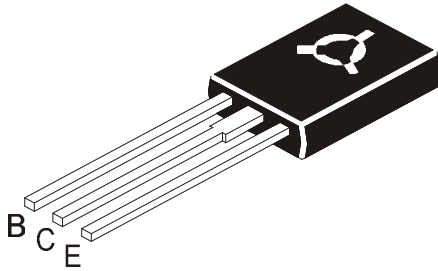


NPN EPITAXIAL SILICON POWER TRANSISTORS

**MJE13002
MJE13003**

**TO-126
Plastic Package**



Suitable for Switching Regulators, Inverters, Motor Control Solenoid/Relay Drivers and Deflection Circuits

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	MJE13002	MJE13003	UNIT
Collector Emitter Voltage	$V_{CEO(sus)}$	300	400	V
Collector Emitter Voltage	V_{CEV}	600	700	V
Emitter Base Voltage	V_{EBO}		9.0	V
Collector Current Continuous	I_C		1.5	A
Peak	$*I_{CM}$		3.0	A
Base Current Continuous	I_B		0.75	A
Peak	$*I_{BM}$		1.5	A
Emitter Current Continuous	I_E		2.25	A
Peak	$*I_{EM}$		4.5	A
Total Power Dissipation @ $T_a=25^\circ\text{C}$	P_D		1.4	W
Derate Above 25°C			11.2	mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_c=25^\circ\text{C}$	P_D		40	W
Derate Above 25°C			320	mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	T_j, T_{stg}		- 65 to 150	$^\circ\text{C}$

THERMAL RESISTANCE

Junction to Case	$R_{th(j-c)}$		3.12	$^\circ\text{C/W}$
Junction to Ambient in free air	$R_{th(j-a)}$		89	$^\circ\text{C/W}$
Maximum Load Temperature for Soldering Purposes 1/8" from Case for 5 Seconds	T_L		275	$^\circ\text{C}$

*Pulse Test: Pulse Width=5ms, Duty Cycle \leq 10%

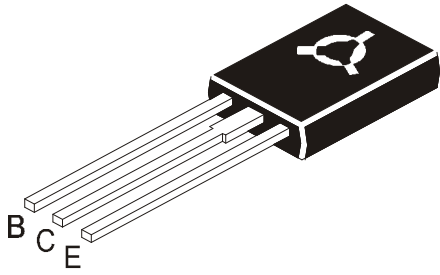
ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Sustaining Voltage	$**V_{CEO(sus)}$	$I_C=10\text{mA}, I_B=0$ MJE13002 MJE13003	300 400			V V
Collector Cutoff Current	I_{CEV}	$V_{CEV}=\text{Rated Value}, V_{BE}(\text{off})=1.5\text{V}$			1.0	mA
		$V_{CEV}=\text{Rated Value}, V_{BE}(\text{off})=1.5\text{V}, T_c=100^\circ\text{C}$			5.0	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=9\text{V}, I_C=0$			1.0	mA

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ELECTRICAL CHARACTERISTICS (T_c=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
DC Current Gain	**h _{FE}	I _C =0.5A, V _{CE} =2V I _C =1A, V _{CE} =2V	8 5		40 25	
Collector Emitter Saturation Voltage	**V _{CE(sat)}	I _C =0.5A, I _B =0.1A I _C =1A, I _B =0.25A I _C =1.5A, I _B =0.5A I _C =1A, I _B =0.25A, T _C =100°C			0.5 1.0 3.0 1.0	V V V V
Base Emitter Saturation Voltage	**V _{BE(sat)}	I _C =0.5A, I _B =0.1A I _C =1A, I _B =0.25A I _C =1A, I _B =0.25A, T _C =100°C			1.0 1.2 1.1	V V V

DYNAMIC CHARACTERISTICS

Transition Frequency	f _T	I _C =100mA, V _{CE} =10V f=1MHz	4.0			MHz
Output Capacitance	C _{ob}	V _{CB} =10V, I _E =0, f=0.1MHz		21		pF

Resistive Load

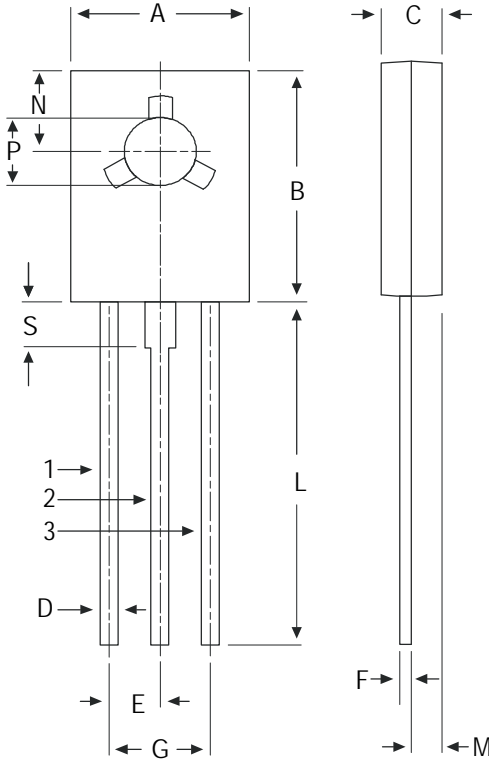
Delay Time	t _d	V _{CC} =125V, I _C =1A, I _{B1} =I _{B2} =0.2A, t _p =25μs, Duty Cycle≤1%			0.1	μs
Rise Time	t _r				1.0	μs
Storage Time	t _s				4.0	μs
Fall Time	t _f				0.7	μs

