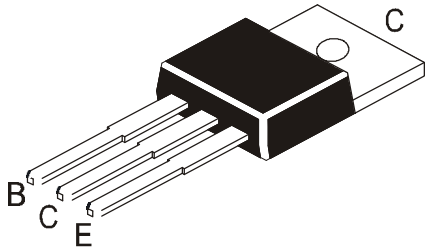
NPN PLASTIC POWER TRANSISTORS

MJE13004
MJE13005

TO-220
Plastic Package



Switchmode Series NPN Silicon Power Transistors

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	MJE13004	MJE13005	UNIT
Collector Emitter Sustaining Voltage	$V_{CEO\ (sus)}$	300	400	V
Collector Emitter Voltage	V_{CEV}	600	700	V
Emitter Base Voltage	V_{EBO}	9		V
Collector Current Continuous	I_C	4		A
*Peak	I_{CM}	8		A
Base Current Continuous	I_B	2		A
*Peak	I_{BM}	4		A
Emitter Current Continuous	I_E	6		A
*Peak	I_{EM}	12		A
Power Dissipation upto $T_{a=}$25ºC	P_D	2		W
Derate above=25ºC		16		mW/ºC
Power Dissipation upto T_c=25ºC	P_D	75		W
Derate above=25ºC		600		mW/ºC
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 65 to +150		ºC

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

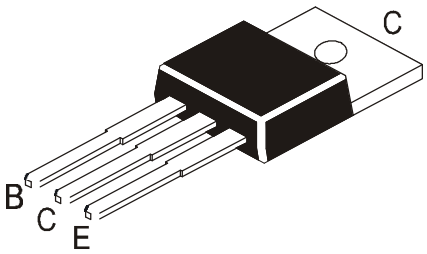
THERMAL RESISTANCE

Junction to Case	$R_{th\ (j-c)}$	1.67	ºC/W
Junction to Ambient in free air	$R_{th\ (j-a)}$	62.5	ºC/W
Maxmium Lead Temperature for Soldering Purpose 1/8" from Case for 5 Seconds	T_L	275	ºC

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				
		MJE13004	300			V
		MJE13005	400			V
Collector Cut off Current	I_{CEV}	V_{CEV}=Rated Value,V_{BE}=(off)=1.5V			1.0	mA
		T_C=100ºC				
		V_{CEV}=Rated Value,V_{BE}=(off)=1.5V			5.0	mA
Emitter Cut off Current	I_{EBO}	V_{EB}=9V, I_C=0			1.0	mA
DC Current Gain	**h_{FE}	I_C=1A, V_{CE}=5V	10		60	
		I_C=2A, V_{CE}=5V	8		40	

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



TO-220
Plastic Package

ELECTRICAL CHARACTERISTICS (T_c=25ºC Unless Specified Otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Saturation Voltage	$^{**}V_{CE(sat)}$	I_C=1A, I_B=0.2A			0.5	V
		I_C=2A, I_B=0.5A			0.6	V
		I_C=4A, I_B=1A			1.0	V
		I_C=2A, I_B=0.5A, T_c=100ºC			1.0	V
Base Emitter Saturation Voltage	$^{**}V_{BE(sat)}$	I_C=1A, I_B=0.2A			1.2	V
		I_C=2A, I_B=0.5A			1.6	V
		I_C=2A, I_B=0.5A, T_c=100ºC			1.5	V
Current Gain-Bandwidth Product	f_T	I_C=500mA,V_{CE}=10V, f=1MHz	4			MHz
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=0.1MHz		65		pF

