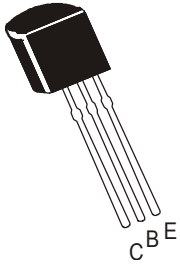


NPN SILICON HIGH SPEED SWITCHING TRANSISTOR

P2N2369A



**TO - 92
Plastic Package**

LOW POWER AND HIGH SPEED SWITCHING APPLICATIONS

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

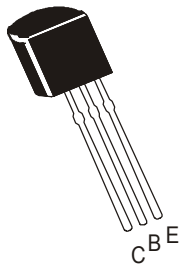
DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Emitter Voltage	V _{CEO}	15	V
Collector Base Voltage	V _{CBO}	40	V
Collector Emitter Voltage (V _{BE} =0)	V _{CES}	40	V
Emitter Base Voltage	V _{EBO}	4.5	V
Collector Current Peak	I _{CM}	500	mA
Power Dissipation @ Ta=25°C	P _D	625	mW
Operating And Storage Junction Temperature Range	T _j , T _{stg}	-65 to +200	°C

THERMAL RESISTANCE

Junction to Ambient in free air	R _{th(j-a)}	200	°C/W
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ELECTRICAL CHARACTERISTICS (T_a=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE		UNIT
			MIN	MAX	
Collector Emitter Breakdown Voltage	BV _{CEO(sus)} *	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 Cutoff Current	I _{CBO}	V _{CB} =20V, I _E =0 Ta=150°C		30	μA
Collector Cutoff Current	I _{CES}	V _{CE} =20V, V _{BE} =0		0.4	μA
Base Current	I _B	V _{CE} =20V, V _{BE} =0		0.4	μA
Collector Emitter Saturation Voltage	V _{CE(sat)} *	I _C =10mA, I _B =1mA		0.20	V
		I _C =30mA, I _B =3mA		0.25	V
		I _C =100mA, I _B =10mA		0.5	V
		I _C =10mA, I _B =1mA Ta=125°C		0.3	V



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

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE		UNIT
			MIN	MAX	
Base Emitter Saturation Voltage	$V_{BE(sat)}$ *	$I_C=10\text{mA}, I_B=1\text{mA}$	0.7	0.85	V
		$I_C=30\text{mA}, I_B=3\text{mA}$		0.15	V
		$I_C=100\text{mA}, I_B=10\text{mA}$		1.60	V
		$I_C=10\text{mA}, I_B=1\text{mA}$ $T_a=+125^\circ\text{C}$	0.59		V
		$I_C=10\text{mA}, I_B=1\text{mA}$ $T_a=-55^\circ\text{C}$		1.02	V
DC Current Gain	h_{FE} *	$I_C=10\text{mA}, V_{CE}=1\text{V}$	40	120	
		$I_C=10\text{mA}, V_{CE}=1\text{V}$ $T_a=-55^\circ\text{C}$	20		
		$I_C=30\text{mA}, V_{CE}=0.4\text{V}$	30		
		$I_C=100\text{mA}, V_{CE}=1\text{V}$	20		
		$I_C=10\text{mA}, V_{CE}=0.35\text{V}$	40	120	

DYNAMIC CHARACTERISTICS

Output Capacitance	C_{ob}	$I_E=0, V_{CB}=5\text{V}$ $f=140\text{KHz}$		4	pF
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_C=10\text{mA}$ $f=100\text{MHz}$	500		MHz

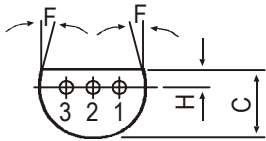
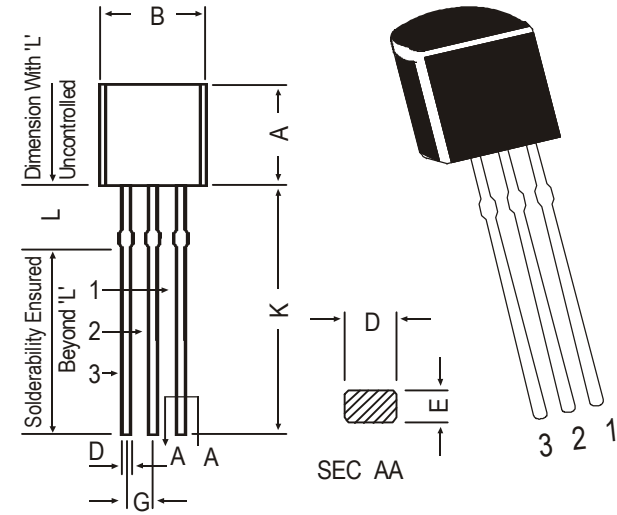
SWITCHING CHARACTERISTICS

Turn on Time	t_{on}	$I_C=10\text{mA}, I_{B1}=3\text{mA},$ $I_{B2}=1.5\text{mA}, V_{CC}=3\text{V}$		12	ns
Turn off Time	t_{off}	$I_C=10\text{mA}, I_{B1}=3\text{mA},$ $V_{CC}=3\text{V}, I_{B2}=1.5\text{mA}$		15	ns
Storage Time	t_s	$I_C=100\text{mA}, I_{B1}=10\text{mA},$ $I_{B2}=10\text{mA}, V_{CC}=10\text{V}$		13	ns

*Pulse Condition: Width $\leq 300\text{ms}$, Duty Cycle $\leq 2\%$.

TO-92 Plastic Package

TO-92 Transistors in Tape and Ammo Pack

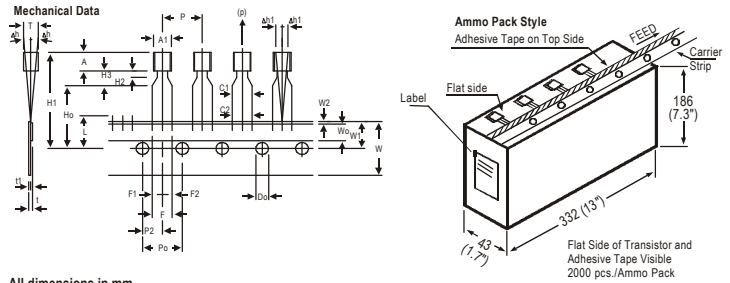


PIN CONFIGURATION

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 dimensions in mm.



All dimensions in mm

ITEM	SYMBOL	SPECIFICATION			REMARKS
		MIN.	NOM.	MAX.	
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
FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		± 0.4
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

Disclaimer

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