

SILICON PLANAR EPITAXIAL TRANSISTORS

CVL639

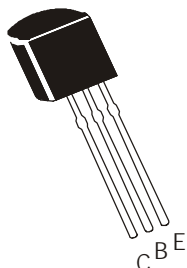
NPN

CVL640

PNP

TO-92

Plastic Package



Driver Stages of Audio Amplifier Application

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNITS
Collector Base Voltage	V_{CBO}	150	V
Collector Emitter Voltage	V_{CEO}	135	V
Emitter Base Voltage	V_{EBO}	5.0	V
Collector Current Continuous	I_C	1.0	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}	- 65 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 specified otherwise)

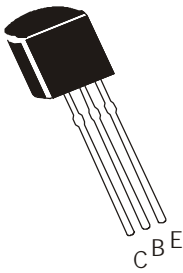
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNITS
Collector Emitter Voltage	V_{CEO}	$I_C=10\text{mA}, I_B=0$	135		V
Collector Base Voltage	V_{CBO}	$I_C=100\mu\text{A}, I_E=0$	150		V
Emitter Base Voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	5.0		V
Collector Cut Off Current	I_{CBO}	$V_{CB}=30\text{V}, I_E=0$ $V_{CB}=30\text{V}, I_E=0, T_a=125^\circ\text{C}$		100 10	nA 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
DC Current Gain	h_{FE}	$I_C=5\text{mA}, V_{CE}=2\text{V}$ $*I_C=150\text{mA}, V_{CE}=2\text{V}$ $*I_C=500\text{mA}, V_{CE}=2\text{V}$	25 80 15		

*Pulse test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

CVL639/640 Rev210405E

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ELECTRICAL CHARACTERISTICS (T_a=25°C unless specified otherwise)

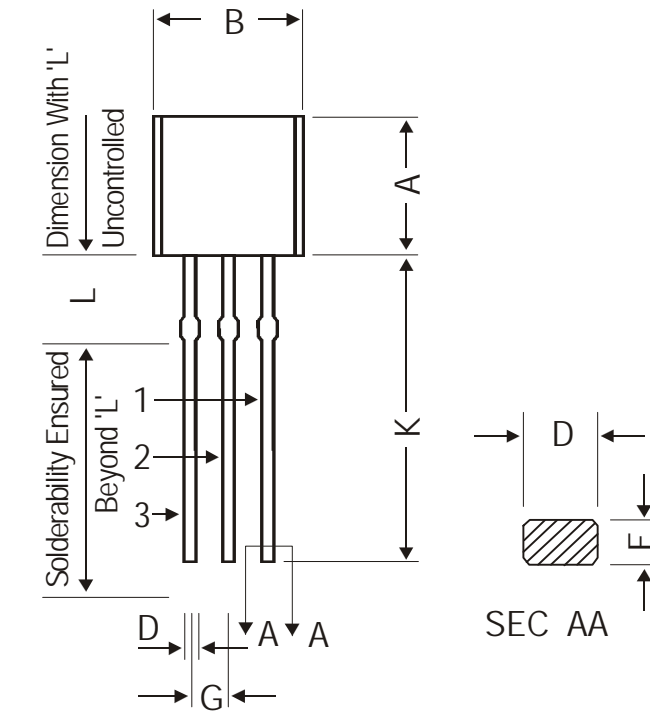
DYNAMIC CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE	UNITS
Transistors Frequency	f _T	I _C =10mA, V _{CE} =5V, f=35MHz NPN PNP	TYP 130 TYP 50	MHz MHz
Output Capacitance	C _{ob}	V _{CB} =10V, I _E =0, f=1MHz NPN PNP	TYP 7.0 TYP 9.0	pF pF
Input Capacitance	C _{ib}	V _{EB} =0.5V, I _C =0, f=1MHz NPN PNP	TYP 50 TYP 110	pF pF

CVL639/640 Rev210405E

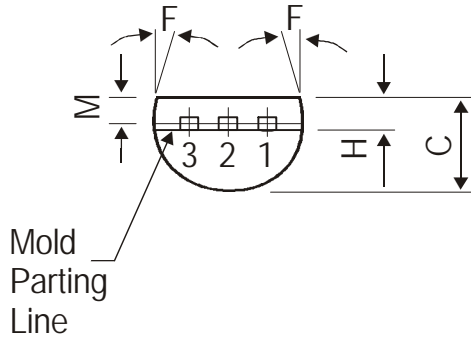
TO-92
Plastic Package

TO-92 Plastic Package



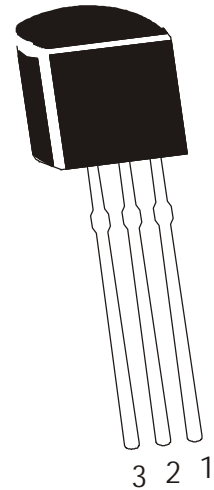
DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.20	1.40
K	12.70	—
L	1.982	2.082
M	1.03	1.20

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.

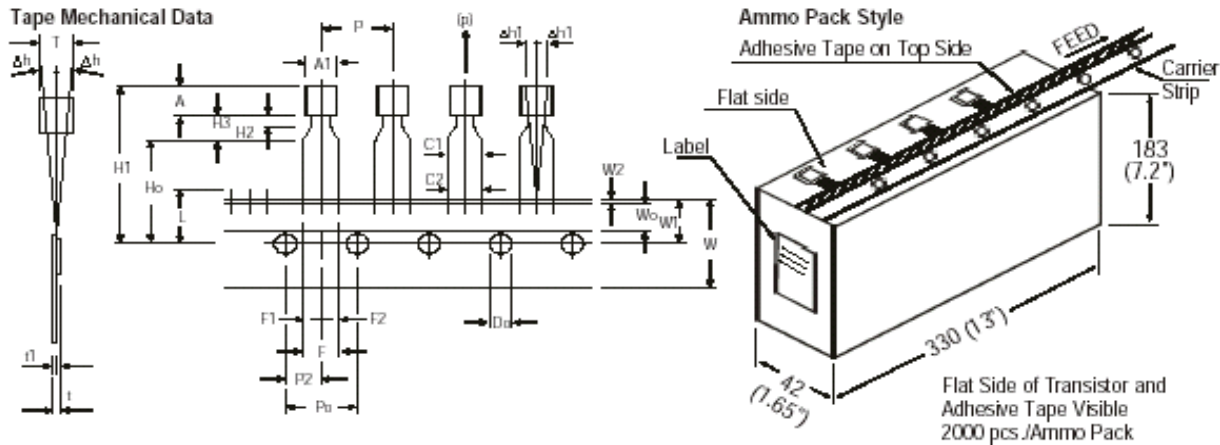
The currently valid dimensions and information, may please be confirmed from the TO-92 Drawing in the Packages and Packing Section of the Product Catalogue.

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

TO-92
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	W0		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

Disclaimer

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