1.6x1.6)			UFM (SOT-323F) (2.0x2.1)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
	0.32 0.13 0.8 0.13 1.2 0.8 0.22 0.5	0.13		0.2 0.15 0.8 0.15 1.6 0.8 1.0 1.6 0.7	0.15		0.3 0.166 2.1 0.3 1.7 1.3 2.0 0.7	0.166
Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example
	0.5 0.45 1.15 0.8 0.45 0.4	1.4 1.0 0.6 0.6		1.9 1.3 0.5 1.3	0.8		1.9 1.3 0.5	0.8
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
3	1.5 mg	8,000 p/reel	3	2.4 mg	3,000 p/reel	3	6.6 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

USM (SOT-323) (2.0x2.1)			SOT23 (SOT-23) (2.9x2.4)			SOT-23F (2.9x2.4)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
	0.3 2.1 1.25 1.3 2.0	0.15 0.90		0.4 2.4 1.3 1.9 2.9 0.9	0.15		0.42 1.3 2.4 0.95 0.95 2.9 0.8	0.17
Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example
	1.9 1.3 0.5		0.6 0.7 0.95 0.95 2.0		2.1 0.9 0.95 0.95		0.9 0.8	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
3	6 mg	3,000 p/reel	3	9 mg	3,000 p/reel	3	11 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

S-Mini (SOT-346) (2.9x2.5)		PW-Mini (4.6x4.2)		USQ (SOT-343) (2.0x2.1)							
Package dimension		unit : mm		Package dimension		unit : mm		Package dimension		unit : mm	
											
2.5	1.9	0.4	0.16	4.6max 1.7max	1.6max	2.1	1.3	0.2	0.15	1.25	0.95
2.9		1.1		0.8min	4.2max	2.0					
Land pattern example		unit : mm		Land pattern example		unit : mm		Land pattern example		unit : mm	
											
2.4	1.0	0.8		2.0	0.9	2.2	0.9	1.9	0.6	1.0	
0.95	0.95			1.0	1.0	1.5	0.9	1.3			
Pin count	Weight	MOQ		Pin count	Weight	MOQ		Pin count	Weight	MOQ	
3	12 mg	3,000 p/reel		3	50 mg	1,000 p/reel		4	6 mg	3,000 p/reel	
Reel dimension		Tape width		Reel dimension		Tape width		Reel dimension		Tape width	
Diameter	Width			Diameter	Width			Diameter	Width		
180 mmΦ	9 mm	8 mm		180 mmΦ	13 mm	12 mm		180 mmΦ	9 mm	8 mm	

SMQ (SOT-24) (2.9x2.9)			PW-X (6.1x6.3)			ESV (SOT-553) (1.6x1.6)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
0.55	1.5	2.9	4.7	6.1	6.3	1.6	1.2	1.6
0.6	0.4	0.16	0.5	0.4	0.2	0.12	0.12	0.55
Land pattern example			Land pattern example			Land pattern example		
		unit : mm			unit : mm			unit : mm
2.4	1.45	0.9	6.7	3.9	0.9	1.35	0.5	0.45
0.1	1.9	1.35	1.15	1.9	1.1	0.9	0.5	0.3
0.9			1.1		1.1	0.9		
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	13 mg	3,000 p/reel	4	80 mg	1,000 p/reel	5	3 mg	- *
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	13 mm	12 mm	180 mmΦ	9 mm	8 mm

\* TPL3 8,000p/reel, TE85L 4,000p/reel

UFV (SOT-353F) (2.0x2.1)			USV (SOT-353) (2.0x2.1)			SMV (SOT-25) (2.9x2.8)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
5	7 mg	3,000 p/reel	5	6 mg	3,000 p/reel	5	14 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

ES6 (SOT-563) (1.6x1.6)			UF6 (SOT-363F) (2.0x2.1)			US6 (SOT-363) (2.0x2.1)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
6	3 mg	-*	6	7 mg	3,000 p/reel	6	6.8 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

\* TPL3 8,000p/reel, TE85L 4,000p/reel

SM6 (SOT-26) (2.9x2.8)			TSOP6F (SOT-26F) (2.9x2.8)			US8 (SOT-765) (2.0x3.1)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example	unit : mm		Land pattern example	unit : mm		Land pattern example	unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
6	15 mg	3,000 p/reel	6	16 mg	3,000 p/reel	8	8.8 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

SM8 (SOT-505) (2.9x4.0)		
Package dimension		unit : mm
Land pattern example	unit : mm	
Pin count	Weight	MOQ
8	21 mg	3,000 p/reel
Reel dimension		Tape width
Diameter	Width	
180 mmΦ	13 mm	12 mm

## Surface Mount Type (Leadless Type)

SL2 (SOD-962) (0.62x0.32)			CL2E (1.0x0.6)			CST2 (SOD-882) (1.0x0.6)		
Package dimension 			Package dimension 			Package dimension 		
Land pattern example 			Land pattern example 			Land pattern example 		
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
2	0.2 mg	10,000 p/reel	2	0.39 mg	10,000 p/reel	2	0.7 mg	10,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

CST2B (1.2x0.8)			CST2C (SOD-963) (1.6x0.8)			CST3C (0.8x0.6)		
Package dimension 			Package dimension 			Package dimension 		
Land pattern example 			Land pattern example 			Land pattern example 		
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
2	0.7 mg	10,000 p/reel	2	1.5 mg	10,000 p/reel	3	0.63 mg	10,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

CST3 (SOT-883) (1.0x0.6)			CST3B (1.2x0.8)			WCSP4E (0.645x0.645)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example	unit : mm		Land pattern example	unit : mm		Land pattern example	unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
3	0.75 mg	10,000 p/reel	3	1.5 mg	10,000 p/reel	4	0.34 mg	5,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm
WCSP4F (0.645x0.645)			WCSP4 (0.79x0.79)			WCSP4D (0.79x0.79)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example	unit : mm		Land pattern example	unit : mm		Land pattern example	unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	0.26 mg	5,000 p/reel	4	0.7 mg	3,000 p/reel	4	0.79 mg	5,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

SDFN4 (0.8x0.8)			WCSP4C (0.9x0.9)			DFN4 (1.0x1.0)		
Package dimension			Package dimension			Package dimension		
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	0.6 mg	10,000 p/reel	4	0.9 mg	3,000 p/reel	4	1.3 mg	10,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

DFN4A (1.2x1.2)			DFN5B (1.2x1.2)			DFN5 (1.3x0.8)		
Package dimension			Package dimension			Package dimension		
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	1.45 mg	5,000 p/reel	5	1.4 mg	5,000 p/reel	5	1 mg	5,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

WCSP6E (1.2x0.8)			WCSP6F (1.2x0.8)			DFN6 (1.25x1.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
6	1 mg	5,000 p/reel	6	0.61 mg	5,000 p/reel	6	0.7 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

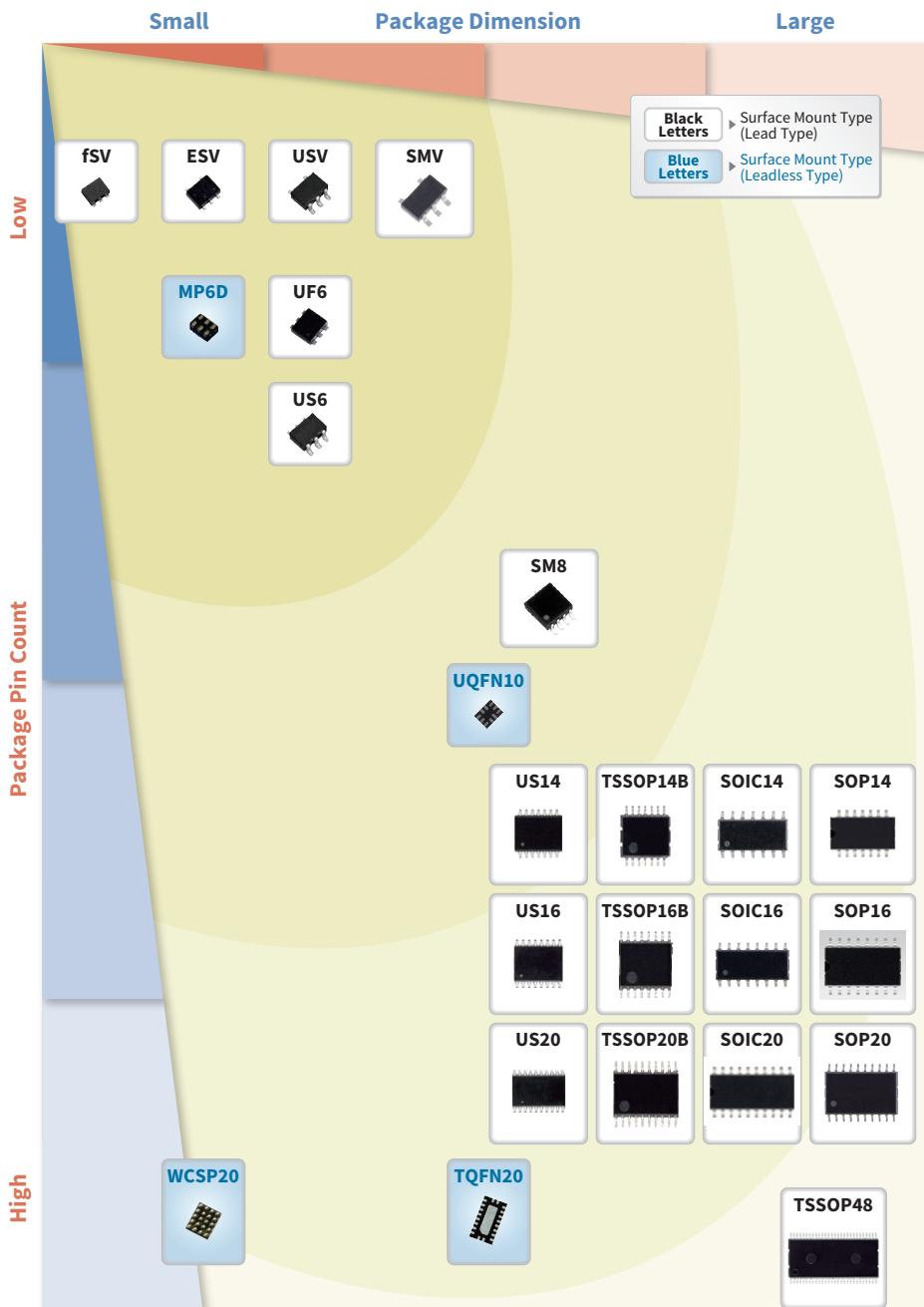
MP6C (1.45x1.0)			WCSP6C (1.5x1.0)			UDFN6 (SOT-1118) (2.0x2.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
6	2.4 mg	5,000 p/reel	6	1.4 mg	3,000 p/reel	6	8.5 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

