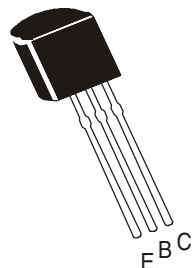


## NPN SILICON PLANAR EPITAXIAL TRANSISTORS



**MPS8098**  
**MPS8099**

**TO-92**  
**Plastic Package**

### Amplifier Transistors

#### ABSOLUTE MAXIMUM RATING

DESCRIPTION	SYMBOL	MPS8098	MPS8099	UNITS
Collector Base Voltage	$V_{CBO}$	60	80	V
Collector Emitter Voltage	$V_{CEO}$	60	80	V
Emitter Base Voltage	$V_{EBO}$	6.0		V
Collector Current Continuous	$I_C$	500		mA
Power Dissipation $T_a=25^\circ\text{C}$	$P_D$	625		mW
Derate Above $25^\circ\text{C}$		5.0		mW/ $^\circ\text{C}$
Power Dissipation $T_c=25^\circ\text{C}$	$P_D$	1.5		W
Derate Above $25^\circ\text{C}$		12		mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 55 to +150		$^\circ\text{C}$

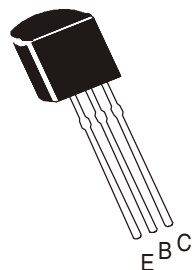
#### THERMAL CHARACTERISTICS

Junction to Case	$R_{th(j-c)}$	83.3	$^\circ\text{C/W}$
Junction to Ambient in free air	$R_{th(j-a)}$	200	$^\circ\text{C/W}$

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

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Collector Base Voltage	$V_{CBO}$	$I_C=100\mu\text{A}, I_E=0$ <b>MPS8098</b> <b>MPS8099</b>	60 80			V V
Collector Emitter Voltage	$V_{CEO}$	$I_C=10\text{mA}, I_B=0$ <b>MPS8098</b> <b>MPS8099</b>	60 80			V V
Emitter Base Voltage	$V_{EBO}$	$I_E=10\mu\text{A}, I_C=0$	6.0			V
Collector Cut Off Current	$I_{CEO}$	$V_{CE}=60\text{V}, I_B=0$			0.1	$\mu\text{A}$
Collector Cut Off Current	$I_{CBO}$	<b>MPS8098</b> $V_{CB}=60\text{V}, I_E=0$  <b>MPS8099</b> $V_{CB}=80\text{V}, I_E=0$			0.1 0.1	$\mu\text{A}$ $\mu\text{A}$
Emitter Cut Off Current	$I_{EBO}$	$V_{EB}=6\text{V}, I_C=0$			0.1	$\mu\text{A}$

# NPN SILICON PLANAR EPITAXIAL TRANSISTOR



**MPS8098**

**MPS8099**

**TO-92**

**Plastic Package**

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

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
DC Current Gain	$*h_{FE}$	$I_C=1\text{mA}, V_{CE}=5\text{V}$	100		300	
		$I_C=10\text{mA}, V_{CE}=5\text{V}$	100			
		$I_C=100\text{mA}, V_{CE}=5\text{V}$	75			
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=100\text{mA}, I_B=5\text{mA}$			0.4	V
		$I_C=100\text{mA}, I_B=10\text{mA}$			0.3	V
Base Emitter On Voltage	$*V_{BE(on)}$	<b>MPS8098</b> $I_C=1\text{mA}, V_{CE}=5\text{V}$	0.5		0.7	V
		<b>MPS8099</b> $I_C=10\text{mA}, V_{CE}=5\text{V}$	0.6		0.8	V

