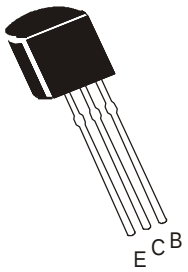
SILICON PLANAR EPITAXIAL TRANSISTORS

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=25ºC)

DESCRIPTION	SYMBOL	BC635 / BC636	BC637 / BC638	BC639 / BC640	UNIT
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=25ºC Derate Above 25ºC	P_D	800 6.4			mW mW/ºC
Total Device Dissipation at T_a=25ºC	**P_D	1.0			W
Total Device Dissipation at T_c=25ºC Derate Above 25ºC	P_D	2.75 22			W mW/ºC
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 55 to +150			ºC

THERMAL RESISTANCE

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

ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Collector Emitter Voltage	V_{CEO}	I_C=1mA, I_B=0			
		BC635/BC636	45		V
		BC637/BC638	60		V
		BC639/BC640	80		V
Collector Base Voltage	V_{CBO}	I_C=100µA, I_E=0			
		BC635/BC636	45		V
		BC637/BC638	60		V
		BC639/BC640	80		V
Emitter Base Voltage	V_{EBO}	I_E=10µA, I_C=0	5.0		V
Collector Cut Off Current	I_{CBO}	V_{CB}=30V, I_E=0		0.1	µA
		V_{CB}=30V, I_E=0, T_a=125ºC		10	µA
Base Emitter (On) Voltage	*$V_{BE\ (on)}$	I_C=500mA, V_{CE}=2V		1.0	V
Collector Emitter Saturation Voltage	*$V_{CE\ (sat)}$	I_C=500mA, I_B=50mA		0.5	V

***Pulse Test: Pulse Width ≤ 300ms, 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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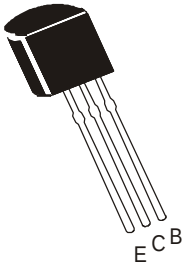

For Lead Free Parts, Device Part # will be Prefixed with "T"

ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
DC Current Gain	*h_{FE}	V_{CE}=2V, I_C=5mA	25		
		V_{CE}=2V, I_C=150mA			
		BC635/BC636	40	250	
		BC637/BC638	40	**250**	
		BC639/BC640	40	**250**	
		Group-10	40	160	
		Group-16	100	250	
		V_{CE}=2V, I_C=500mA	25		