UDFN6B (SOT-1220) (2.0x2.0)			WCSP9 (1.5x1.5)			DFN10 (2.5x1.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example	unit : mm	Land pattern example
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
6	8.5 mg	3,000 p/reel	9	3.5 mg	5,000 p/reel	10	3.2 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

WCSP16C (1.9x1.9)		
Package dimension		unit : mm
Land pattern example	unit : mm	
Pin count	Weight	MOQ
16	3.9 mg	5,000 p/reel
Reel dimension		Tape width
Diameter	Width	
180 mmΦ	9 mm	8 mm

## 2. Logic ICs

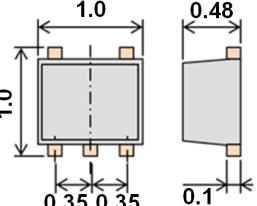
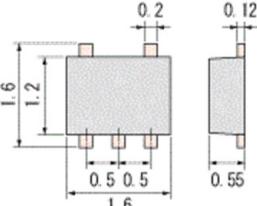
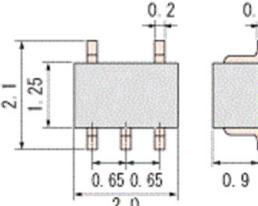
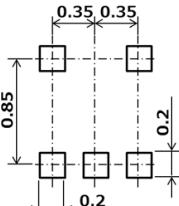
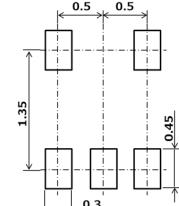
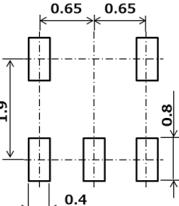
### ■ Package Lineups



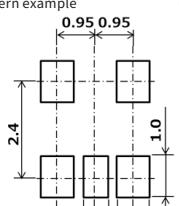
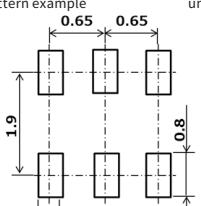
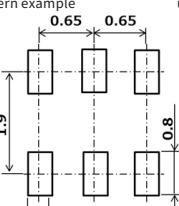
Package		Pin Count	Dimension W x L (mm)	Products				Page
				One-Gate Logic	CMOS Logic ICs	BusSwitches	Dual-Supply Bidirectional Level Shifters	
Surface Mount Type (Lead Type)	fSV (SOT-953)	5	1.0 x 1.0	✓				20
	ESV (SOT-553)	5	1.6 x 1.6	✓				20
	USV (SOT-353)	5	2.0 x 2.1	✓		✓		20
	SMV (SOT-25)	5	2.9 x 2.8	✓				20
	UF6 (SOT-363F)	6	2.0 x 2.1			✓	✓	20
	US6 (SOT-363)	6	2.0 x 2.1	✓		✓		20
	US8 (SOT-765)	8	2.0 x 3.1	✓		✓		21
	SM8 (SOT-505)	8	2.9 x 4.0	✓				21
	US14	14	4.0 x 4.0		✓	✓		21
	TSSOP14B	14	5.0 x 6.4		✓			21
	SOIC14	14	8.65 x 6.0		✓			21
	SOP14	14	10.3 x 7.8		✓			21
	US16	16	4.0 x 4.0		✓	✓		22
	TSSOP16B	16	5.0 x 6.4		✓			22
	SOIC16	16	9.9 x 6.0		✓			22
	SOP16	16	10.3 x 7.8		✓			22
	US20	20	5.0 x 4.0		✓	✓		22
	TSSOP20B	20	6.5 x 6.4		✓			22
	SOP20	20	12.8 x 7.8		✓			23
	SOIC20	20	12.8 x 10.3		✓			23
	TSSOP48	48	12.5 x 8.1		✓			23
Surface Mount Type (Leadless Type)	MP6D	6	1.45 x 1.0			✓		24
	UQFN10	10	1.8 X 1.4			✓		24
	TQFN20	20	4.5 x 2.5			✓		24
	WCSP20	20	1.6 x 2.0			✓		24

## ■ Dimensional Outline

### Surface Mount Type (Lead Type)

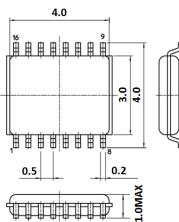
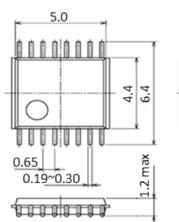
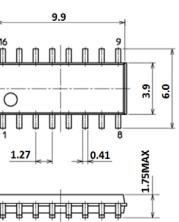
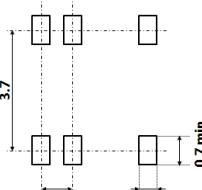
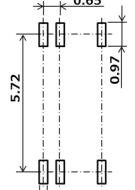
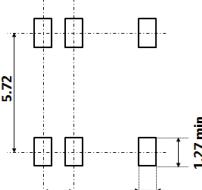
FSV (SOT-953) (1.0x1.0)	ESV (SOT-553) (1.6x1.6)	USV (SOT-353) (2.0x2.1)						
Package dimension 	Package dimension 	Package dimension 						
Land pattern example	Land pattern example	Land pattern example						
								
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
5	1 mg	10,000 p/reel	5	3 mg	- *	5	6 mg	3,000 p/reel
Reel dimension	Tape width		Reel dimension	Tape width		Reel dimension	Tape width	
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

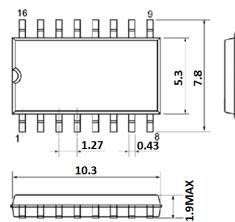
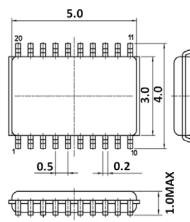
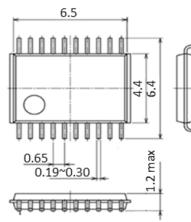
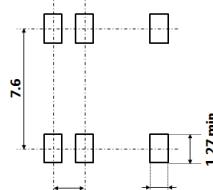
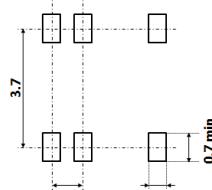
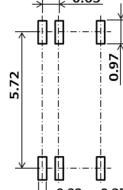
\* TPL3 8,000p/reel, TE85L 4,000p/reel

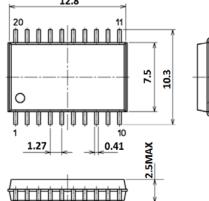
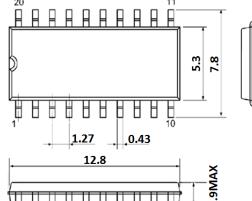
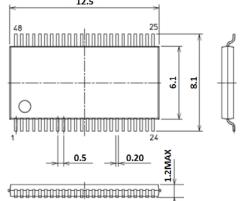
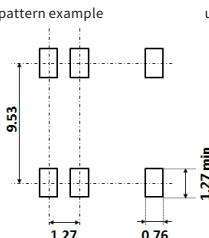
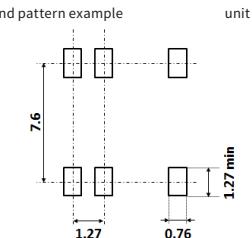
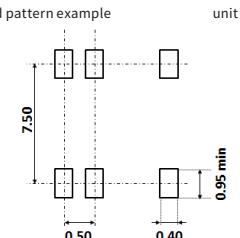
SMV (SOT-25) (2.9x2.8)			UF6 (SOT-363F) (2.0x2.1)			US6 (SOT-363) (2.0x2.1)		
Land pattern example	unit:mm	Land pattern example	unit:mm	Land pattern example	unit:mm	Land pattern example	unit:mm	Land pattern example
								
