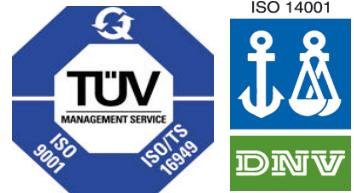


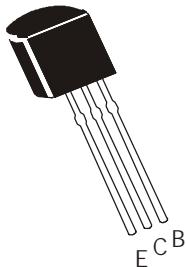


Continental Device India Limited

An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company



SILICON PLANAR EPITAXIAL TRANSISTORS



**BC635, 637, 639 NPN
BC636, 638, 640 PNP**

**TO-92
Plastic Package**

For Lead Free Parts, Device Part # will be Prefixed with "T"

High Current Transistor

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

DESCRIPTION	SYMBOL	BC635	BC637	BC639	UNIT
		BC636	BC638	BC640	
Collector Emitter Voltage	V_{CEO}	45	60	80	V
Collector Base Voltage	V_{CBO}	45	60	80	V
Emitter Base Voltage	V_{EBO}		5.0		V
Collector Current Continuous	I_C		1.0		A
Total Device Dissipation at $T_a=25^\circ\text{C}$ Derate Above 25°C	P_D		800 6.4		mW mW/ $^\circ\text{C}$
Total Device Dissipation at $T_a=25^\circ\text{C}$	$**P_D$		1.0		W
Total Device Dissipation at $T_c=25^\circ\text{C}$ Derate Above 25°C	P_D		2.75 22		W mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	T_j, T_{stg}		- 55 to +150		$^\circ\text{C}$

THERMAL RESISTANCE

Junction to Case	$R_{th(j-c)}$	45	$^\circ\text{C/W}$
Junction to Ambient in free air	$R_{th(j-a)}$	156	$^\circ\text{C/W}$
Junction to Ambient	$**R_{th(j-a)}$	125	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless specified otherwise)

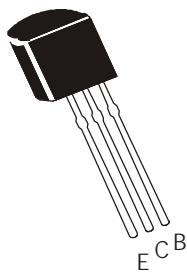
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Collector Emitter Voltage	V_{CEO}	$I_C=1\text{mA}, I_B=0$ BC635/BC636 BC637/BC638 BC639/BC640	45		V
Collector Base Voltage	V_{CBO}	$I_C=100\mu\text{A}, I_E=0$ BC635/BC636 BC637/BC638 BC639/BC640	45		V
Emitter Base Voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	5.0		V
Collector Cut Off Current	I_{CBO}	$V_{CB}=30\text{V}, I_E=0$ $V_{CB}=30\text{V}, I_E=0, T_a=125^\circ\text{C}$		0.1 10	μA
Base Emitter (On) Voltage	$*V_{BE(on)}$	$I_C=500\text{mA}, V_{CE}=2\text{V}$		1.0	V
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$		0.5	V

*Pulse Test: Pulse Width $\leq 300\text{ms}$, Duty Cycle 2%

**Transistors mounted on printed circuit board, max Lead Length 4mm, mounting pad for collector lead min 10mm x 10 mm

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ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless specified otherwise)

