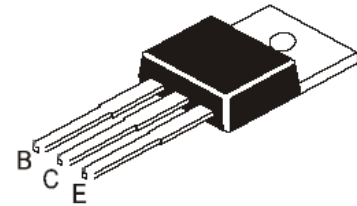


## NPN Power Transistor

### Features

- MJE13004 is designed for high-voltage, high-speed power switching inductive circuits where fall time is critical.
- RoHS Compliant



TO-220



### Mechanical Data

<b>Case:</b>	TO-220, Plastic Package
<b>Terminals:</b>	Solderable per MIL-STD-202, Method 208
<b>Weight:</b>	0.08 ounces, 2.24 grams

### Absolute Maximum Ratings (T<sub>amb</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	300	V
V <sub>CBO</sub>	Collector-Base Voltage	600	V
V <sub>EBO</sub>	Emitter-Base Voltage	9.0	V
I <sub>C</sub>	Collector Current Continuous	4.0	A
I <sub>CM</sub>	Collector Current Peak	8.0	A
I <sub>B</sub>	Base Current Continuous	2.0	A
I <sub>BM</sub>	Base Current Peak	4.0	A
I <sub>E</sub>	Emitter Current Continuous	6.0	A
I <sub>EM</sub>	Emitter Current Peak	12.0	A
PD	Power Dissipation T <sub>c</sub> =25°C Derate above 25°C	75 600	W mW/°C
PD	Power Dissipation T <sub>a</sub> =25°C Derate above 25°C	2 16	W mW/°C
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperature Range	-65~+150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

# NPN Power Transistor

## MJE13004

### Electrical Characteristics (Tamb=25°C unless otherwise noted)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Condition
<b>Off Characteristics</b>						
VCE0(sus) *	Collector- Emitter Sustaining Voltage	300	-	-	V	IC=10mA, IB=0
ICE0 *	Collector Cut-off Current	-	-	1.0	mA	VCEV=300V, VBE(off)=1.5V
		-	-	5.0		VCEV=300V, VBE(off)=1.5V, Tc=100°C
IEBO *	Emitter Cut-off Current	-	-	1.0	mA	VEB=9.0V, IC=0
<b>On Characteristics</b>						
hFE1 *	DC Current Gain	10	-	60		VCE=5.0V, IC =1.0A
hFE2 *		8	-	40		VCE=5.0V, IC =2.0A
VCE(sat) *	Collector-Emitter Saturation Voltage	-	-	0.5	V	IC =1.0A, IB =0.2A
		-	-	0.6		IC =2.0A, IB =0.5A
		-	-	1.0		IC =4.0A, IB =1.0A
		-	-	1.0		IC =2.0A, IB =0.5A, Tc=100°C
VBE(sat) *	Base-Emitter Saturation Voltage	-	-	1.2	V	IC =1.0A, IB =0.2A
		-	-	1.6		IC =2.0A, IB =0.5A
		-	-	1.5		IC =2.0A, IB =0.5A, Tc=100°C
<b>Dynamic Characteristics</b>						
fT	Current Gain Bandwidth Product	4.0	-	-	MHz	IC=500mA, VCE=10V, f=1.0MHz
Cob	Output Capacitance	-	65	-	pF	VCB=10V, IE=0, f=0.1MHz
<b>Switching Characteristics Resistive Load</b>						
td	Delay Time	-	-	0.1	us	VCC=125V, IC=2.0A IB1=-IB2=0.4A, tp=25µs, Duty Cycle≤1.0%
tr	Rise Time	-	-	0.7		
ts	Storage Time	-	-	4.0		
tf	Fall Time	-	-	0.9		