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
5	14 mg	3,000 p/reel	6	7 mg	3,000 p/reel	6	6.8 mg	3,000 p/reel
Reel dimension	Tape width		Reel dimension	Tape width		Reel dimension	Tape width	
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

US8 (SOT-765) (2.0x3.1)			SM8 (SOT-505) (2.9x4.0)			US14 (4.0x4.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
	0.2	0.12		0.2	0.65		4.0	1.0MAX
Land pattern example	0.5 0.5 0.5	unit : mm	Land pattern example	0.65 0.65 0.65	unit : mm	Land pattern example	0.5	0.7 min
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
8	8.8 mg	3,000 p/reel	8	21 mg	3,000 p/reel	14	20 mg	2,500 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	13 mm	12 mm	254 mmΦ	13 mm	12 mm

TSSOP14B (5.0x6.4)			SOIC14 (8.65x6.0)			SOP14 (10.3x7.8)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
	5.0	6.4		8.65	6.0		10.3	1.39MAX
Land pattern example	0.65	unit : mm	Land pattern example	0.72	unit : mm	Land pattern example	0.76	unit : mm
	0.23 ~ 0.35			1.27	0.76		1.27	0.76
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
14	54 mg	2,500 p/reel	14	130 mg	2,500 p/reel	14	180 mg	2,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	12.4 mm	12 mm	330 mmΦ	17.4 mm	16 mm	330 mmΦ	17.5 mm	16 mm

US16 (4.0x4.0)			TSSOP16B (5.0x6.4)			SOIC16 (9.9x6.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
								
Land pattern example	unit : mm		Land pattern example	unit : mm		Land pattern example	unit : mm	
								
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
16	20 mg	2,500 p/reel	16	55 mg	2,500 p/reel	16	150 mg	2,500 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
254 mmΦ	12 mm	12 mm	330 mmΦ	12.4 mm	12 mm	330 mmΦ	17.4 mm	16 mm

SOP16 (10.3x7.8)			US20 (5.0x4.0)			TSSOP20B (6.5x6.4)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
								
Land pattern example	unit : mm		Land pattern example	unit : mm		Land pattern example	unit : mm	
								
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
16	180 mg	2,000 p/reel	20	30 mg	2,500 p/reel	20	71 mg	2,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	17.5 mm	16 mm	254 mmΦ	13 mm	12 mm	330 mmΦ	17.5 mm	16 mm

SOIC20 (12.8x10.3)	SOP20 (12.8x7.8)	TSSOP48 (12.5x8.1)
Package dimension  unit : mm	Package dimension  unit : mm	Package dimension  unit : mm
Land pattern example  unit : mm	Land pattern example  unit : mm	Land pattern example  unit : mm
Pin count    Weight    MOQ 20    510 mg    2,000 p/reel	Pin count    Weight    MOQ 20    220 mg    2,000 p/reel	Pin count    Weight    MOQ 48    250 mg    1,000 p/reel
<b>Reel dimension</b> Diameter    Width		<b>Reel dimension</b> Diameter    Width
330 mmΦ    25.4 mm	330 mmΦ    25.5 mm	330 mmΦ    25.5 mm
Tape width		Tape width
24 mm	24 mm	24 mm

## Surface Mount Type (Leadless Type)

MP6D (1.45x1.0)			UQFN10 (1.8x1.4)			TQFN20 (4.5x2.5)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example	unit : mm		Land pattern example	unit : mm		Land pattern example	unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
6	2.4 mg	10,000 p/reel	10	3.5 mg	3,000 p/reel	20	17 mg	- *
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	179 mmΦ	8.4 mm	8 mm	179 mmΦ	13 mm	12 mm

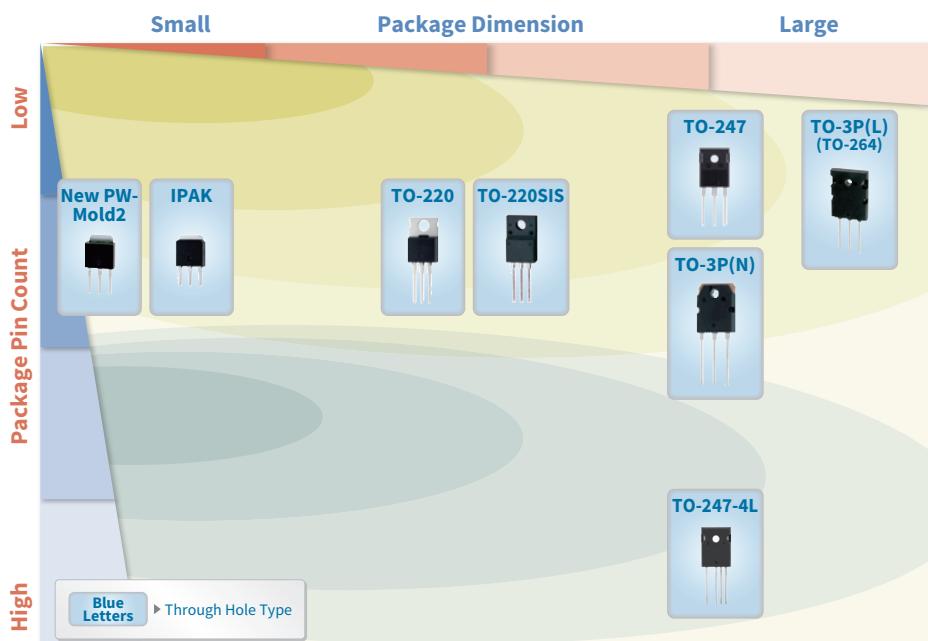
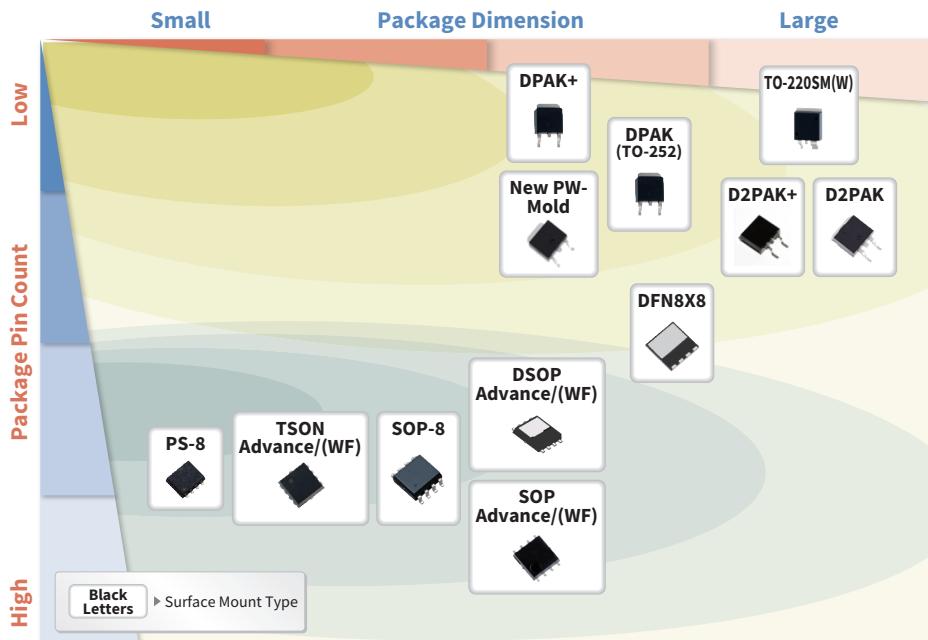
\* 3,000 or 5,000pcs/reel

WCSP20 (1.6x2.0)		
Package dimension		unit : mm
Land pattern example	unit : mm	
Pin count	Weight	MOQ
20	5 mg	3,000 p/reel
Reel dimension		Tape width
Diameter	Width	
180 mmΦ	9 mm	8 mm



### 3. Power MOSFETs

#### ■ Package Lineups



Package		Pin Count	Dimension W x L (mm)	Page
Surface Mount Type	DPAK+	3	6.5 x 9.5	28
	New PW-Mold	3	6.5 x 9.5	28
	DPAK	3	6.6 x 10.0	28
	TO-220SM(W)	3	10.0 x 13.0	28
	D2PAK+	3	10.0 x 15.0	28
	D2PAK	3	10.35 x 15.3	29
	DFN8x8	5	8.0 x 8.0	29
	PS-8	8	2.9 x 2.8	29
	TSon Advance	8	3.1 x 3.3	29
	SOP-8	8	4.9 x 6.0	29
	DSOP Advance	8	5.0 x 6.0	30
	SOP Advance	8	5.0 x 6.0	30
Wettable Flank Lead	TSon Advance (WF)	8	3.1 x 3.6	31
	DSOP Advance (WF)L	8	5.0 x 6.0	31
	DSOP Advance (WF)M	8	5.0 x 6.0	31
	SOP Advance (WF)	8	5.0 x 6.0	31
Through Hole Type	New PW-Mold2	3	6.5 x 5.5	32
	IPAK	3	6.65 x 6.1	32
	TO-220	3	10.16 x 8.59	32
	TO-220SIS	3	10.0 x 15.0	32
	TO-3P(N)	3	15.5 x 20.0	32
	TO-247	3	15.94 x 20.95	32
	TO-3P(L)	3	20.0 x 26.0	33
	TO-247-4L	4	15.94 x 20.95	33