Inductive Load, Clamped

Voltage Storage Time	t _{sv}	V _{Clamp} =300V, I _C =1A, I _{B1} =0.2A, V _{BE(off)} =5V, T _C =100°C			4.00	μs
Crossover Time	t _C				0.75	μs
Fall Time	t _{fi}			0.15		μs

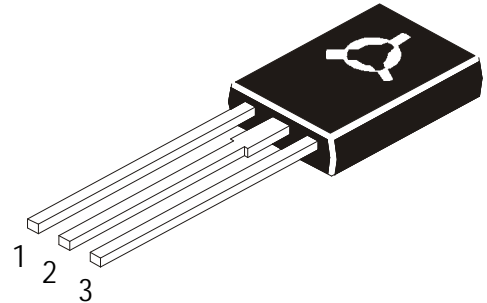
****Pulse Test: Pulse Width=300ms, Duty Cycle≤2%**

TO-126 (SOT-32) Plastic Package



DIM	MIN	MAX
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 TYP.	
F	0.49	0.75
G	4.5 TYP.	
L	15.7 TYP.	
M	1.27 TYP.	
N	3.75 TYP.	
P	3.0	3.2
S	2.5 TYP.	

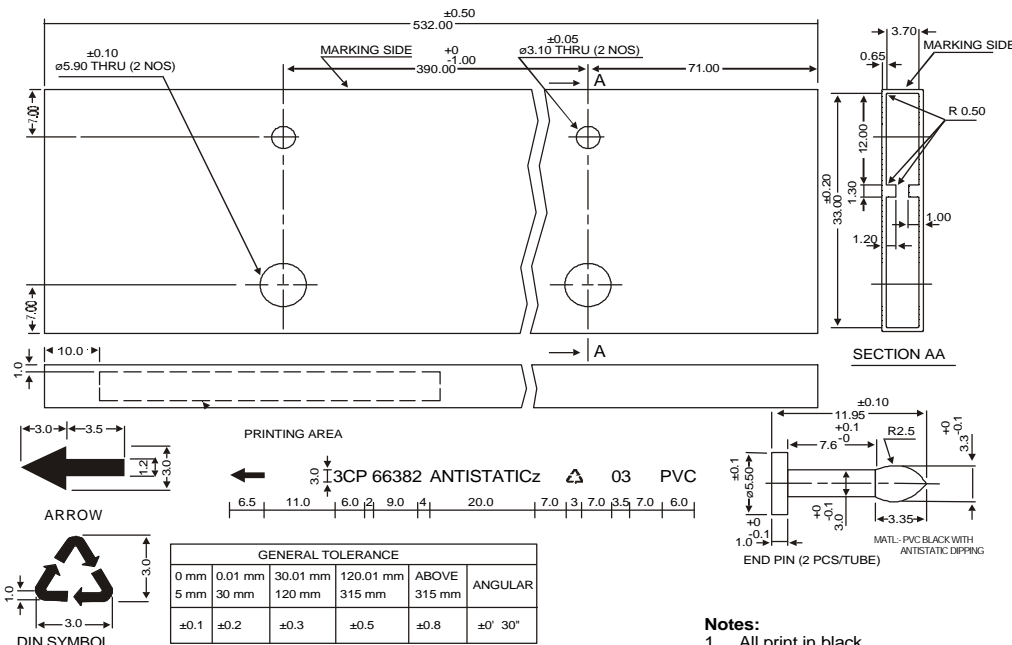
All dimensions in mm.



Pin Configuration

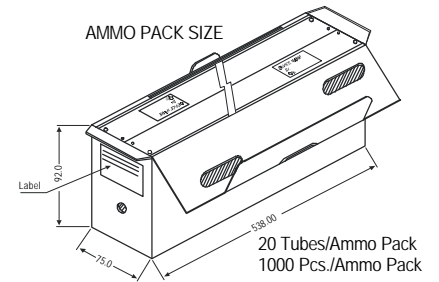
1. Base
2. Collector
3. Emitter

TO-126 (SOT-32) Plastic Package



All dimensions in mm

- Notes:
1. All print in black.
 2. All text in Helvetia medium font.



Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-126 Bulk	500 pcs/polybag	340 gm/500 pcs	3" x 7.5" x 7.5"	2K	17" x 15" x 13.5"	32K	31 kgs
TO-126 Tube	50 pcs/tube	73 gm/50 pcs	3" x 3.7" x 21.5"	1K	19" x 19" x 19"	10K	15 kgs

Disclaimer

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