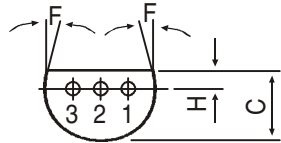
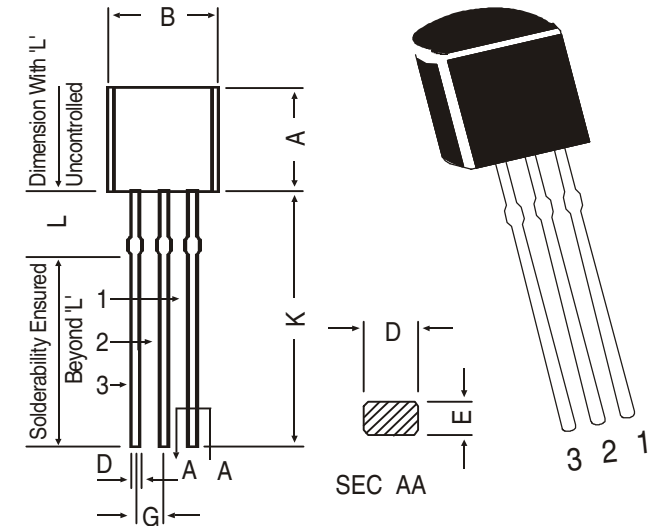
## SMALL SIGNAL CHARACTERISTICS

Current Gain Bandwidth Product	$f_T$	$I_C=10\text{mA}, V_{CE}=5\text{V}, f=100\text{MHz}$	150			MHz
Output Capacitance	$C_{obo}$	$I_E=0, V_{CB}=5\text{V}, f=1\text{MHz}$			6.0	pF
Input Capacitance	$C_{ibo}$	$I_C=0, V_{EB}=0.5\text{V}, f=1\text{MHz}$			25	pF

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

## TO-92 Plastic Package

### TO-92 Transistors on Tape and Ammo Pack

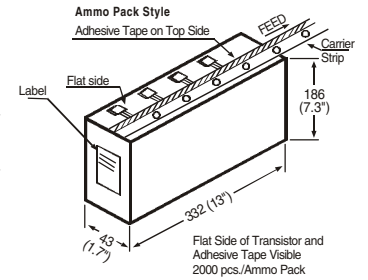
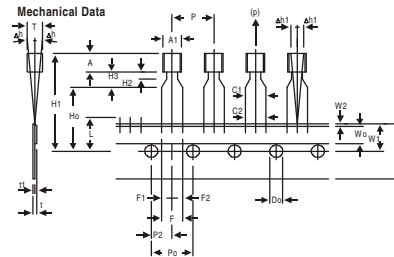


#### PIN CONFIGURATION

1. COLLECTOR
2. BASE
3. EMITTER

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	1.14	1.53
K	12.70	—
L	1.982	2.082

All dimensions in mm.



All dimensions in mm

ITEM	SYMBOL	SPECIFICATION				REMARKS
		MIN.	NOM.	MAX.	TOL.	
BODY WIDTH	A1	4.0		4.8		
BODY HEIGHT	A	4.8		5.2		
BODY THICKNESS	T	3.9		4.2		
PITCH OF COMPONENT	P		12.7		± 1.0	
FEED HOLE PITCH	Po		12.7		± 0.3	CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH
FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		± 0.4	TO BE MEASURED AT BOTTOM OF CLINCH
DISTANCE BETWEEN OUTER LEADS	F		5.08		+0.6 -0.2	
COMPONENT ALIGNMENT SIDE VIEW	Δh	0	1.0			AT TOP OF BODY
COMPONENT ALIGNMENT FRONT VIEW	Δh1	0	1.3			AT TOP OF BODY
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		0.5		± 0.2	
LEAD WIRE CLINCH HEIGHT	Ho		16		± 0.5	
COMPONENT HEIGHT	H1		23.25			
LENGTH OF CLIPPED LEADS	L		11.0			
FEED HOLE DIAMETER	Do		4		± 0.2	
TOTAL TAPE THICKNESS	t		1.2			t1 0.3-0.6
LEAD - TO - LEAD DISTANCE	F1, F2		2.54		+0.4 -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 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.

## Packing Detail

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

### **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 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