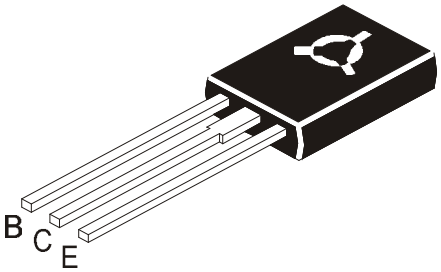
NPN EPITAXIAL SILICON POWER TRANSISTORS

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=25ºC	P_D	1.4		W
Derate Above 25ºC		11.2		mW/ ºC
Total Power Dissipation @ T_C=25ºC	P_D	40		W
Derate Above 25ºC		320		mW/ ºC
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 65 to 150		ºC

THERMAL RESISTANCE

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

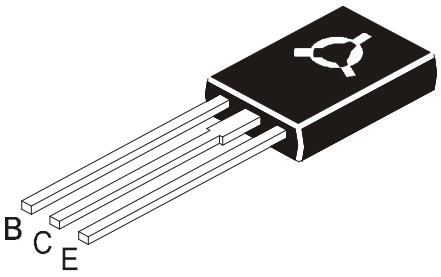
***Pulse Test: Pulse Width=5ms, Duty Cycle≤10%**

ELECTRICAL CHARACTERISTICS (T_c=25ºC unless specified otherwise)

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

NPN SILICON POWER TRANSISTORS

MJE13002
MJE13003



TO126
Plastic Package

ELECTRICAL CHARACTERISTICS (T_c=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
DC Current Gain	**h_{FE}	I_C=0.5A, V_{CE}=2V	8		40	
		I_C=1A,V_{CE}=2V	5		25	
Collector Emitter Saturation Voltage	**$V_{CE(sat)}$	I_C=0.5A, I_B=0.1A			0.5	V
		I_C=1A, I_B=0.25A			1.0	V
		I_C=1.5A, I_B=0.5A			3.0	V
		I_C=1A, I_B=0.25A,T_C=100ºC			1.0	V
Base Emitter Saturation Voltage	**$V_{BE(sat)}$	I_C=0.5A, I_B=0.1A			1.0	V
		I_C=1A, I_B=0.25A			1.2	V
		I_C=1A, I_B=0.25A,T_C=100ºC			1.1	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

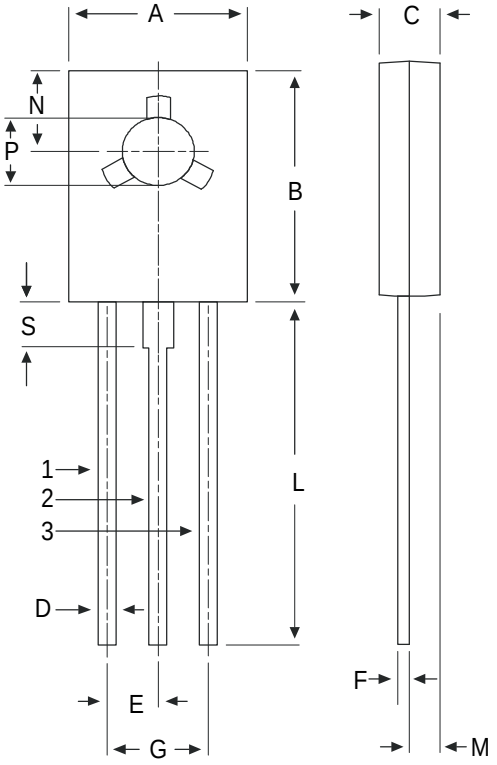
Delay Time	t_d	V_{CC}=125V, I_C=1A, I_{B1}=I_{B2}=0.2A, t_p=25µs, Duty Cycle≤1%			0.1	µs
Rise Time	t_r				1.0	µs
Storage Time	t_s				4.0	µs
Fall Time	t_f				0.7	µs

