

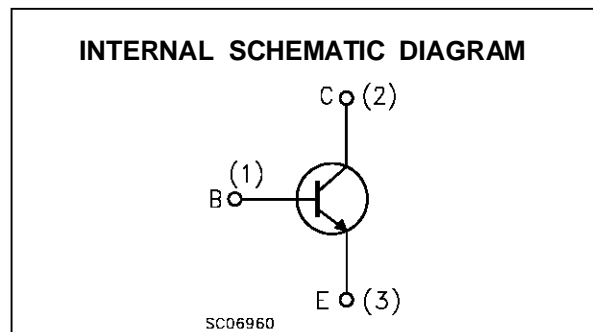
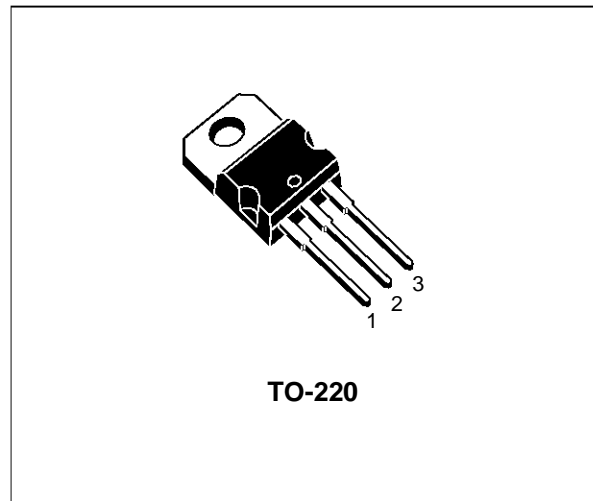
SILICON NPN SWITCHING TRANSISTORS

■ SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

The MJE13007 and MJE13007A are silicon multiepitaxial mesa NPN power transistor mounted in Jedec TO-220 plastic package.

They are intended for use in motor control, switching regulators etc.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		MJE13007	MJE13007A	
V_{CEV}	Collector-Emitter Voltage ($V_{BE} = -1.5V$)	700	850	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	400	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
-----------------------	----------------------------------	-----	------	------

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 _{CB0}	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

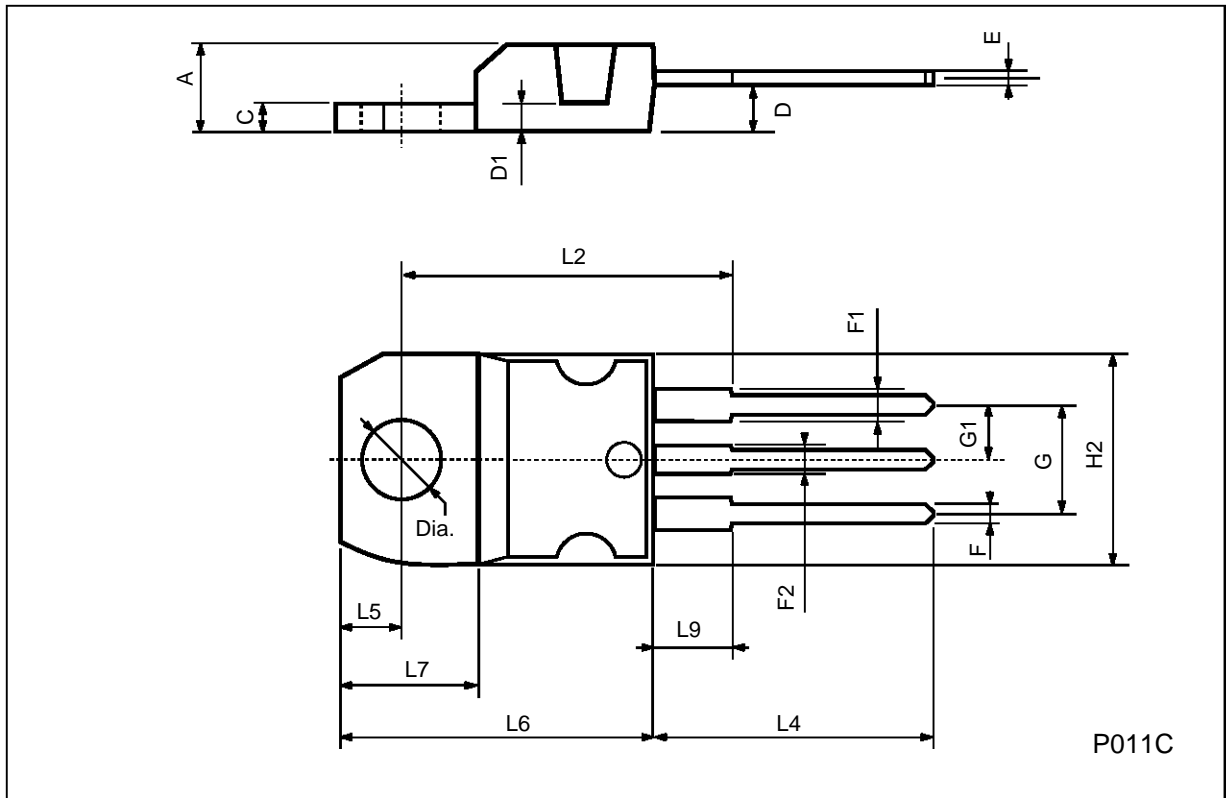
INDUCTIVE LOAD

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 %

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



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A