## ■ Dimensional Outline

### Surface Mount Type

DPAK+ (6.5x9.5)			New PW-Mold (6.5x9.5)			DPAK 2-7K1S (TO-252) (6.6x10.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
	6.5 5.2 1.5 5.5 9.5 0.6 2.3 2.3 0.8Max			6.5 5.2 1.5 5.5 9.5 0.6 0.8 2.3 2.3 0.5			6.6 5.34 1.08 6.1 10.0 2.29 0.76 1.52 0.51 4.4 5.21	
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
	6.0 1.6 2.3 2.3 3.0 2.0			6.0 1.6 2.3 2.3 3.0 2.0			6.0 1.6 2.3 2.3 3.0 1.6	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
3	360 mg	2,000 p/reel	3	360 mg	2,000 p/reel	3	360 mg	2,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	17.5 mm	16 mm	330 mmΦ	17.5 mm	16 mm	332 mmΦ	16.4 mm	16 mm

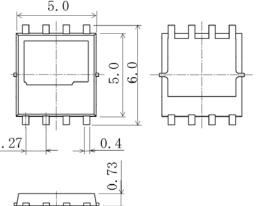
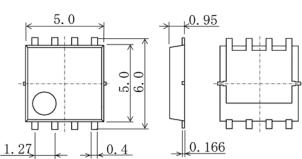
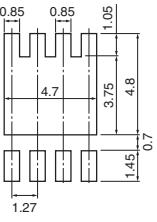
DPAK 2-7N1S (TO-252)			TO-220SM(W) (10.0x13.0)			D2PAK+ (10.0x15.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
	6.54 5.2 1.08 6.1 10.14 2.29 0.76 1.64			10.0 9.5 5.0 1.0 10.0 3.5 0.4 1.6 3.0 0.4 0.94 5.85			10.0 9.5 5.0 1.0 10.0 3.5 0.4 1.4 0.76 2.35 2.54 0.4 1.6 2.54	
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
	6.0 1.6 2.3 2.3 3.0 1.6			10.3 2.0 1.4 2.34 3.0 2.0 1.4 2.34			10.8 9.5 16.2 4.0 1.6 2.54	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
3	389 mg	2,500 p/reel	3	1070 mg	1,000 p/reel	3	992 mg mg	1,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width	<th>Diameter</th> <th>Width</th> <td><th>Diameter</th><th>Width</th><td></td></td>	Diameter	Width	<th>Diameter</th> <th>Width</th> <td></td>	Diameter	Width	
330 mmΦ	17.2 mm	16 mm	330 mmΦ	25.5 mm	24 mm	330 mmΦ	25.5 mm	24 mm

D2PAK (10.35x15.3)			DFN8X8 (8.0x8.0)			PS-8 (2.9x2.8)		
Package dimension			Package dimension			Package dimension		
	unit : mm			unit : mm			unit : mm	
	unit : mm			unit : mm			unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
3	1590 mg	1,000 p/reel	5	175 mg	2,500 p/reel	8	17 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	25.5 mm	24 mm	332 mmΦ	17.2 mm	16.2 mm	180 mmΦ	9 mm	8 mm

TSON Advance (3.1x3.3)			SOP-8 2-5R1S (4.9x6.0)			SOP-8 2-6J1S		
Package dimension			Package dimension			Package dimension		
	unit : mm			unit : mm			unit : mm	
	unit : mm			unit : mm			unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
8	20 mg	-*	8	85 mg	2,500 p/reel	8	85 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	13.5 mm	12 mm	330 mmΦ	13.5 mm	12 mm	330 mmΦ	13.5 mm	12 mm

\* 3,000 or 5,000pcs/reel

## Surface Mount Type

DSOP Advance (5.0x6.0)		SOP Advance (5.0x6.0)			
Package dimension	unit : mm	Package dimension	unit : mm		
					
Land pattern example	unit : mm	Land pattern example	unit : mm		
 Pad widths: 0.85mm, 0.85mm, 1.05mm, 1.05mm, 0.85mm, 0.85mm, 1.05mm, 1.05mm Pad pitch: 4.7mm Body width: 4.8mm Body height: 0.7mm Lead width: 1.45mm Lead pitch: 1.27mm					
Pin count	Weight	MOQ	Pin count	Weight	MOQ
8	98 mg	5,000 p/reel	8	69 mg	- *
Reel dimension		Reel dimension		Tape width	
Diameter	Width	Tape width	Diameter	Width	Tape width
330 mmΦ	13.5 mm	12 mm	330 mmΦ	13.5 mm	12 mm

\* 3,000 or 5,000pcs/reel

## Surface Mount Type (Wettable Flank Lead Terminal)

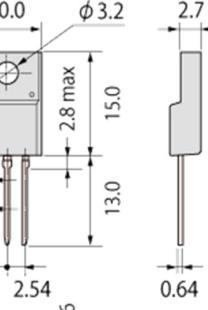
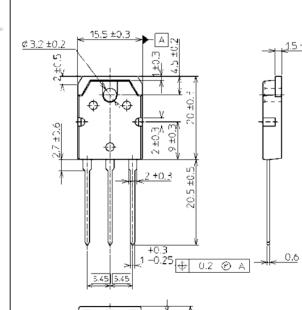
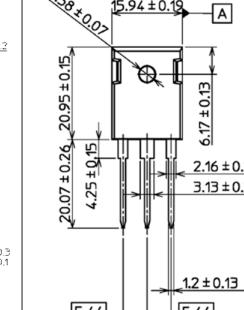
TSOP Advance (WF) (3.1x3.6)			DSOP Advance (WF)L (5.0x6.0)			DSOP Advance (WF)M (5.0x6.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example 	unit : mm		Land pattern example 	unit : mm		Land pattern example 	unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
8	20 mg	- *	8	98 mg	5,000 p/reel	8	98 mg	5,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	13.5 mm	12 mm	330 mmΦ	13.5 mm	12 mm	330 mmΦ	13.5 mm	12 mm

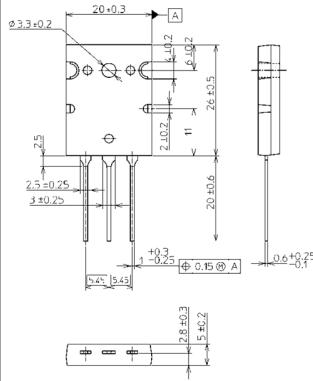
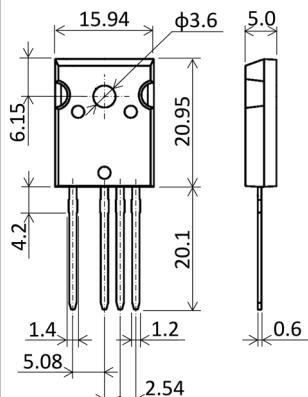
\* 3,000 or 5,000pcs/reel

SOP Advance (WF) (5.0x6.0)		
Package dimension		unit : mm
Land pattern example 	unit : mm	
Pin count	Weight	MOQ
8	69 mg	- *
Reel dimension		Tape width
Diameter	Width	
330 mmΦ	13.5 mm	12 mm

\* 3,000 or 5,000pcs/reel

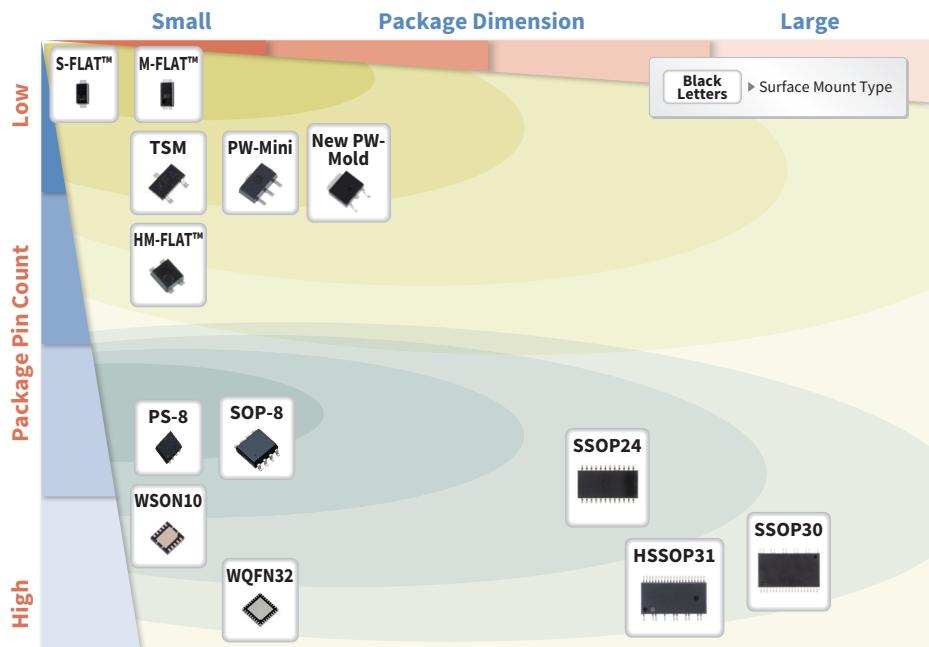
## Through Hole Type

TO-220SIS (SC-67) (10.0x15.0)		TO-3P(N) (SC-65) (15.5x20.0)		TO-247 (15.94x20.95)	
Package dimension	unit : mm	Package dimension	unit : mm	Package dimension	unit : mm
					
