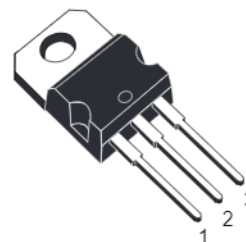


SILICON NPN SWITCHING TRANSISTOR

■ SGS-THOMSON PREFERRED SALESTYPE

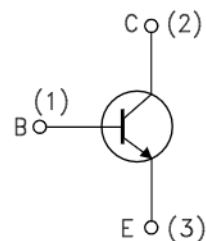
DESCRIPTION

The MJE13005 is a silicon multiepitaxial mesa NPN transistor in Jedec TO-220 plastic package particularly intended for switch-mode applications.



TO-220

INTERNAL SCHEMATIC DIAGRAM



SC06960

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-Emitter Voltage	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	4	A
I_{CM}	Collector Peak Current	8	A
I_B	Base Current	2	A
I_{BM}	Base Peak Current	4	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25^\circ C$	75	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	1.67	$^{\circ}\text{C}/\text{W}$
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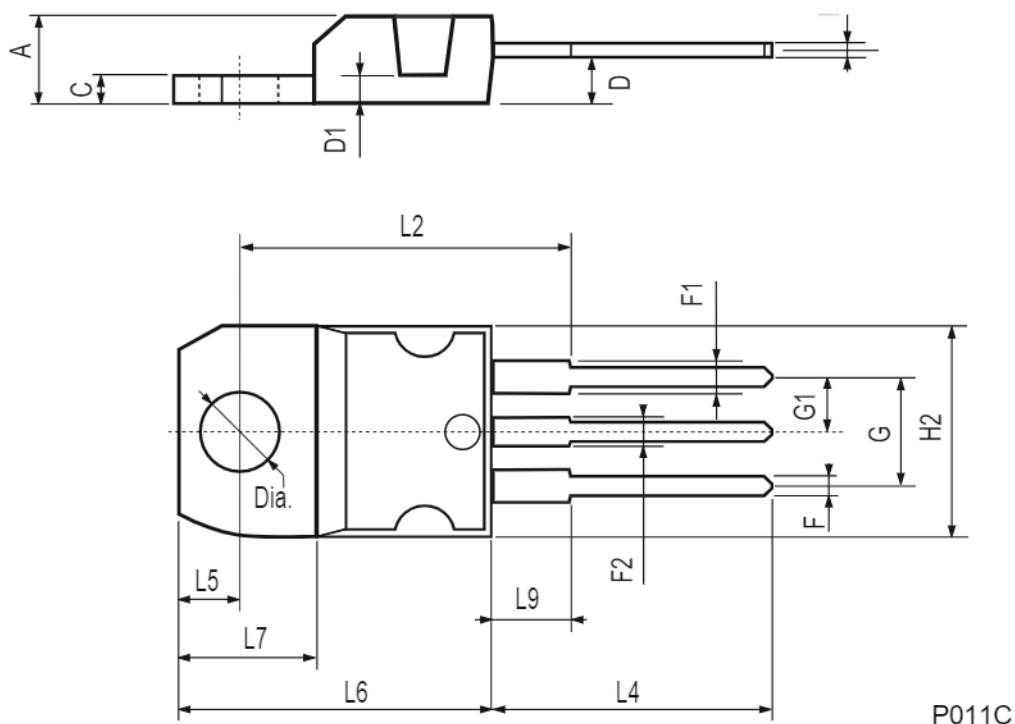
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5\text{V}$)	$V_{CE} = 700\text{V}$ $V_{CE} = 700\text{V}$ $T_{case} = 100^{\circ}\text{C}$			1 5	mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 9\text{V}$			1	mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 10\text{mA}$	400			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{A}$ $I_B = 0.2\text{A}$ $I_C = 2\text{A}$ $I_B = 0.5\text{A}$ $I_C = 4\text{A}$ $I_B = 1\text{A}$			0.5 0.6 1	V V V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 1\text{A}$ $I_B = 0.2\text{A}$ $I_C = 2\text{A}$ $I_B = 0.5\text{A}$			1.2 1.6	V V
h_{FE}	DC Current Gain	$I_C = 1\text{A}$ $V_{CE} = 5\text{V}$ $I_C = 2\text{A}$ $V_{CE} = 5\text{V}$	10 8	30	60 40	V
t_{on} t_s t_f	Turn-on Time Storage Time Fall Time	$I_C = 2\text{A}$ $I_{B1} = -I_{B2} = 0.4\text{A}$ $V_{CC} = 250\text{V}$			0.8 4 0.9	μs μs μs

* Pulsed: Pulse duration = 300 μs , duty cycle = 1.5 %

TO-220 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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