SWITCHING CHARACTERISTICS

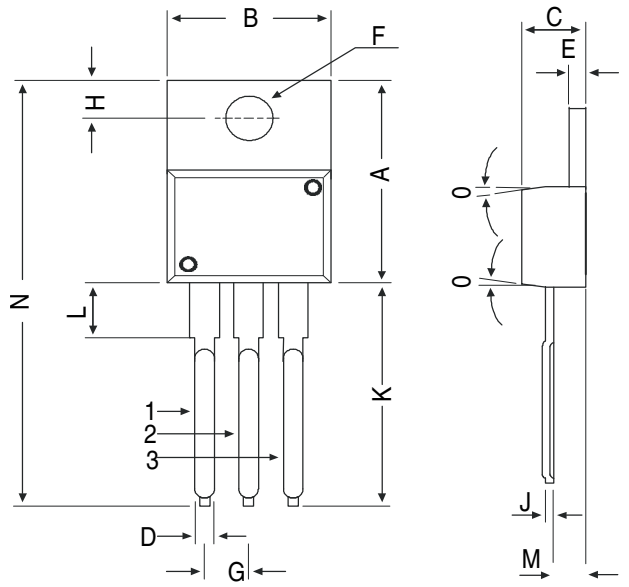
Resistive Load	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Delay Time	t_d	V_{CC}=125V, I_C=2A, I_{B1}=I_{B2}=0.4A, t_p=25µs, Duty Cycle≤1%			0.1	µs
Rise Time	t_r				0.7	µs
Storage Time	t_s				4.0	µs
Fall Time	t_f				0.9	µs

Inductive Load, Clamped

Voltage Storage Time	t_{sv}	V_{Clamp}=300V, I_C=2A, I_{B1}=0.4A, $V_{BE(off)}$=5V, T_c=100ºC			4.0	µs
Crossover Time	t_C				0.9	µs
Fall Time	t_{fi}			0.16		µs

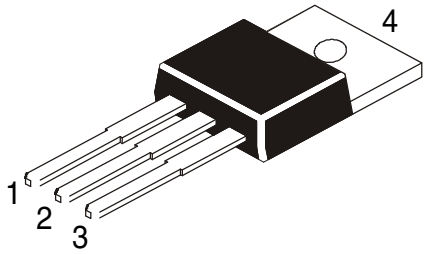
****Pulse Test: Pulse Width=300µs, Duty Cycle≤2%**

TO-220 Plastic Package



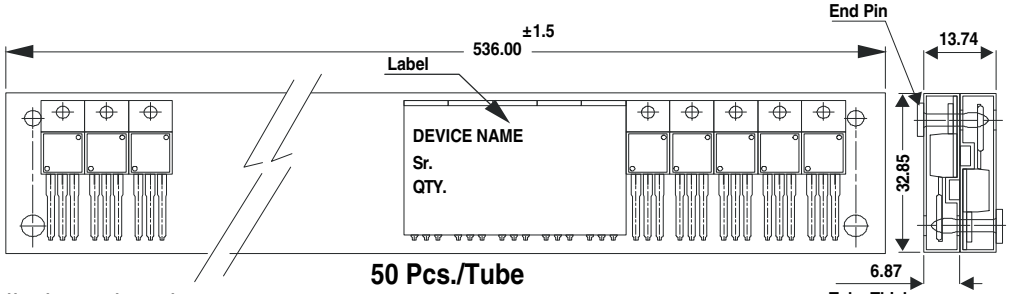
DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	—	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	—	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	—	31.24
O	7 DEG	

All diminsions in mm.



Pin Configuration
1. Base
2. Collector
3. Emitter
4. Collector

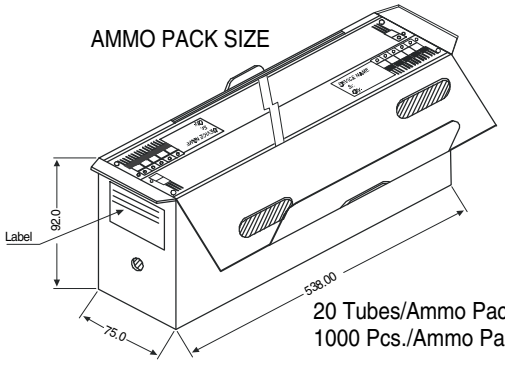
TO-220 Tube Packing



50 Pcs./Tube

All Dimensions in mm

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-220 / FP	200 pcs/polybag	396 gm/200 pcs	3" x 7.5" x 7.5"	1.0K	17" x 15" x 13.5"	16.0K	36 kgs
	50 pcs/tube	120 gm/50 pcs	3.5" x 3.7" x 21.5"	1.0K	19" x 19" x 19"	10.0K	29 kgs

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