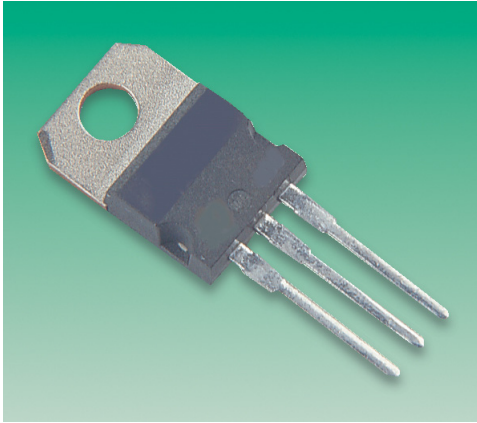


MJE13007

Power Transistor



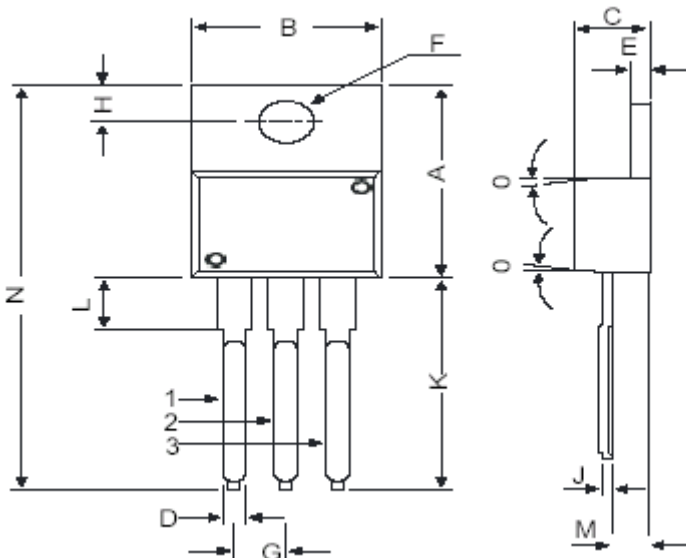
High Voltage Switching



Features:

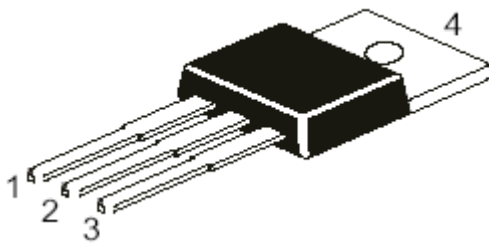
- NPN Plastic Power Transistors.
- Switchmode Series NPN Silicon Power Transistors.

TO-220 Plastic Package



Dimension	Minimum	Maximum
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°	

Dimensions : Millimetres



Pin Configuration:

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



Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(sus)}$	400	V
Collector Emitter Voltage	V_{CEV}	700	
Emitter Base Voltage	V_{EBO}	9	
Collector Current Continuous *Peak	I_C I_{CM}	8 16	A
Base Current Continuous *Peak	I_B I_{BM}	4 8	
Emitter Current Continuous *Peak	I_E I_{EM}	12 24	
Power Dissipation up to $T_a = 25^\circ\text{C}$ Derate Above 25°C	P_D	2 16	W mW/ $^\circ\text{C}$
Power Dissipation up to $T_C = 25^\circ\text{C}$ Derate Above 25°C		80 640	
Operating and Storage Junction Temperature Range	T_j, T_{stg}	-65 to +150	$^\circ\text{C}$

*Pulse Test: Pulse Width = 5ms, duty cycle $\leq 10\%$

Thermal Resistance

Junction to Case	$R_{th(j-c)}$	1.56	$^\circ\text{C/W}$
Junction to Ambient in Free Air	$R_{th(j-a)}$	62.5	
Maximum Lead Temperature for Soldering Purpose 1/8" from Case for 5 Seconds	T_L	275	$^\circ\text{C}$

Electrical Characteristics ($T_C = 25^\circ\text{C}$ unless specified otherwise)

Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Unit
Collector Emitter Sustaining Voltage	** $V_{CEO(sus)}$	$I_C = 10\text{mA}, I_B = 0$	400	-	-	V
Collector Cut off Current	I_{CEV}	$V_{CEV} = \text{Rated Value}, V_{BE(off)} = 1.5\text{V}$ $T_C = 100^\circ\text{C}$ $V_{CEV} = \text{Rated Value}, V_{BE(off)} = 1.5\text{V}$	-	-	1.0 5.0	mA
Emitter Cut off Current	I_{EBO}	$V_{EB} = 9\text{V}, I_C = 0$	-	-	1.0	
DC Current Gain	** h_{FE}	$I_C = 2\text{A}, V_{CE} = 5\text{V}$ $I_C = 5\text{A}, V_{CE} = 5\text{V}$	8 5	-	60 30	-

MJE13007

Power Transistor



Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Unit
Collector Emitter Saturation Voltage	**VCE(sat)	IC = 2A, IB = 0.4A IC = 5A, IB = 1A IC = 8A, IB = 2A IC = 5A, IB = 1A, TC = 100°C	-	-	1 2 3 3	V
Base Emitter Saturation Voltage	**VBE(sat)	IC = 2A, IB = 0.4A IC = 5A, IB = 1A IC = 5A, IB = 1A, TC = 100°C	-	-	1.2 1.6 1.5	V

Electrical Characteristics (T_C = 25°C unless specified otherwise)

Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Unit
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	-	110	-	pF

Switching Characteristics

Resistive Load	Symbol	Test Condition	Minimum	Typical	Maximum	Unit
Delay Time	t _d	V _{CC} = 125V, I _C = 5A, I _{B1} = I _{B2} = 1A, t _p = 25μs, Duty Cycle ≤1%	-	-	0.1	μs
Rise Time	t _r		-	-	1.5	
Storage Time	t _s		-	-	3.0	
Fall Time	t _f		-	-	0.7	
Inductive Load, Clamped						
Voltage Storage Time	t _{sv}	V _{clamp} = 300V, I _C = 5A, I _{B1} = 1A, V _{BE(off)} = 5V, T _C = 100°C	-	-	2.3	μs
Crossover Time	t _c		-	-	0.7	

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

Specifications

I _{C(av)} maximum (A)	V _{CEO} maximum (V)	V _{CEV} maximum (V)	V _{CE(sat)} (V) at I _C = 5A	t _f maximum (μs)	P _D at 25°C (W)	Type	Package	Part Number
8	400	700	2	0.7	80	NPN	TO-220	MJE13007



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