# NPN Power Transistor

## MJE13004

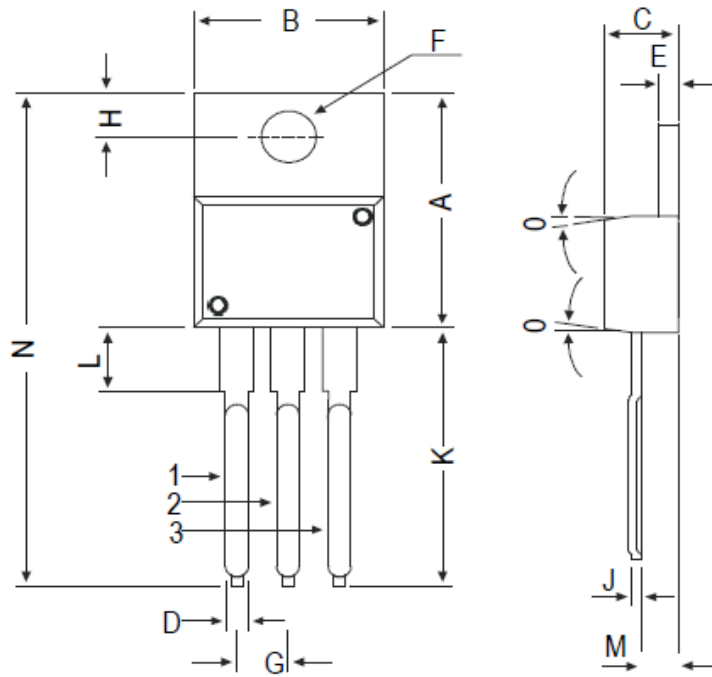
Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Condition
<b>Switching Characteristics Inductive Load, Clamped</b>						
<b>tstg</b>	Storage Time	-	-	4.0	us	IC=2.0A, VCLAMP=300V, IB1 =0.4A, VBE(OFF)=5V, Tc=100°C
<b>tc</b>	Crossover Time	-	-	0.9		
<b>tf</b>	Fall Time	-	0.16	-		

\* Pulse Test: Pulse Width≤300us, Duty Cycle≤2.0%

### Thermal Resistance

Description	Symbol	Value	Unit
Junction to case	<b>Rth(j-c)</b>	1.67	°C/W
Junction to ambient in free air	<b>Rth(j-a)</b>	62.5	°C/W
Maximum lead temperature for soldering purpose 1/8" from case for 5 seconds	<b>T<sub>L</sub></b>	275	°C

### Dimensions in mm

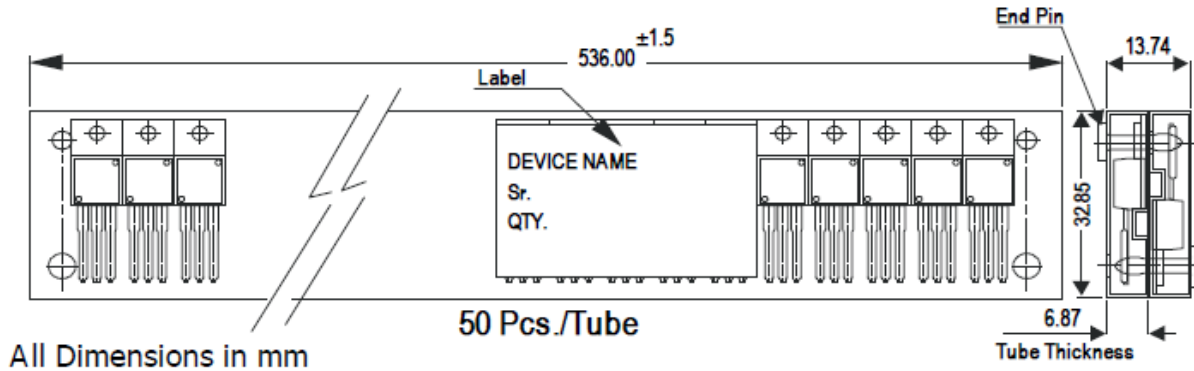


DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	—	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	—	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	—	31.24
O	7 DEG	

**TO-220**

### Packing Information

#### Tube Dimensions



#### Packing Details

Pack	Description	Standard Pack	Inner Box	Carton Box
BL	Bulk, RoHS	200pcs/polybag	1,000pcs	16,000pcs
TU	Tube, RoHS	50pcs/tube	1,000pcs	10,000pcs

#### How to contact us

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