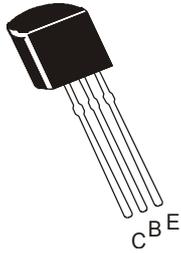


**NPN SILICON HIGH SPEED SWITCHING TRANSISTORS**

**P2N2369**

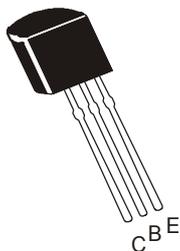


**TO-92  
Plastic Package**

**LOW POWER FOR HIGH SPEED SWITCHING APPLICATIONS**

**ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless specified otherwise)**

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Emitter Voltage	$V_{CEO}$	15	V
Collector Base Voltage	$V_{CBO}$	40	V
Collector Emitter Voltage ( $V_{BE}=0$ )	$V_{CES}$	40	V
Emitter Base Voltage	$V_{EBO}$	4.5	V
Collector Current Peak	$I_{CM}$	500	mA
Power Dissipation @ Ta=25°C	$P_D$	625	mW
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	-55 to +150	°C
<b>THERMAL RESISTANCE</b>			
Junction to Ambient in free air	$R_{th(j-a)}$	200	°C/W



TO-92  
Plastic Package

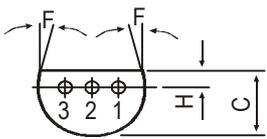
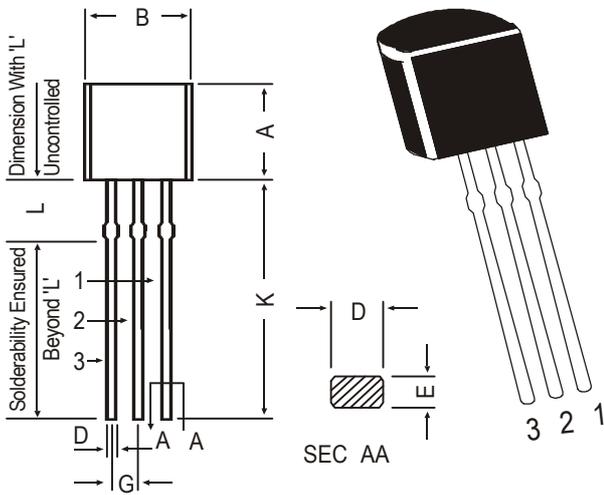
## ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE		UNIT
			MIN	MAX	
Collector Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=10mA, I_B=0$	15		V
Collector Emitter Breakdown Voltage	$BV_{CES}$	$I_C=10\mu A, V_{BE}=0$	40		V
Collector Base Breakdown Voltage	$BV_{CBO}$	$I_C=10\mu A, I_E=0$	40		V
Emitter Base Breakdown Voltage	$BV_{EBO}$	$I_E=10\mu A, I_C=0$	4.5		V
Collector Leakage Current	$I_{CBO}$	$V_{CB}=20V, I_E=0$		400	nA
Collector Leakage Current	$I_{CBO}$	$V_{CB}=20V, T_a=125^\circ C$		30	$\mu A$
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10mA, I_B=1mA$		0.25	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10mA, I_B=1mA$	0.7	0.85	V
DC Current Gain	$h_{FE}$	$I_C=10mA, V_{CE}=1V$	40	120	
		$I_C=100mA, V_{CE}=2V^*$	20		
		$I_C=10mA, V_{CE}=1V,$ $T_a = -55^\circ C$	20		
<b>DYNAMIC CHARACTERISTICS</b>					
Output Capacitance	$C_c$	$I_E=0, V_{CB}=5V$ $f=140KHz$		4	pF
Small Signal Current Gain	$ h_{fe} $	$V_{CE}=10V, I_C=10mA$ $f=100MHz$	5		MHz
<b>SWITCHING CHARACTERISTICS</b>					
Turn on Time	$t_{on}$	$I_C=10mA, I_{B1}=3mA,$ $V_{CC}=3V$		12	ns
Turn off Time	$t_{off}$	$I_C=10mA, I_{B1}=3mA,$ $V_{CC}=3V, I_{B2}=1.5mA$		18	ns
Storage Time	$t_s$	$I_C=10mA, I_{B1}=10mA= I_{B2}$		13	ns

\*Pulse Condition: Length  $\leq 300ms$ , Duty Cycle  $\leq 2\%$ .

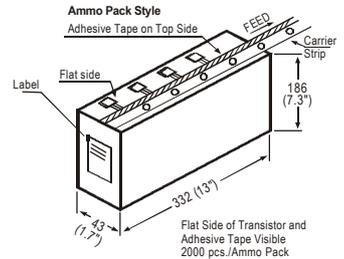
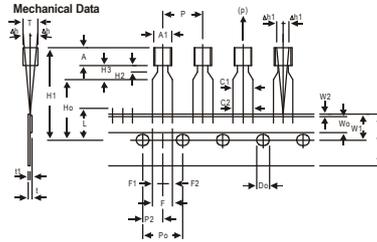
TO-92 Transistors on Tape and Ammo Pack

TO-92 Transistors on Tape and Ammo Pack



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 diminsions 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	W0		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 SNIPPED 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

- Maximum alignment deviation between leads will not 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.

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 in the Data Sheet and on the CDIL Web Site/CD is 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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