



MJE13007

SILICON NPN SWITCHING TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY

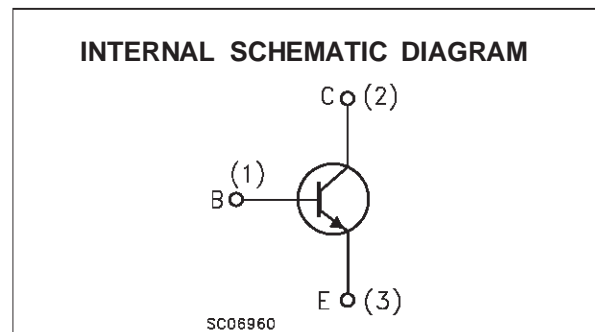
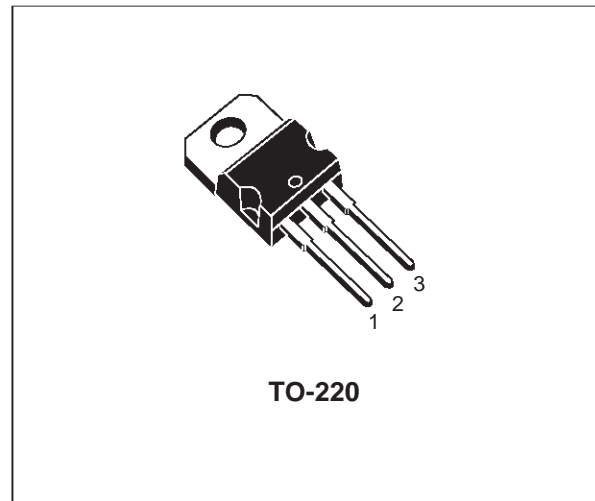
APPLICATIONS

- SWITCHING REGULATORS
- MOTOR CONTROL

DESCRIPTION

The MJE13007 is a silicon multiepitaxial mesa NPN power transistor mounted in Jedec TO-220 plastic package.

It is intended for use in motor control, switching regulators etc.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-Emitter Voltage ($V_{BE} = -1.5V$)	700	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	400	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	9	V
I_C	Collector Current	8	A
I_{CM}	Collector Peak Current	16	A
I_B	Base Current	4	A
I_{BM}	Base Peak Current	8	A
I_E	Emitter Current	12	A
I_{EM}	Emitter Peak Current	24	A
P_{tot}	Total Dissipation at $T_c \leq 25^\circ C$	80	W
T_{stg}	Storage Temperature	-65 to 150	$^\circ C$
T_j	Max. Operating Junction Temperature	150	$^\circ C$

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	1.56	°C/W
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ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CEV}	Collector Cut-off Current (V _{BE} = -1.5V)	V _{CE} = rated V _{CEV} V _{CE} = rated V _{CEV} T _c = 100 °C			1 5	mA mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 9 V			1	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage	I _C = 10 mA	400			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 2 A I _B = 0.4 A I _C = 5 A I _B = 1 A I _C = 8 A I _B = 2 A I _C = 5 A I _B = 1 A T _c = 100 °C			1 1.5 3 2	V V V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 2 A I _B = 0.4 A I _C = 5 A I _B = 1 A I _C = 5 A I _B = 1 A T _c = 100 °C			1.2 1.6 1.5	V V V
h _{FE*}	DC Current Gain	I _C = 2 A V _{CE} = 5 V I _C = 5 A V _{CE} = 5 V	8 6		40 30	
f _T	Transition Frequency	I _C = 0.5 A V _{CE} = 10 V f = 1 MHz	4			MHz
C _{CBO}	Output Capacitance	I _E = 0 V _{CB} = 10 V f = 0.1 MHz		110		pF

RESISTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t _{on}	Turn-on Time	V _{CC} = 125 V I _C = 5 A			0.7	μs
t _s	Storage Time	I _{B1} = -I _{B2} = 1 A			3	ms
t _f	Fall Time	t _p = 25 μs Duty Cycle < 1%			0.7	ms

INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t _f	Fall Time	V _{CC} = 125 V I _C = 5 A I _{B1} = 1 A t _p = 25 μs Duty Cycle < 1%			0.3	μs
t _f	Fall Time	V _{CC} = 125 V I _C = 5 A I _{B1} = 1 A t _p = 25 μs Duty Cycle < 1% T _c = 100 °C			0.6	μs

* Pulsed: Pulse duration = 300 μs, duty cycle 2 %

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