Inductive Load, Clamped

Voltage Storage Time	t_{sv}	V_{Clamp}=300V, I_C=1A, I_{B1}=0.2A, $V_{BE(off)}$=5V, T_c=100ºC			4.00	µs
Crossover Time	t_C				0.75	µs
Fall Time	t_{fi}			0.15		µs

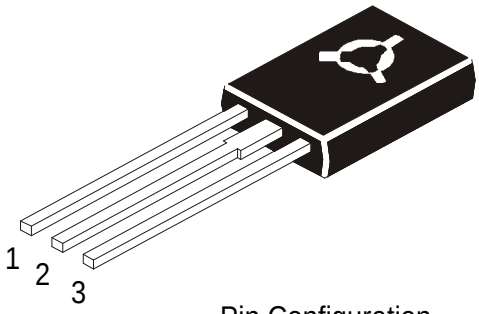
****Pulse Test: Pulse Width=300ms, Duty Cycle≤2%**

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.	

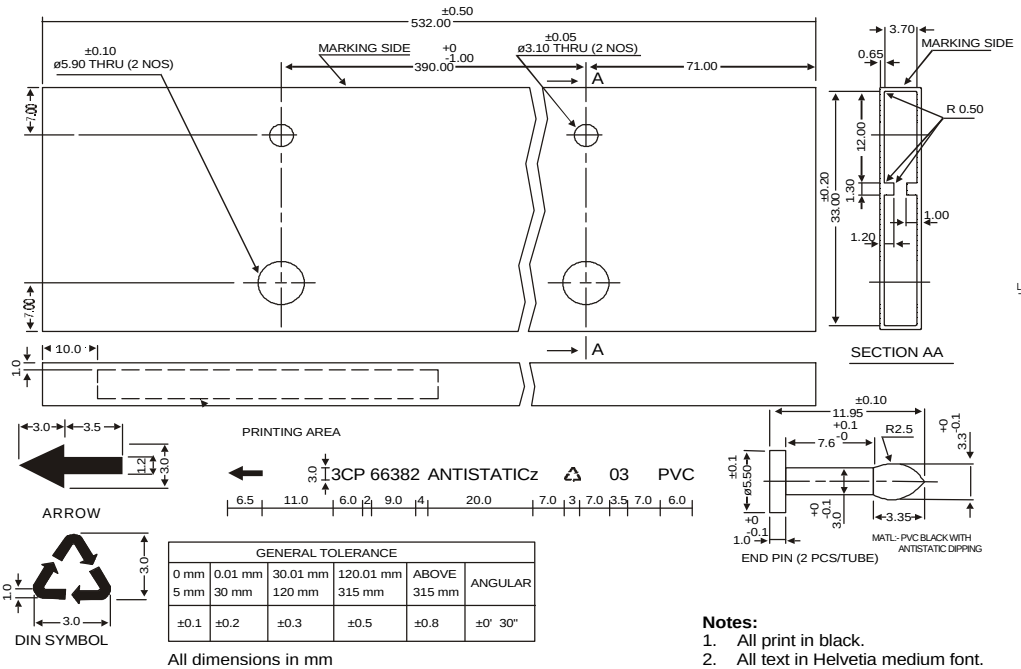
All dimensions in mm.



Pin Configuration

1. Base
2. Collector
3. Emitter

TO-126 (SOT-32) Plastic Package

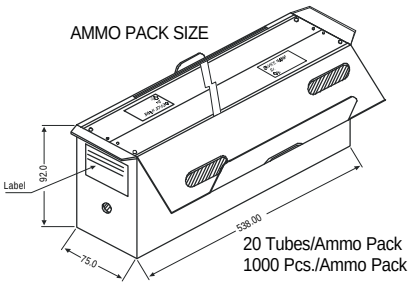


GENERAL TOLERANCE					
0 mm 5 mm	0.01 mm 30 mm	30.01 mm 120 mm	120.01 mm 315 mm	ABOVE 315 mm	ANGULAR
±0.1	±0.2	±0.3	±0.5	±0.8	±0' 30"

All dimensions in mm

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

AMMO PACK SIZE



20 Tubes/Ammo Pack
1000 Pcs./Ammo Pack

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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