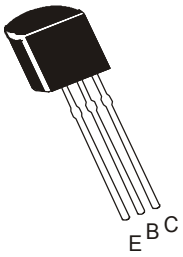
NPN SILICON HIGH SPEED SWITHCHING TRANSISTORS

PN2369



TO-92
Plastic Package

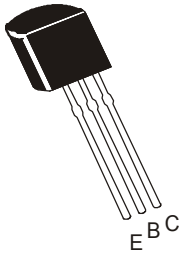
LOW POWER FOR HIGH SPEED SWITCHING APPLICATIONS

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

PN2369



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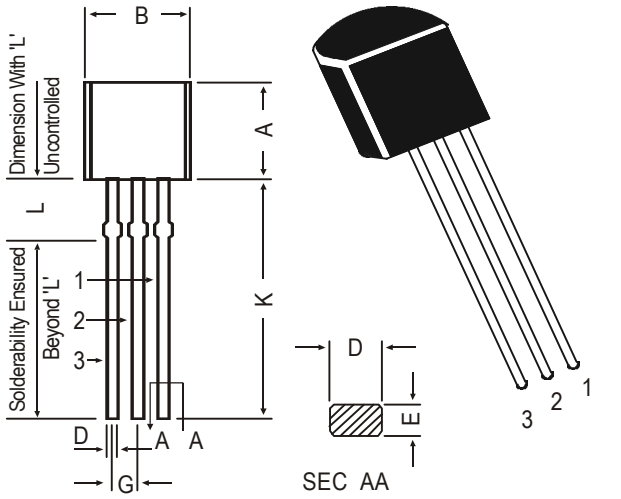
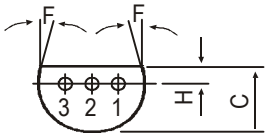
ELECTRICAL CHARACTERISTICS (Ta=25ºC unless specified otherwise)

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_{CEO}	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=125ºC			
DYNAMIC CHARACTERISTICS					
Output Capacitance	C_c	I_E=0, V_{CB}=5V		4	pF
		f=1MHz			
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, V_{CC}=3V		12	ns
Turn off Time	t_{off}	I_C=10mA, I_{B1}=3mA, V_{CC}=3V,		18	ns
		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%.**

TO-92 Plastic Package



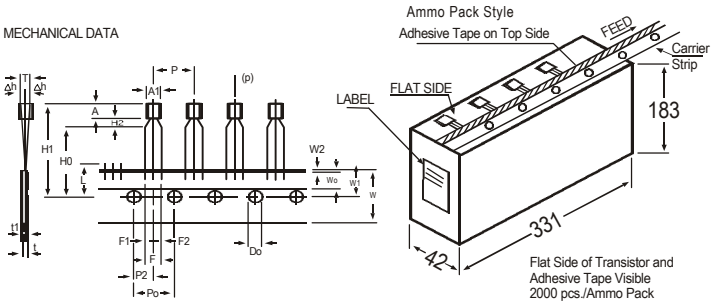


PIN CONFIGURATION
1. COLLECTOR
2. BASE
3. EMITTER

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 diminsions in mm.

TO-92 Transistors on Tape and Ammo Pack



All dimensions in mm unless specified otherwise

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	
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	△h		0	1		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 DISTANCEF1,	F2		2.54		+0.4 -0.1	
CLINCH HEIGHT	H2			3		
PULL - OUT FORCE	(P)	6N				

NOTES
1. MAXIMUM ALIGNMENT DEVIATION BETWEEN LEADS NOT TO BE GREATER THAN 0.2 mm.
2. MAXIMUM NON-CUMULATIVE VARIATION BETWEEN TAPE FEED HOLES SHALL NOT EXCEED 1 mm IN 20 PITCHES.
3. HOLDDOWN TAPE NOT TO EXCEED BEYOND THE EDGE(S) OF CARRIER TAPE AND THERE SHALL BE NO EXPOSURE OF ADHESIVE.
4. NO MORE THAN 3 CONSECUTIVE MISSING COMPONENTS ARE PERMITTED.
5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES ARE REQUIRED AFTER THE LAST COMPONENT.
6. SPLICES SHALL 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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