DYNAMIC CHARACTERISTICS

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

***Pulse Test: Pulse Width ≤ 300ms, Duty Cycle 2%**

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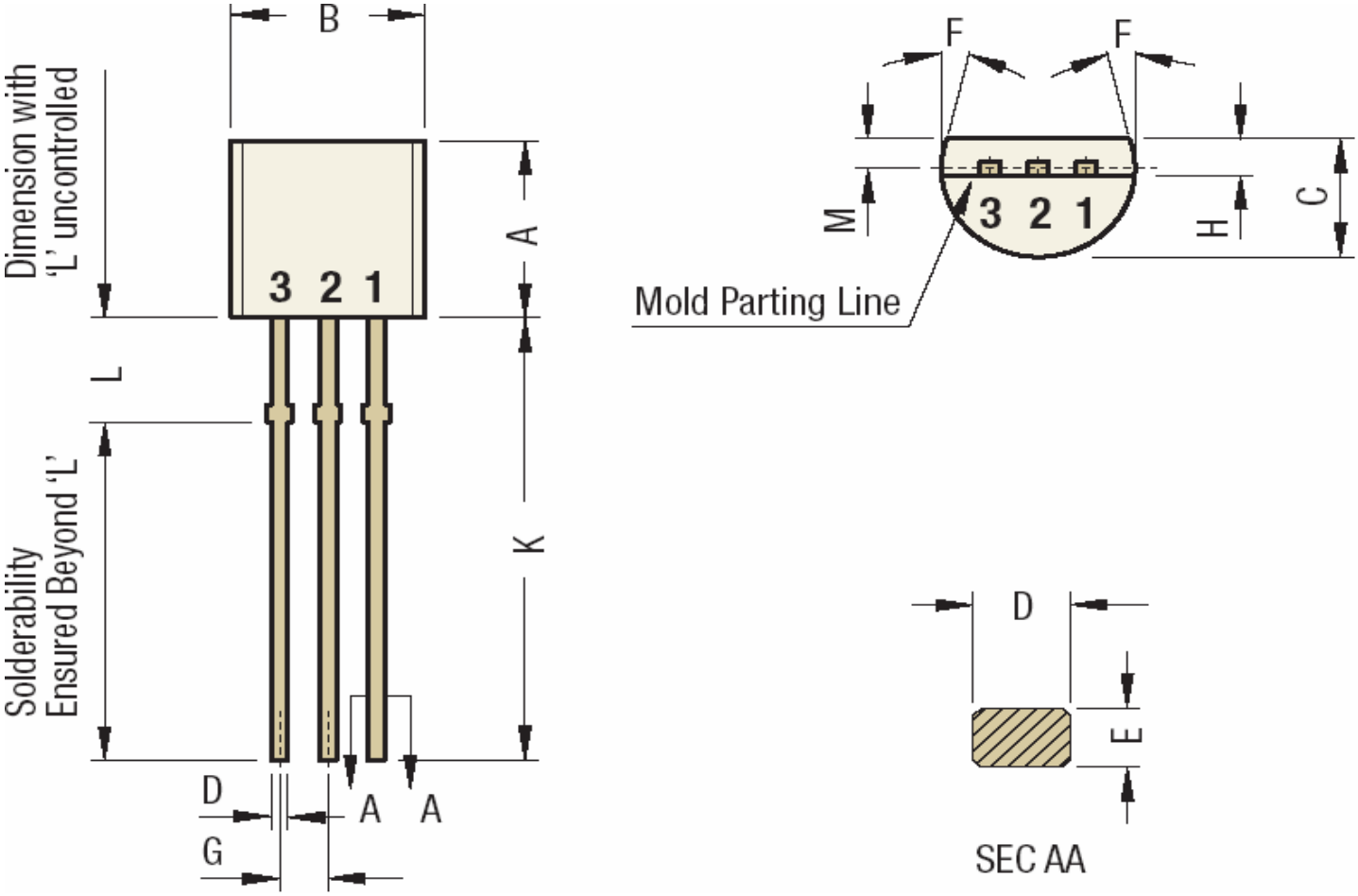
TO-92 Leaded Plastic Package

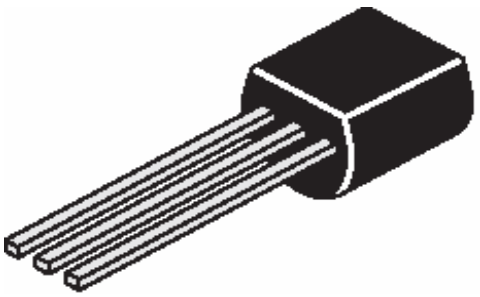


DIM	Min	Max
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.40	0.55
E	0.30	0.55
F	5º	