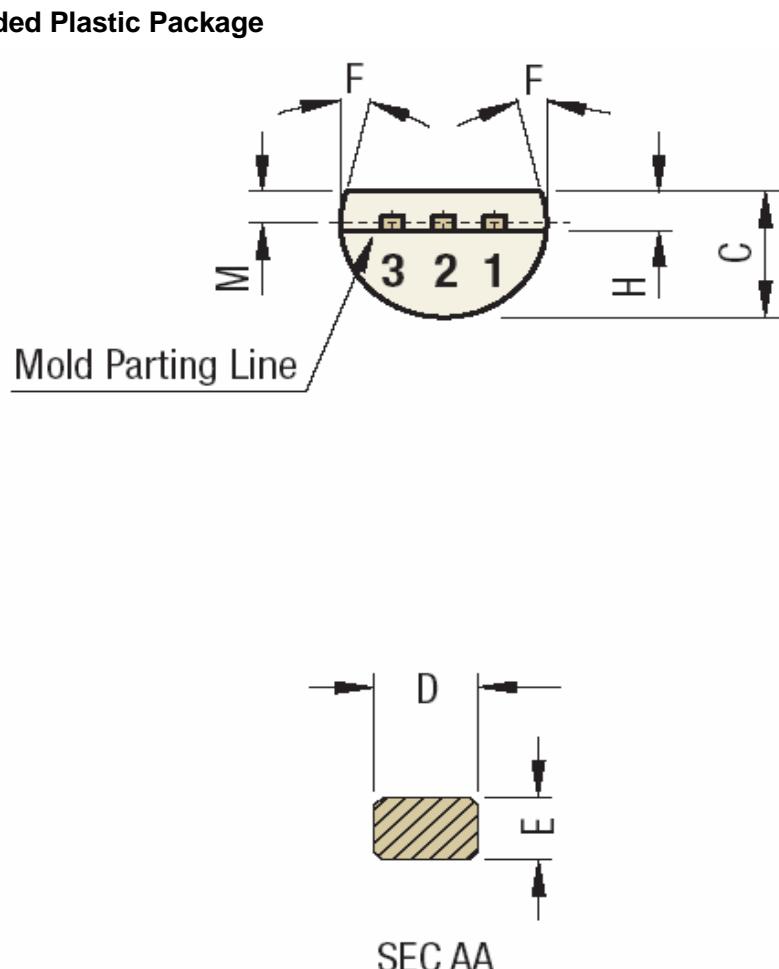
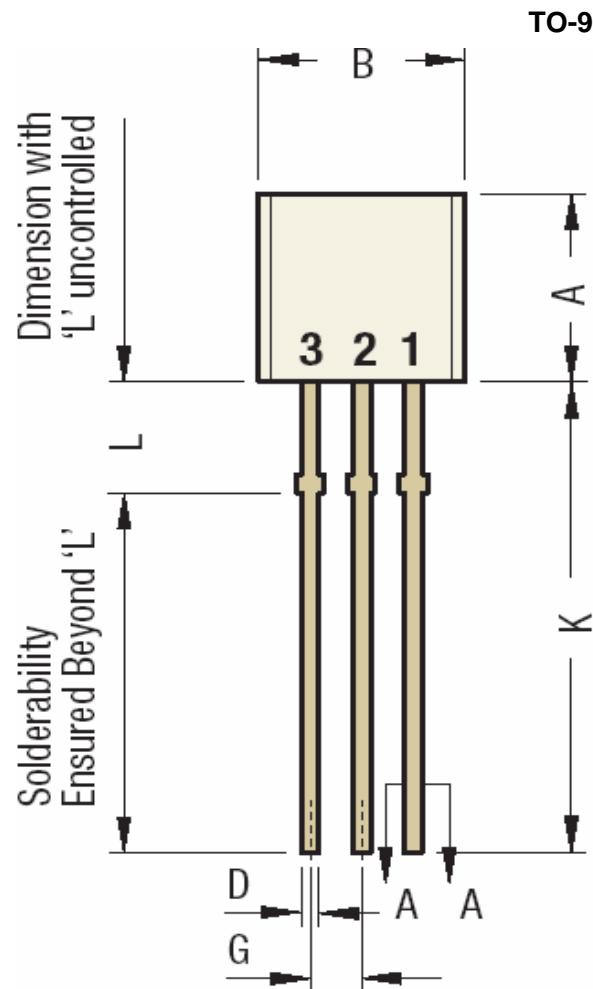
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
DC Current Gain	$^*\text{h}_{\text{FE}}$	$V_{\text{CE}}=2\text{V}, I_{\text{C}}=5\text{mA}$ $V_{\text{CE}}=2\text{V}, I_{\text{C}}=150\text{mA}$ BC635/BC636 BC637/BC638 BC639/BC640 Group-10 Group-16 $V_{\text{CE}}=2\text{V}, I_{\text{C}}=500\text{mA}$	25 40 40 40 63 100 25	250 160 160 160 160 250	

DYNAMIC CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	TYP	UNIT
Transistors Frequency	f_T	$I_{\text{C}}=50\text{mA}, V_{\text{CE}}=2\text{V}, f=100\text{MHz}$ NPN PNP	200 150	MHz MHz
Output Capacitance	C_{ob}	$I_E=0, V_{\text{CB}}=10\text{V}, f=1\text{MHz}$ NPN PNP	7 9	pF pF
Input Capacitance	C_{ib}	$V_{\text{BE}}=0.5\text{V}, f=1\text{MHz}$ NPN PNP	50 110	pF pF

*Pulse Test: Pulse Width $\leq 300\text{ns}$, Duty Cycle 2%

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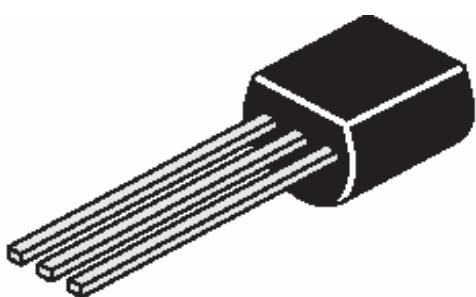
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DIM	Min	Max
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.40	0.55
E	0.30	0.55
F	5°	

