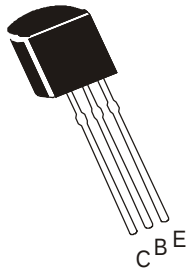


SILICON PLANAR EPITAXIAL TRANSISTORS



CNL635
CNL637
CNL639

CPL636
CPL638
CPL640

NPN

PNP

TO-92
Plastic Package

Suitable for Driver Stage of Audio Amplifier

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

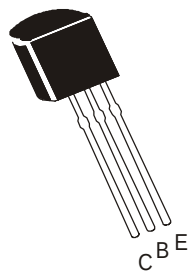
DESCRIPTION	SYMBOL	CNL635 CPL636	CNL637 CPL638	CNL639 CPL640	UNIT
Collector Emitter Voltage	V_{CEO}	45	60	80	V
Collector Base Voltage	V_{CBO}	45	60	100	V
Emitter Base Voltage	V_{EBO}	5			V
Collector Current Continuous	I_C	1			A
Collector Current Peak	I_{CM}	1.5			A
Base Current Continuous	I_B	100			mA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

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

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ Unless Otherwise Specified)

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

SILICON PLANAR EPITAXIAL TRANSISTORS



CNL635

CNL637

CNL639

CPL636

CPL638

CPL640

NPN

PNP

TO-92

Plastic Package

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ 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 PNP	typ 50 typ 110	pF
Output Capacitance	C_{ob}	$V_{CB}=10V, I_C=0, f=1MHz$ NPN PNP	typ 7 typ 9	pF
Transition Frequency	f_T	$I_C=50mA, V_{CE}=2V,$ $f=100MHz$ NPN PNP	typ 200 typ 150	MHz

* Pulse Test: Pulse Width $\leq 300ms$; Duty Cycle $\leq 2\%$

CNL635CPL636

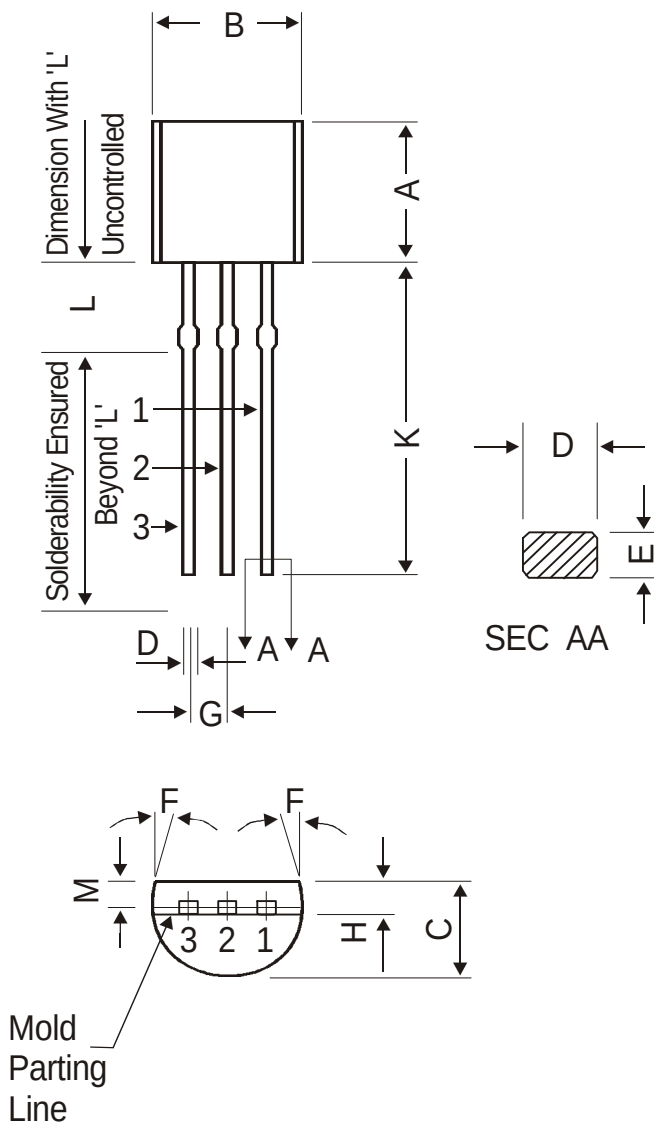
CNL637CPL638

CNL639CPL640

NPNPNP

TO-92Plastic Package

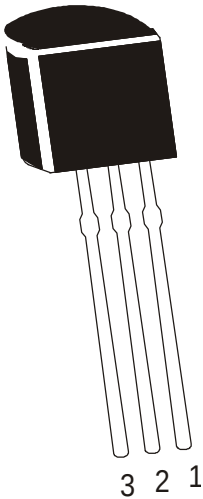
TO-92 Plastic Package



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

CNL635
CNL637
CNL639

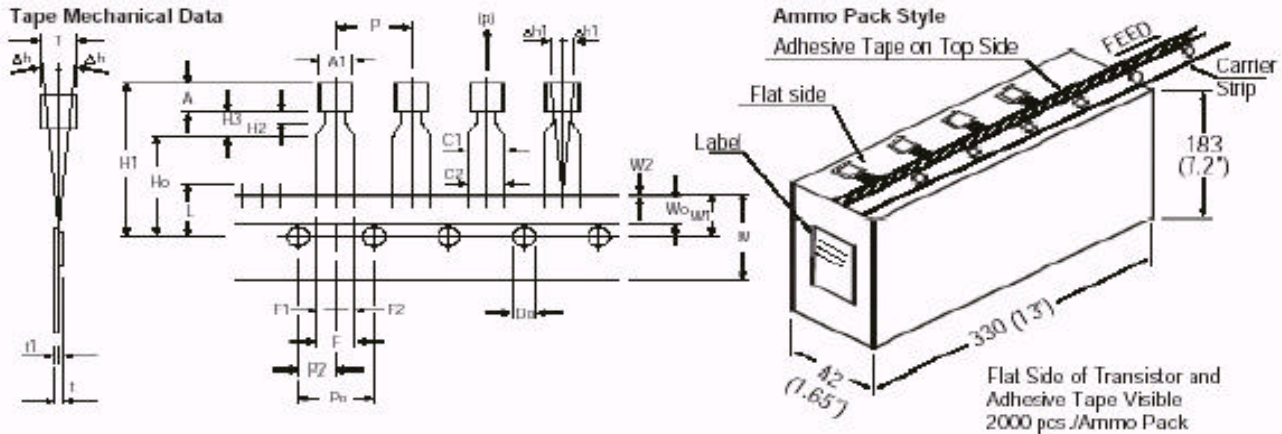
CPL636
CPL638
CPL640

NPN
TO-92

PNP

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			12	
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

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

CNL635
CNL637
CNL639

CPL636
CPL638
CPL640

NPN
TO-92
Plastic Package

PNP

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).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



CDIL is a registered Trademark of
Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone + 91-11-2579 6150, 5141 1112 Fax + 91-11-2579 5290, 5141 1119

email@cdil.com www.cdilsemi.com