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

All Dimensions are in mm

Pin 1 Base
Pin 2 Collector
Pin 3 Emitter



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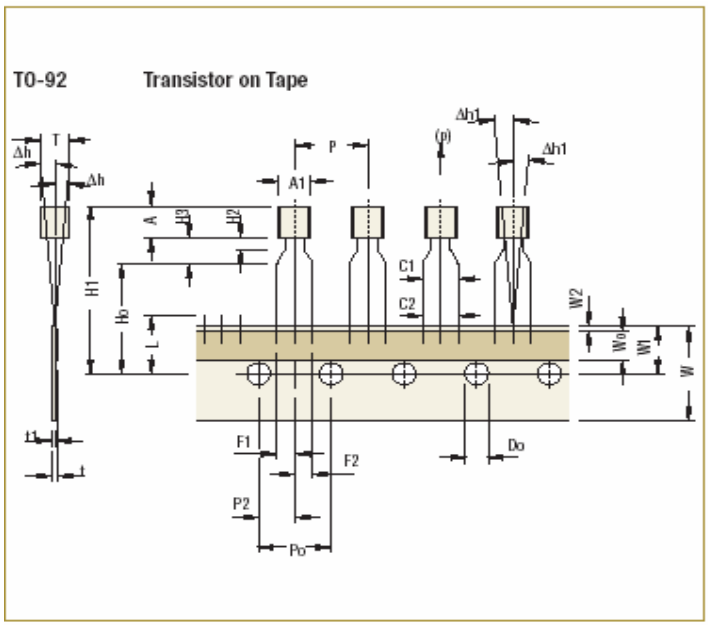
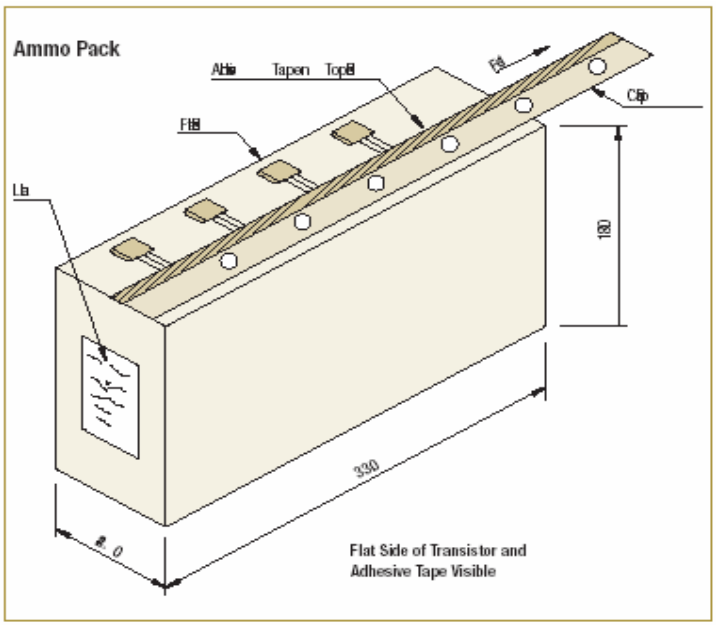
TO-92 Tape and Ammo Packaging





All Dimensions are in mm

Tape Specifications

		TO-92			
Item description	Symbol	Min	Nom	Max	Tol
Body width	A1	4.45		5.20	
Body height	A	4.32		5.33	
Body thickness	T	3.18		4.19	
Pitch of component[Cr]	P		12.7		±1.0
Feed hole pitch[§1]	Po		12.7		±0.3
Feed hole center to component centre[§2]	P2		6.35		±0.4
Comp. alignment, Side view[§3]	Dh		0	1.0	
Comp. alignment, Front view[§3]	Dh1		0	1.3	
Tape width[Cr]	W		18		±0.5
Hold down tape width[Cr]	Wo		6		±0.2
Hole position	W1		9		+0.7 -0.5
Hold-down tape position	W2	0.0		0.7	
Lead wire clinch height	Ho		16		±0.5
Component height	H1			24.0	
Length of snipped leads	L			11.0	
Feed hole diameter[Cr]	Do		4		±0.2
Total tape thickness[§4]	t			1.2	
Lead-to-lead distance[Cr]	F1, F2	2.4		2.7	
Stand off	H2	0.45		1.45	
Clinch height	H3			3.0	
Lead parallelismCr	C1-C2			0.22	
Pull-out force	(p)	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 t1 = 0.3 – 0.6 mm
Cr Critical Dimension.

All Dimensions are in mm

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TO-92
Plastic Package

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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	Std. Packing	Inner Carton			Outer Carton		
		Qty	Qty	Size L x W x H (cm)	Gross Weight (Kg)	Qty	Size L x W x H (cm)	Gross Weight (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