Pin count	Weight	Q'ty	Pin count	Weight	Q'ty
3	1700 mg	50 p/tube	3	4600 mg	25 p/tube
Tube dimension		Tube dimension		Tube dimension	
32.4 x 7.11 x 528.5 mm		45 x 7.6 x 433 mm		46 x 7.7 x 533.5 mm	
30 tube		40 tube		8 tube	

TO-3P(L) (20.0x26.0)	TO-247-4L (15.94x20.95)				
Package dimension	unit : mm				
					
Pin count	Weight	Q'ty	Pin count	Weight	Q'ty
3	9750 mg	100 p/tray	4	6360 mg	30 p/tube
Tray dimension	Tray Q'ty / Carton	Tube dimension	Tube Q'ty / Carton		
184 x 24 x 290 mm	5 tray	45.5 x 7.6 x 533 mm	15 tube		

## 4. Power Discrete Devices

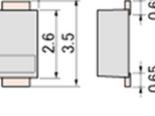
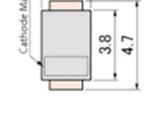
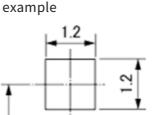
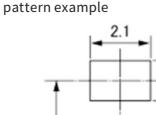
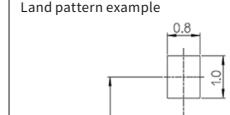
### ■ Package Lineups



Package	Pin Count	Dimension W x L (mm)	Products				Page
			IPDs (Intelligent Power Devices)	Diodes	IGBTs	Bipolar Transistors	
Surface Mount Type	S-FLAT	2	1.6 x 3.5	✓			36
	M-FLAT	2	2.4 x 4.7	✓			36
	TSM	3	2.9 x 2.8			✓	36
	PW-Mini	3	4.6 x 4.2			✓	36
	New PW-Mold	3	6.5 x 9.5			✓	36
	HM-FLAT	4	2.4 x 3.35	✓			36
	PS-8	8	2.9 x 2.8	✓			37
	SOP-8	8	4.9 x 6.0	✓			37
	WSON10	10	3.0 x 3.0	✓			37
	SSOP24	24	13.0 x 8.0	✓			37
	SSOP30	30	20.0 x 14.2	✓			37
	HSSOP31	31	17.5 x 11.93	✓			37
	WQFN32	32	5.0 x 5.0	✓			38
Through Hole Type	TO-220-2L	2	10.03 x 15.11	✓			38
	TO-220F-2L	2	10.0 x 15.0	✓			38
	New PW-Mold2	3	6.5 x 5.5			✓	38
	TO-126N	3	8.0 x 11.0			✓	39
	TO-220SIS	3	10.0 x 15.0		✓	✓	39
	TO-3P(N)	3	15.5 x 20.0	✓	✓	✓	39
	TO-247	3	15.94 x 20.95	✓			39
	TO-3P(L)	3	20.0 x 26.0			✓	39
	DIP26	26	32.0 x 16.6	✓			39

## ■ Dimensional Outline

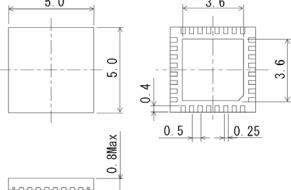
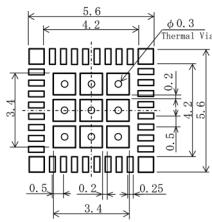
## Surface Mount Type

S-FLAT™ (1.6x3.5)			M-FLAT™ (2.4x4.7)			TSM (2.9x2.8)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
								
Land pattern example	unit : mm		Land pattern example	unit : mm		Land pattern example	unit : mm	
								
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
2	13 mg	3,000 p/reel	2	23 mg	3,000 p/reel	3	10 mg	3,000 p/reel
Reel dimension		Reel dimension			Reel dimension			
Diameter	Width	Tape width	Diameter	Width	Tape width	Diameter	Width	Tape width
180 mmΦ	9 mm	8 mm	180 mmΦ	13 mm	12 mm	180 mmΦ	9 mm	6 mm

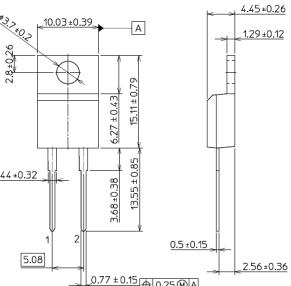
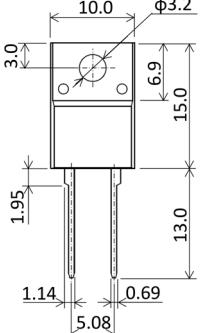
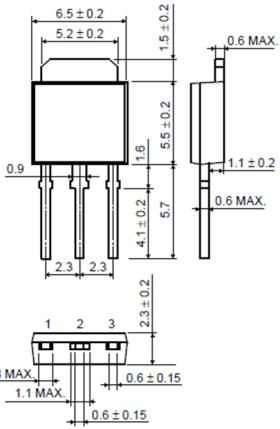
PW-Mini (4.6x4.2)			New PW-Mold (6.5x9.5)			HM-FLAT™ (2.4x3.35)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
4.6max 1.7max	1.6max		6.5 5.2 1.5 5.5 9.5 0.6 0.8 2.3 2.3	2.3 1.5 0.5 4.8 5.2	2.4 1.4 2.6 3.35 0.6 0.98			
0.8min 1.5 1.5	2.5	4.2max 0.4						
Land pattern example			Land pattern example			Land pattern example		
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
3	50 mg	1,000 p/reel	3	360 mg	2,000 p/reel	4	16 mg	3,000 p/reel
Reel dimension			Reel dimension			Reel dimension		
Diameter	Width	Tape width	Diameter	Width	Tape width	Diameter	Width	Tape width
180 mmΦ	13 mm	12 mm	330 mmΦ	17.5 mm	16 mm	180 mmΦ	9 mm	16 mm

PS-8 (2.9x2.8)			SOP-8 P-1.27A (5.0x6.0)			WSON10 (3.0x3.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
8	17 mg	3,000 p/reel	8	85 mg	3,000 p/reel	10	20 mg	1,500 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	330 mmΦ	13.5 mm	12 mm	330 mmΦ	9 mm	8 mm
SSOP24 (13.0x8.0)			SSOP30 (20.0x14.2)			HSSOP31 (17.5x11.93)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
24	290 mg	2,000 p/reel	30	1,200 mg		31	700 mg	1,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	25.5 mm	24 mm						

## Surface Mount Type

WQFN32 (5.0x5.0)	
Package dimension	unit : mm
	
Land pattern example	
	unit : mm
Pin count	Weight
32	60 mg
Reel dimension	Tape width
Diameter	Width

