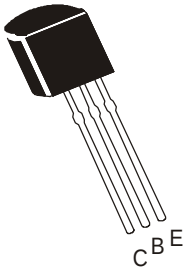
SILICON PLANAR EPITAXIAL TRANSISTORS

CNL635 CPL636
CNL637 CPL638
CNL639 CPL640

NPN PNP

TO-92
Plastic Package



Suitable for Driver Stage of Audio Amplifier

ABSOLUTE MAXIMUM RATINGS (T_a=25ºC Unless Otherwise Specified)

DESCRIPTION	SYMBOL	CNL635 CPL636	CNL637 CPL638	CNL639 CPL640	UNIT
Collector Emitter Voltage	V_{CEO}	45	60	80	V
Collector Base Voltage	V_{CBO}	45	60	100	V
Emitter Base Voltage	V_{EBO}	5			V
Collector Current Continuous	I_C	1			A
Collector Current Peak	I_{CM}	1.5			A
Base Current Continuous	I_B	100			mA
Base Current Peak	I_{BM}	200			mA
Power Dissipation @ T_a=25ºC	P_D	0.8			W
Power Dissipation @ T_a=25ºC	*P_D	1.0			W
Power Dissipation @ T_c=25ºC	P_D	2.0			W
Operating And Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150			ºC

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

ELECTRICAL CHARACTERISTICS (T_a=25ºC Unless Otherwise Specified)

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE	UNIT
Collector Emitter Voltage	V_{CEO}	I_C=1mA, I_B=0 **CNL635, CPL636** **CNL637, CPL638** **CNL639, CPL640**	 >45 >60 >80	V
Collector Base Voltage	V_{CBO}	I_C=100µA, I_E=0 **CNL635, CPL636** **CNL637, CPL638** **CNL639, CPL640**	 >45 >60 >100	V
Emitter Base Voltage	V_{EBO}	I_E=10µA, I_C=0	>5	V
Collector Cut-off Current	I_{CBO}	V_{CB}=30V, I_E = 0 V_{CB}=30V, I_E = 0, T_a=125°C	<100 <10	nA µA
Base Emitter On Voltage	*$V_{BE\ (on)}$	V_{CE}=2V, I_C = 500mA	<1	V
Collector Emitter Saturation Voltage	*$V_{CE(sat)}$	I_C=500mA, I_B=50mA	<0.5	V

SILICON PLANAR EPITAXIAL TRANSISTORS

CNL635 CPL636
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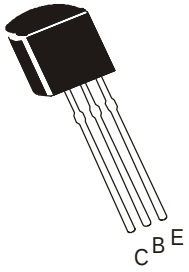

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ELECTRICAL CHARACTERISTICS (T_a=25ºC Unless Otherwise Specified)

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE	UNIT
DC Current Gain	*h_{FE}	V_{CE}=2V, I_C=5mA	>25	
		V_{CE}=2V, I_C=150mA		
		CNL635, CPL636	40 - 250	
		CNL637, CPL638	40 - 160	
		CNL639, CPL640	40 - 160	
		V_{CE}=2V, I_C=500mA	>25	

DYNAMIC CHARACTERISTICS

Input Capacitance	C_{ib}	V_{BE}=0.5V, I_C=0, f=1MHz		
		NPN	typ 50	pF
		PNP	typ 110	
Output Capacitance	C_{ob}	V_{CB}=10V, I_C=0, f=1MHz		
		NPN	typ 7	pF
		PNP	typ 9	
Transition Frequency	f_T	I_C=50mA, V_{CE}=2V, f=100MHz		MHz
		NPN	typ 200	
		PNP	typ 150	

*** Pulse Test: Pulse Width ≤ 300μs; Duty Cycle ≤ 2%**

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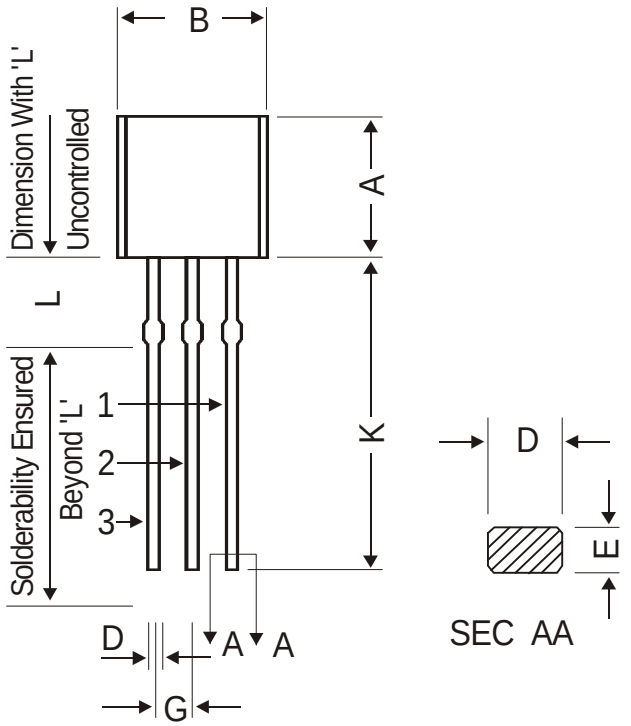
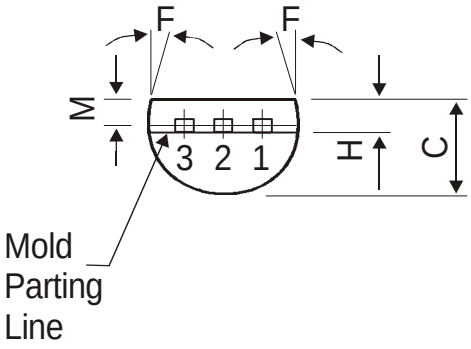
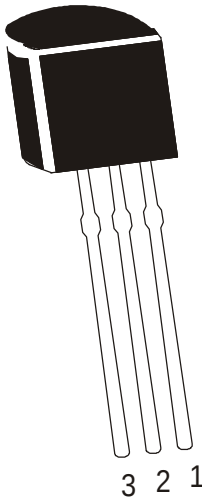


DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.20	1.40
K	12.70	—
L	1.982	2.082
M	1.03	1.20

All dimensions are in mm





PIN CONFIGURATION
1. EMITTER
2. BASE
3. COLLECTOR

The TO-92 Package, Tape and Ammo Pack Drawings are correct as on the date of issue/revision of this Data Sheet.

The currently valid dimensions and information, may please be confirmed from the TO-92 Drawing in the Packages and Packing Section of the Product Catalogue.

Packing Details

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-92 Bulk	1K/polybag	200 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2K	17" x 15" x 13.5"	32K	12.5 kgs

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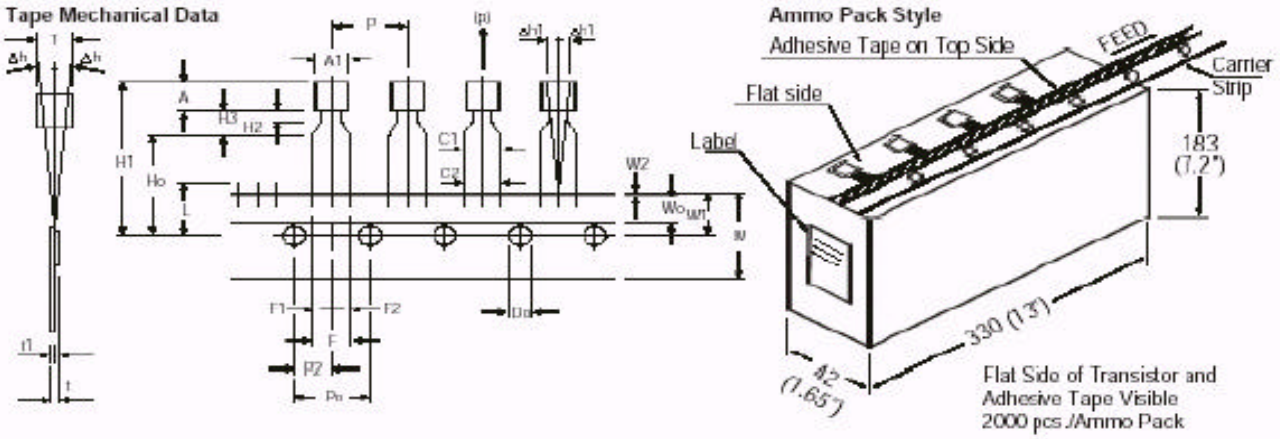
Plastic Package

TO-92 Tape and Ammo Pack



All dimensions are in mm

ITEM	SYMBOL	SPECIFICATION			
		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	P		12.7		± 1.0
*1 FEED HOLE PITCH	Po		12.7		± 0.3
*2 FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		± 0.4
DISTANCE BETWEEN OUTER LEADS	F		5.08		+ 0.6 - 0.2
*3 COMPONENT ALIGNMENT SIDE VIEW	Δh		0	1.0	
*4 COMPONENT ALIGNMENT FRONT VIEW	Δh1		0	1.3	
TAPE WIDTH	W		18		± 0.5
HOLD-DOWN TAPE WIDTH	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	Do		4		± 0.2
*5 TOTAL TAPE THICKNESS	t			1.2	
LEAD - TO - LEAD DISTANCE	F1, F2	2.40		2.70	- 0.1
STAND OFF	H2	0.45		1.45	
CLINCH HEIGHT	H3			3.0	
LEAD PARALLELISM	|C1 - C2|			0.22	
PULL - OUT FORCE	(p)	6N			

NOTES

1. Maximum alignment deviation between leads will not to be greater than 0.2mm.
2. Maximum non-cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches.
3. Holddown tape will not exceed beyond the edge(s) of carrier tape and there shall be no exposure of adhesive.
4. There will be no more than three (3) consecutive missing components in a tape.
5. A tape trailer, having at least three feed holes are provided after the last component in a tape.
6. Splices should not interfere with the sprocket feed holes.

REMARKS

*1 Cumulative pitch error 1.0 mm/20 pitch

*2 To be measured at bottom of clinch

*3 At top of body

*4 At top of body

*5 t1 0.3 – 0.6 mm

Notes

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CNL637 **CPL638**
CNL639 **CPL640**

NPN **PNP**
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Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete 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 Discrete 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).

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