All Dimensions are in mm

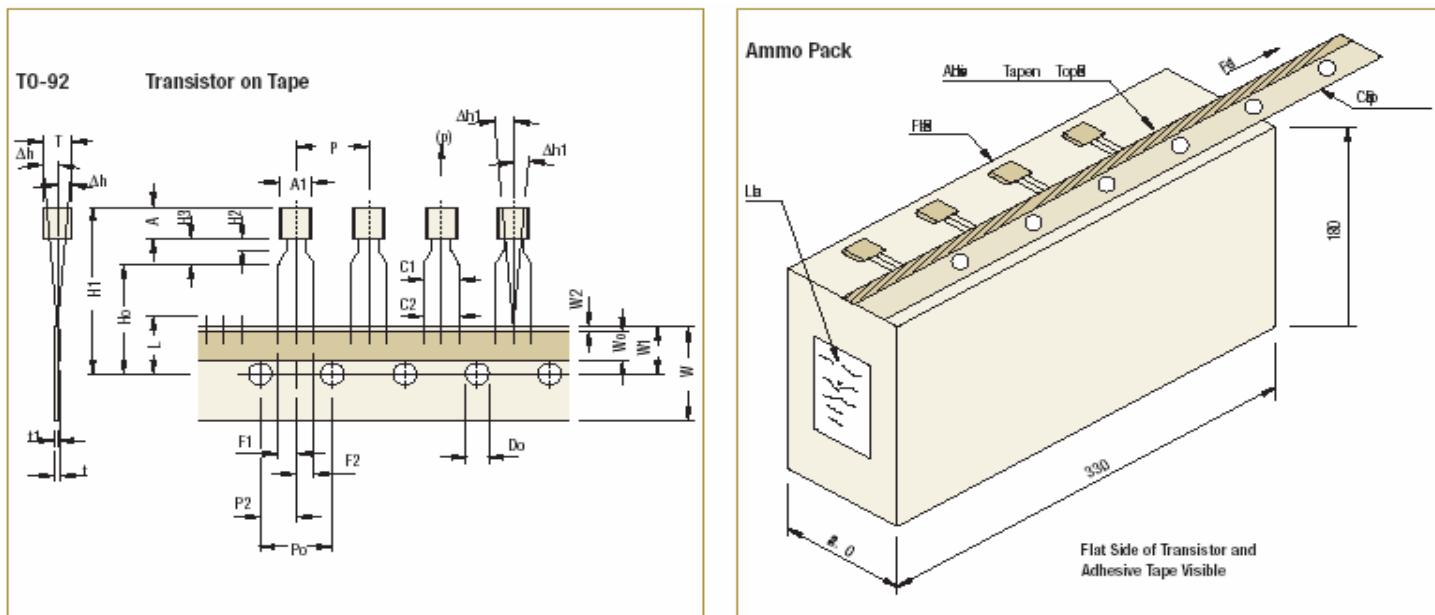
DIM	Min	Max
G	1.14	1.40
H	1.20	1.80
K	12.5	
L	1.982	2.082
M	1.03	1.53

Pin 1 Base
Pin 2 Collector
Pin 3 Emitter



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TO-92 Tape and Ammo Packaging



All Dimensions are in mm

Tape Specifications

Item description	Symbol
Body width	A1
Body height	A
Body thickness	T
Pitch of component ^{Cr}	P
Feed hole pitch ^{§1}	Po
Feed hole center to component centre ^{§2}	P2
Comp. alignment, Side view ^{§3}	Dh
Comp. alignment, Front view ^{§3}	Dh1
Tape width ^{Cr}	W
Hold down tape width ^{Cr}	Wo
Hole position	W1
Hold-down tape position	W2
Lead wire clinch height	Ho
Component height	H1
Length of snipped leads	L
Feed hole diameter ^{Cr}	Do
Total tape thickness ^{§4}	t
Lead-to-lead distance ^{Cr}	F1, F2
Stand off	H2
Clinch height	H3
Lead parallelism ^{Cr}	C1-C2
Pull-out force	(p)

TO-92			
Min	Nom	Max	Tol
4.45		5.20	
4.32		5.33	
3.18		4.19	
	12.7		±1.0
	12.7		±0.3
	6.35		±0.4
	0	1.0	
	0	1.3	
	18		±0.5
	6		±0.2
	9		+0.7 -0.5
0.0		0.7	
	16		±0.5
		24.0	
		11.0	
	4		±0.2
		1.2	
2.4		2.7	
0.45		1.45	
		3.0	
		0.22	
6N			

Taping Specification

- Maximum alignment deviation between leads not to be greater than 0.20 mm.
- Maximum non-cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches.
- Hold down tape not to exceed beyond the edge(s) carrier tape and there shall be no exposure of adhesive.
- No more than 3 consecutive missing components is permitted.
- A tape trailer, having at least three feed holes is required after the last component.
- Splices shall not interfere with the sprocket feed holes.

^{§1} Cumulative pitch error 1.0 mm/20 pitch.^{§2} To be measured at bottom of clinch.^{§3} At top of body.^{§4} $t_1 = 0.3 - 0.6$ mm

Cr Critical Dimension.

All Dimensions are in mm

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Packaging Information

T & A: Tape and Ammo Pack; T & R: Tape and Red; Bulk: Loose in Poly bags; Tube: Tube and Ammo Pack; k: 1.000

Package/Case Type	Packaging Type	Inner Carton			Outer Carton			
		Qty	Qty	Size L x W x H	Gross Weight	Qty	Size L x W x H	Gross Weight
				(cm)	(Kg)			
TO-92	Bulk	1,000	5K	19x19x8	1.10	80K	43x40x35	20.0
	T&A	2,000	2K	32x4.5x20	0.70	40K	43x40x35	15.20

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Customer Notes

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



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