## Through Hole Type

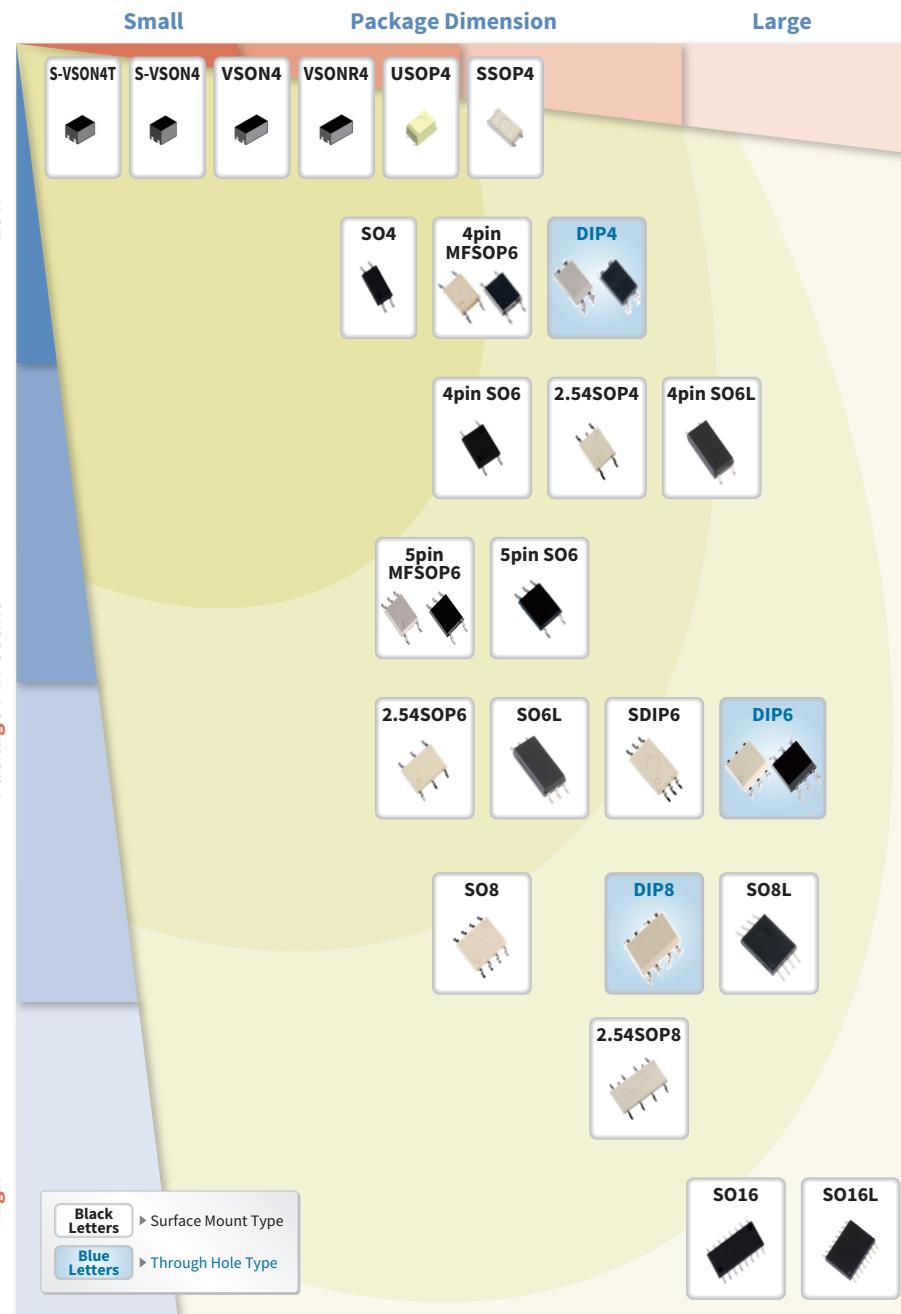
TO-220-2L (10.03x15.11)		TO-220F-2L (10.0x15.0)		New PW-Mold2 (6.5x5.5)	
Package dimension	unit : mm	Package dimension	unit : mm	Package dimension	unit : mm
					
Pin count	Weight	Pin count	Weight	Pin count	Weight
2	1,900 mg	2	1,900 mg	3	360 mg
Tube dimension	Tube Q'ty / Carton	Tube dimension	Tube Q'ty / Carton	Carton Dimension	Bag Q'ty / Carton
32.8/33.0 x 7.0 x 533/534.5 mm	20 tube	33.0 x 7.0 x 532.5 mm	20 tube	178 x 80 x 90 mm	15 bag

TO-126N (8.0x11.0)			TO-220SIS (SC-67) (10.0x15.0)			TO-3P(N) (SC-65) (15.5x20.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Pin count	Weight	Q'ty	Pin count	Weight	Q'ty	Pin count	Weight	Q'ty
3	840 mg	250 p/bag	3	1,700 mg	50 p/tube	3	4,600 mg	25 p/tube
Carton dimension	Tube Q'ty / Carton	Tube dimension	Tube Q'ty / Carton	Tube dimension	Tube dimension	Tube Q'ty / Carton	Tube dimension	Tube Q'ty / Carton
245 x 175 x 100 mm	8 bag	32.4 x 7.11 x 528.5 mm	30 tube	45 x 7.6 x 433 mm	40 tube			

TO-247 (15.94x20.95)			TO-3P(L) (20.5x26.0)			DIP26 (32.0x16.6)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Pin count	Weight	Q'ty	Pin count	Weight	Q'ty	Pin count	Weight	Q'ty
3	6,150 mg	30 p/tube	3	9,750 mg	100 p/tray	26	3,800 mg	20 p/tube
Tube dimension	Tube Q'ty / Carton	Tray dimension	Tray Q'ty / Carton	Tray dimension	Tube dimension	Tube Q'ty / Carton	Tube dimension	Tube Q'ty / Carton
46 x 7.7 x 533.5 mm	8 tube	184 x 24 x 290 mm	5 tray	22 x 11 x 665 mm	25 tube			

## 5. Photocouplers , Photorelays

### ■ Package Lineups



Package		Pin Count	Dimension W x L (mm)	Products					Page
				Photocouplers				Photorelays	
				IC Output	Transistor Output	Triac Output	Photovoltaic Output	Thyristor Output	
Surface Mount Type	S-VSON4T	4	1.45 x 2.0						✓ 42
	S-VSON4	4	1.45 x 2.0						✓ 42
	VSON4	4	1.45 x 2.45						✓ 42
	VSONR4	4	1.45 x 2.75						✓ 42
	USOP4	4	2.2 x 3.25						✓ 42
	SSOP4	4	2.04 x 4.2				✓		✓ 42
	SO4	4	2.6 x 7.0	✓					43
	4pin MFSOP6	4	3.6 x 7.0			✓	✓		43
	4pin SO6	4	3.7 x 7.0	✓	✓	✓	✓		✓ 43
	2.54 SOP4	4	3.9 x 7.0						✓ 43
	4pin SO6L	4	3.84 x 10.0	✓	✓				43
	5pin MFSOP6	5	3.6 x 7.0	✓		✓		✓	43
	5pin SO6	5	3.7 x 7.0	✓					44
	2.54 SOP6	6	6.3 x 7.0						✓ 44
	SO6L	6	3.84 x 10	✓					44
	SDIP6	6	4.58 x 9.7	✓					44
	SO8	8	5.1 x 6.0	✓					44
	SO8L	8	5.85 x 10.0	✓					44
	2.54 SOP8	8	9.4 x 7.0						✓ 45
	SO16	16	10.3 x 7.0		✓				45
	SO16L	16	10.3 x 10.0	✓					45
Through Hole Type	DIP4	4	4.58 x 7.62		✓	✓			✓ 46
	DIP4(TLP785)	4	4.6 x 7.62		✓				46
	DIP6	6	7.12 x 7.62		✓	✓	✓	✓	✓ 46
	DIP8	8	9.66 x 7.62	✓	✓	✓		✓	✓ 46

## ■ Dimensional Outline

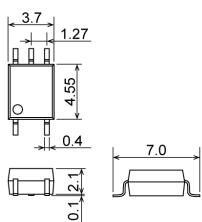
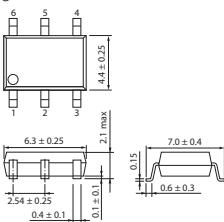
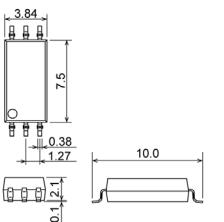
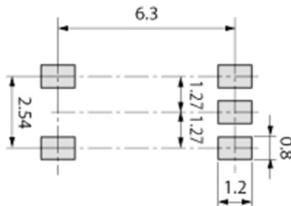
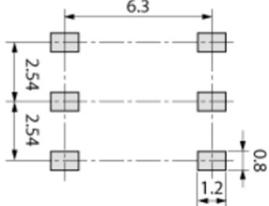
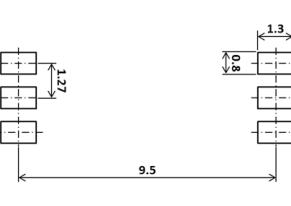
### Surface Mount Type

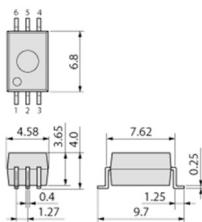
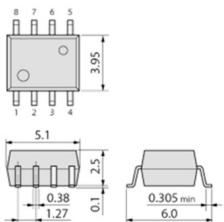
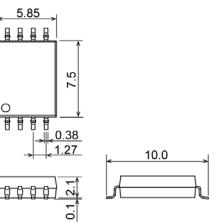
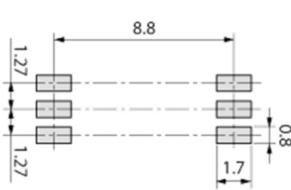
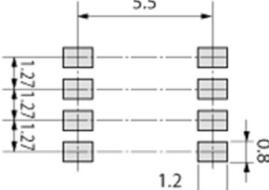
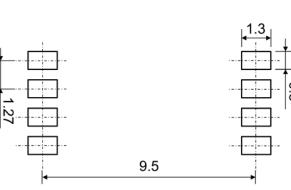
S-VSON4T (1.45x2.0)			S-VSON4 (1.45x2.0)			VSON4 (1.45x2.45)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
		unit : mm			unit : mm			unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	10 mg	2,500 p/reel	4	10 mg	2,500 p/reel	4	10 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm	180 mmΦ	9 mm	8 mm

