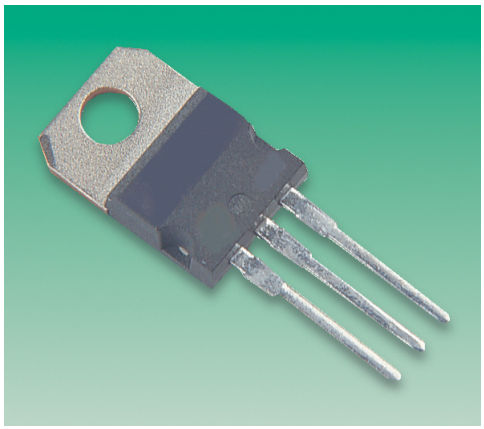
MJE13007

Power Transistor

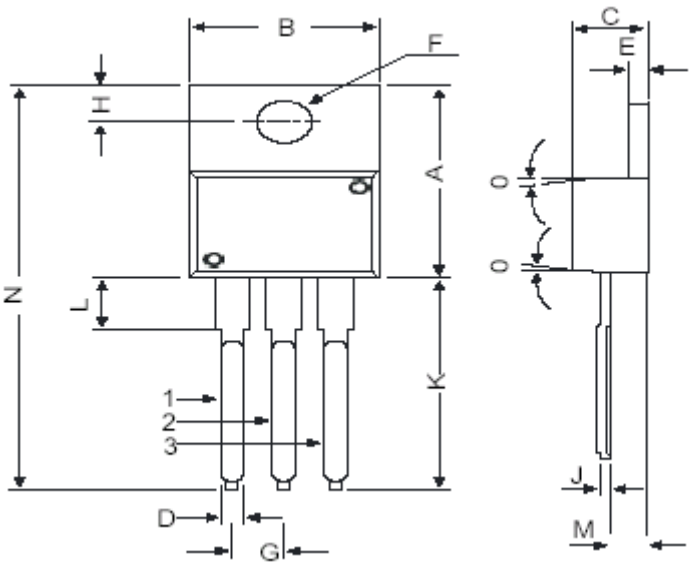
High Voltage Switching



Features:

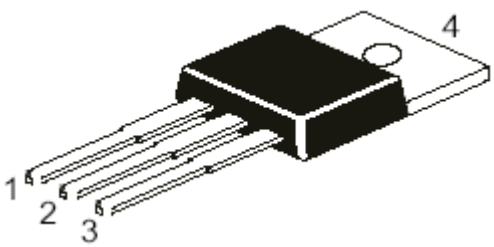
- NPN Plastic Power Transistors.
- Switchmode Series NPN Silicon Power Transistors.

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 = 25ºC Derate Above 25ºC	P_D	2 16	W mW/°C
Power Dissipation up to T_C = 25ºC Derate Above 25ºC		80 640	
Operating and Storage Junction Temperature Range	T_j, T_{stg}	-65 to +150	°C

*Pulse Test: Pulse Width = 5ms, duty cycle ≤ 10%

Thermal Resistance

Junction to Case	$R_{th(j-c)}$	1.56	°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	°C

Electrical Characteristics (T_c = 25ºC unless specified otherwise)

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

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 = 25ºC 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

Notes:

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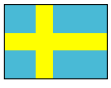

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