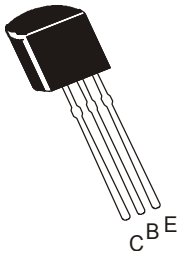
NPN SILICON HIGH SPEED SWITHCHING TRANSISTORS

P2N2369



TO-92
Plastic Package

LOW POWER FOR HIGH SPEED SWITCHING APPLICATIONS

ABSOLUTE MAXIMUM RATINGS (Ta=25ºC 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=25ºC	P_D	625		mW
Operating And Storage Junction	T_j, T_{stg}	-55 to +150		ºC
Temperature Range				
THERMAL RESISTANCE				
Junction to Ambient in free air	$R_{th(j-a)}$	200		ºC/W

NPN SILICON HIGH SPEED SWITCHING TRANSISTORS

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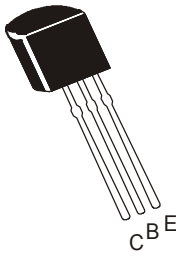

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ELECTRICAL CHARACTERISTICS (Ta=25ºC unless specified otherwise)

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=10µA, V_{BE}=0	40			V
Collector Base Breakdown Voltage	BV_{CBO}	I_C=10µA, I_E=0	40			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=10µA, 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, Ta=125ºC			30	µA
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,	20			
		Ta= -55ºC				
DYNAMIC CHARACTERISTICS						
Output Capacitance	C_c	I_E=0, V_{CB}=5V			4	pF
		f=140KHz				
Small Signal Current Gain	$\lvert h_{fe} \rvert$	V_{CE} =10V,I_C=10mA	5			MHz
		f=100MH_Z				
SWITCHING CHARCTERISTICS						
Turn on Time	t_{on}	I_C=10mA, I_{B1}=3mA,			12	ns
		V_{CC}=3V				
Turn off Time	t_{off}	I_C=10mA, I_{B1}=3mA,			18	ns
		V_{CC}=3V,I_{B2}=1.5mA				
Storage Time	t_s	I_C=10mA, I_{B1}=10mA= I_{B2}			13	ns

***Pulse Condition: Length ≤ 300µs, Duty Cycle ≤ 2%.**

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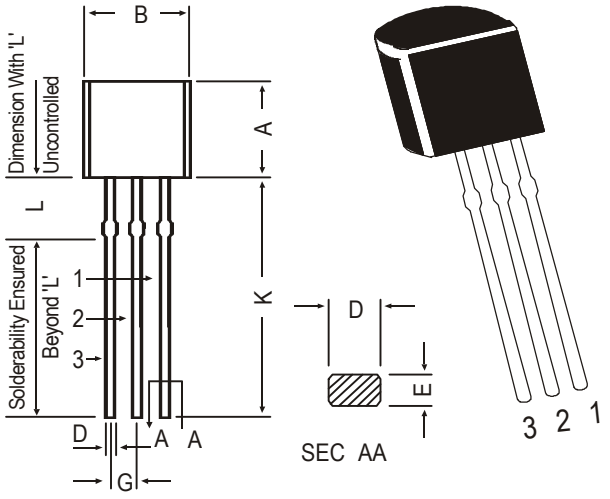
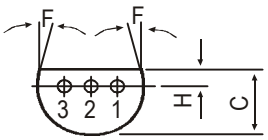
TO-92 Transistors on Tape and Ammo Pack

TO-92 Transistors on Tape and Ammo Pack

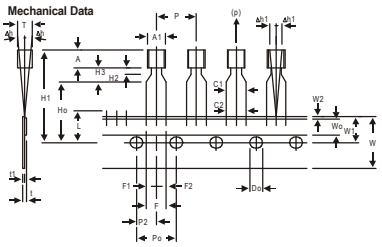


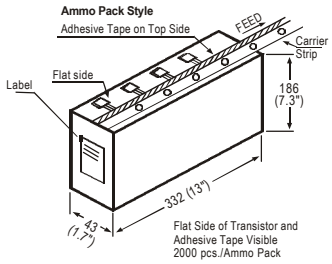


PIN CONFIGURATION
1. EMITTER
2. BASE
3. COLLECTOR

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	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 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
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.

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

TO-92
Plastic Package

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