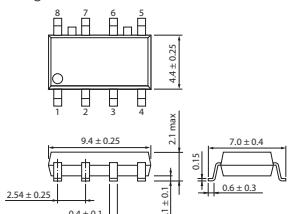
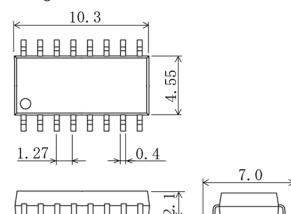
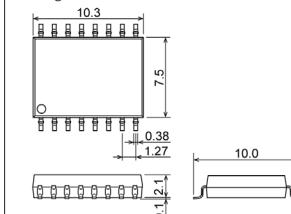
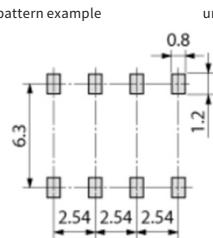
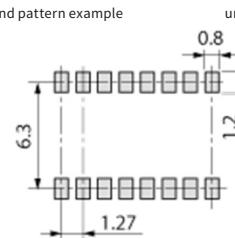
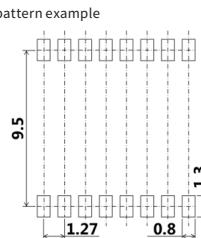
VSONR4 (1.45x2.75)			USOP4 (2.2x3.25)			SSOP4 (2.04x4.2)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
		unit : mm			unit : mm			unit : mm
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	10 mg	3,000 p/reel	4	30 mg	1,500 p/reel	4	30 mg	1,500 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
180 mmΦ	9 mm	8 mm	180 mmΦ	13 mm	12 mm	180 mmΦ	13 mm	12 mm

SO4 (2.6x7.0)			4pin MFSOP6 (3.6x7.0)			4pin SO6 (3.7x7.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
4	3	4.55	6	4	4.4	3.7	4.55	
1	2		1	3		0.4	0.4	
0.38	2.6	1.27 (0.1)	3.6	0.4	2.54 0.1	7.0	2.54 0.1	7.0
1.27		2.1 (0.1)	0.5 min	0.5 min		2.1 (0.1)	2.1 (0.1)	
0.5 min	7.0		0.5 min	7.0		7.0	7.0	
Land pattern example			Land pattern example			Land pattern example		
unit : mm			unit : mm			unit : mm		
6.3		1.27	6.3	2.54	0.8	1.2	2.54	0.8
1.2		0.8	1.2	0.8		6.3		
1.2		0.8	1.2	0.8		6.3		
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	50 mg	2,500 p/reel	4	90 mg	3,000 p/reel	4	80 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	13.5 mm	12 mm	380 mmΦ	13.5 mm	12 mm	380 mmΦ	13.5 mm	12 mm

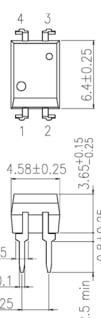
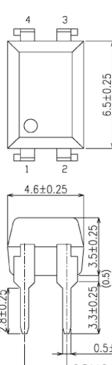
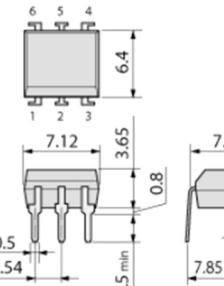
2.54SOP4 (3.9x7.0)			4pin SO6L (3.84x10.0)			5pin MFSOP6 (3.6x7.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
Land pattern example			Land pattern example			Land pattern example		
	unit : mm			unit : mm			unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
4	100 mg	2,500 p/reel	4	128 mg	3,000 p/reel	5	90 mg	3,000 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	13.5 mm	12 mm	330 mmΦ	17.4 mm	16 mm	380 mmΦ	13.5 mm	12 mm

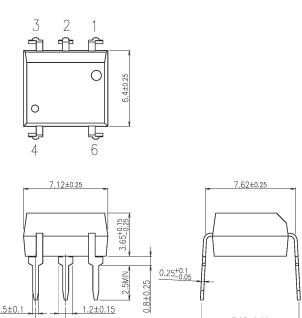
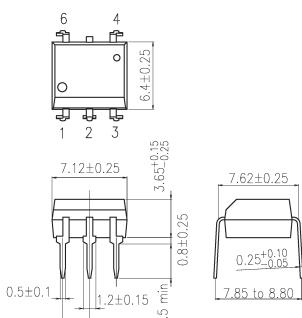
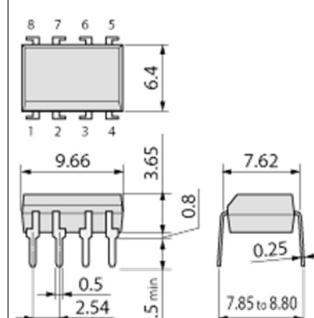
5pin SO6 (3.7x7.0)			2.54SOP6 (6.3x7.0)			SO6L (3.84x10.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
								
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
								
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
5	80 mg	3,000 p/reel	6	130 mg	2,500 p/reel	6	126 mg	1,500 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
380 mmΦ	13.5 mm	12 mm	330 mmΦ	17.5 mm	16 mm	330 mmΦ	17.4 mm	16 mm

SDIP6 (4.58x9.7)			SO8 (5.1x6.0)			SO8L (5.85x10.0)		
Package dimension		unit : mm	Package dimension		unit : mm	Package dimension		unit : mm
								
Land pattern example		unit : mm	Land pattern example		unit : mm	Land pattern example		unit : mm
								
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
6	260 mg	1,500 p/reel	8	110 mg	2,500 p/reel	8	205 mg	1,500 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
380 mmΦ	17.5 mm	16 mm	330 mmΦ	13.5 mm	12 mm	330 mmΦ	17.4 mm	16 mm

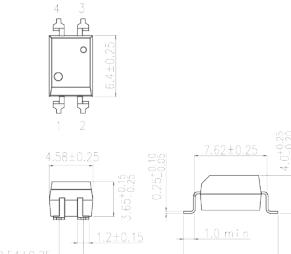
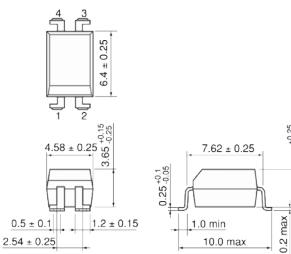
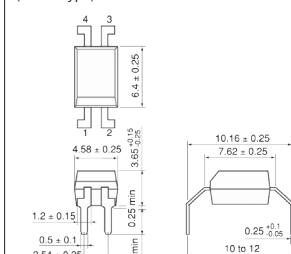
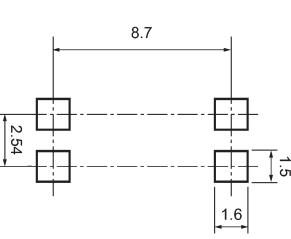
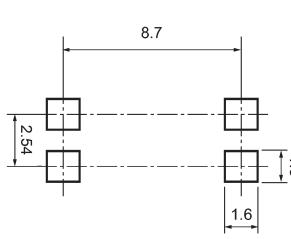
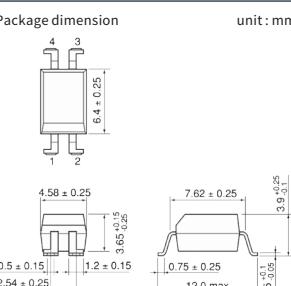
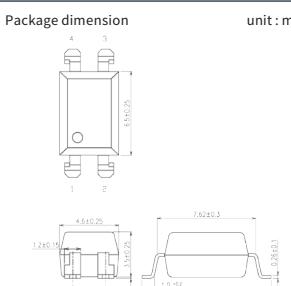
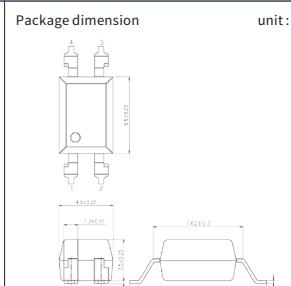
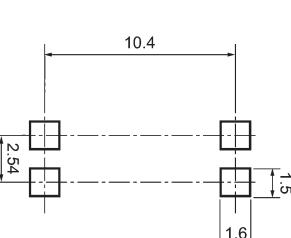
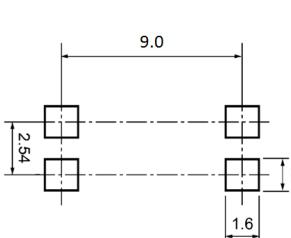
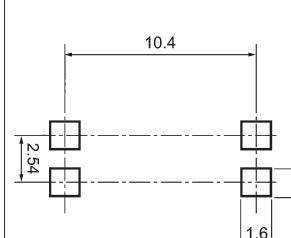
2.54SOP8 (9.4x7.0)			SO16 (10.3x7.0)			SO16L (10.3x10.0)		
Package dimension 	unit : mm		Package dimension 	unit : mm		Package dimension 	unit : mm	
Land pattern example 	unit : mm		Land pattern example 	unit : mm		Land pattern example 	unit : mm	
Pin count	Weight	MOQ	Pin count	Weight	MOQ	Pin count	Weight	MOQ
8	200 mg	2,500 p/reel	16	190 mg	2,000 p/reel	16	370 mg	1,500 p/reel
Reel dimension		Tape width	Reel dimension		Tape width	Reel dimension		Tape width
Diameter	Width		Diameter	Width		Diameter	Width	
330 mmΦ	17.5 mm	16 mm	330 mmΦ	17.5 mm	16 mm	330 mmΦ	17.4 mm	16 mm

## Through Hole Type

DIP4 (4.58x7.62)		DIP4(TLP785) (4.6x7.62)		DIP6 (7.12x7.62)	
Package dimension	unit : mm	Package dimension	unit : mm	Package dimension	unit : mm
					
Pin count	Weight	Q'ty	Pin count	Weight	Q'ty
4	260 mg	100 p/tube	4	260 mg	100 p/tube
Tube dimension	Tube Q'ty / Carton	Tube dimension		Tube Q'ty / Carton	Tube Q'ty / Carton
11.3 x 10.3 x 525 mm	4 tube	11.3 x 10.3 x 525 mm		4 tube	11.3 x 10.3 x 525 mm
20 tube		20 tube		20 tube	

5pin DIP6 (7.12x7.62)		5pin DIP6 (cut) (7.12x7.62)		DIP8 (9.66x7.62)	
Package dimension	unit : mm	Package dimension	unit : mm	Package dimension	unit : mm
					
Pin count	Weight	Q'ty	Pin count	Weight	Q'ty
5	400 mg	50 p/tube	5	400 mg	50 p/tube
Tube dimension	Tube Q'ty / Carton	Tube dimension		Tube Q'ty / Carton	Tube Q'ty / Carton
11.3 x 10.3 x 525 mm	20 tube	11.3 x 10.3 x 525 mm		20 tube	11.3 x 10.3 x 525 mm
60 tube		60 tube		60 tube	

## Lead Form Options

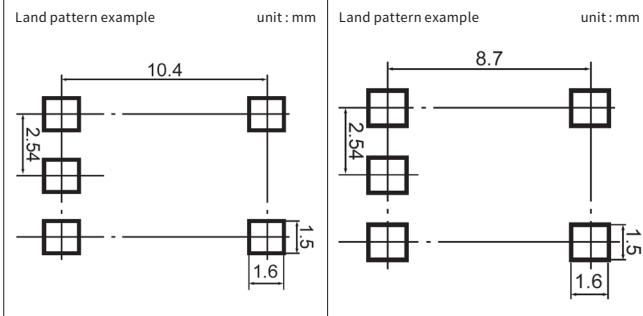
DIP4(LF1) / (TP1)	DIP4(LF5) / (TP5)	DIP4(LF2)
Package dimension 	Package dimension 	Package dimension (DIP4 FType) 
Land pattern example 	Land pattern example 	
DIP4(LF4) / (TP4)	TLP785 DIP4(LF6) / (TP6)	TLP785 DIP4(LF7) / (TP7)
Package dimension 	Package dimension 	Package dimension 
Land pattern example 	Land pattern example 	Land pattern example 

DIP6(LF1) / (TP1)	DIP6(LF5) / (TP5)	DIP6(LF2)
Package dimension	Package dimension	Package dimension (DIP6 Ftype)
<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 7.12±0.25 mm</li> <li>Length: 12.0±0.25 mm</li> <li>Pin height: 2.54±0.25 mm</li> <li>Pin width: 1.2±0.15 mm</li> <li>Pin pitch: 3.65±0.25 mm</li> <li>Pin thickness: 0.25±0.05 mm</li> <li>Pin lead length: 1.0 min., 10.0 max.</li> </ul>	<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 7.12±0.25 mm</li> <li>Length: 12.0±0.25 mm</li> <li>Pin height: 2.54±0.25 mm</li> <li>Pin width: 1.2±0.15 mm</li> <li>Pin pitch: 3.65±0.25 mm</li> <li>Pin thickness: 0.25±0.05 mm</li> <li>Pin lead length: 1.0 min., 10.0 max.</li> </ul>	<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 7.12±0.25 mm</li> <li>Length: 10.16±0.25 mm</li> <li>Pin height: 2.54±0.25 mm</li> <li>Pin width: 1.2±0.15 mm</li> <li>Pin pitch: 3.65±0.25 mm</li> <li>Pin thickness: 0.25±0.05 mm</li> <li>Pin lead length: 1.0 to 12 mm</li> </ul>

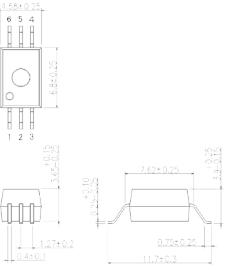
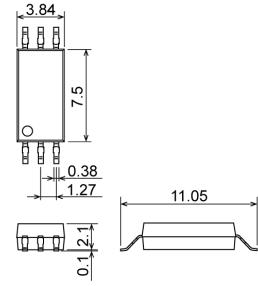
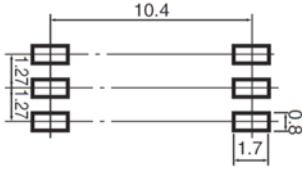
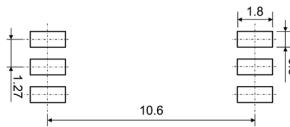
Land pattern example	Land pattern example
<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Total width: 8.7 mm</li> <li>Pad width: 2.54 mm</li> <li>Pad height: 1.5 mm</li> <li>Pad thickness: 1.6 mm</li> </ul>	<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Total width: 8.7 mm</li> <li>Pad width: 2.54 mm</li> <li>Pad height: 1.5 mm</li> <li>Pad thickness: 1.6 mm</li> </ul>

DIP6(LF4) / (TP4)	5pin DIP6 (LF1) / (TP1)	5pin DIP6 (LF5) / (TP5)
Package dimension	Package dimension	Package dimension
<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 7.12±0.25 mm</li> <li>Length: 12.0±0.25 mm</li> <li>Pin height: 2.54±0.25 mm</li> <li>Pin width: 1.2±0.15 mm</li> <li>Pin pitch: 3.65±0.25 mm</li> <li>Pin thickness: 0.25±0.05 mm</li> <li>Pin lead length: 1.0 to 12 mm</li> </ul>	<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 7.12±0.25 mm</li> <li>Length: 12.0±0.25 mm</li> <li>Pin height: 2.54±0.25 mm</li> <li>Pin width: 1.2±0.15 mm</li> <li>Pin pitch: 3.65±0.25 mm</li> <li>Pin thickness: 0.25±0.05 mm</li> <li>Pin lead length: 1.0 min., 10.0 max.</li> </ul>	<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 7.12±0.25 mm</li> <li>Length: 12.0±0.25 mm</li> <li>Pin height: 2.54±0.25 mm</li> <li>Pin width: 1.2±0.15 mm</li> <li>Pin pitch: 3.65±0.25 mm</li> <li>Pin thickness: 0.25±0.05 mm</li> <li>Pin lead length: 1.0 min., 10.0 max.</li> </ul>
<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Total width: 10.4 mm</li> <li>Pad width: 2.54 mm</li> <li>Pad height: 1.5 mm</li> <li>Pad thickness: 1.6 mm</li> </ul>	<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Total width: 8.7 mm</li> <li>Pad width: 2.54 mm</li> <li>Pad height: 1.5 mm</li> <li>Pad thickness: 1.6 mm</li> </ul>	<p>unit : mm</p> <p>Dimensions:</p> <ul style="list-style-type: none"> <li>Total width: 8.7 mm</li> <li>Pad width: 2.54 mm</li> <li>Pad height: 1.5 mm</li> <li>Pad thickness: 1.6 mm</li> </ul>

5pin DIP6 (LF2)	5pin DIP6 (LF4) / (TP4)	5pin DIP6 (cut) (LF1) / (TP1)
<p>Package dimension (5pin DIP6 Ftype)</p> <p>unit : mm</p>	<p>Package dimension</p> <p>unit : mm</p>	<p>Package dimension</p> <p>unit : mm</p>



5pin DIP6 (cut) (LF5) / (TP5)	5pin DIP6 (cut) (LF2)	5pin DIP6 (cut) (LF4) / (TP4)
<p>Package dimension</p> <p>unit : mm</p>	<p>Package dimension (5pin DIP6 (cut) Ftype)</p> <p>unit : mm</p>	<p>Package dimension</p> <p>unit : mm</p>
<p>Land pattern example</p> <p>unit : mm</p>	<p>unit : mm</p>	<p>unit : mm</p>

SDIP6	SO6L(LF4)
Package dimension (SDIP6 Ftype) 	Package dimension unit : mm 
Land pattern example unit : mm 	Land pattern example unit : mm 

DIP8(LF1) / (TP1)	DIP8(LF5) / (TP5)	DIP8(LF2)
<p>Package dimension</p> <p>unit : mm</p>	<p>Package dimension</p> <p>unit : mm</p>	<p>Package dimension (DIP8 Ftype)</p> <p>unit : mm</p>
Land pattern example	Land pattern example	
<p>unit : mm</p>	<p>unit : mm</p>	
DIP8(LF4) / (TP4)	SO8L(LF4)	
<p>Package dimension</p> <p>unit : mm</p>	<p>Package dimension</p> <p>unit : mm</p>	
Land pattern example	Land pattern example	
<p>unit : mm</p>	<p>unit : mm</p>	

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