

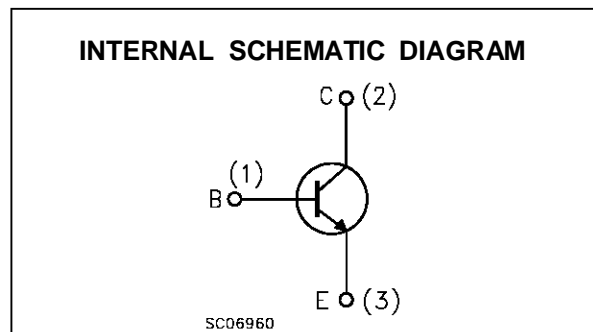
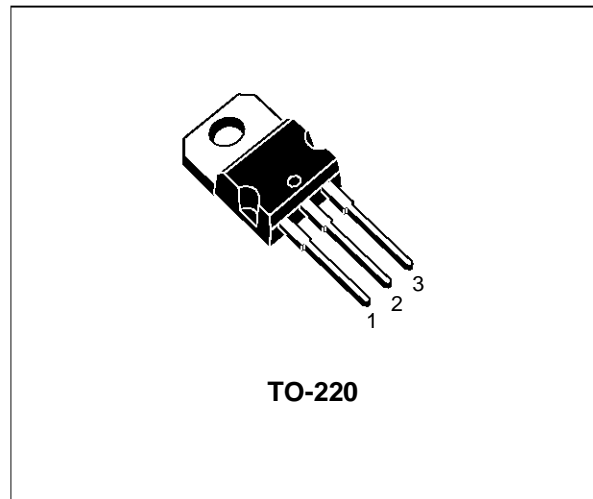
## SILICON NPN SWITCHING TRANSISTOR

- LOW SATURATION VOLTAGE
- FAST TURN-ON AND TURN-OFF
- BASE DRIVE SPECIFIED FOR DIFFERENT VALUES OF  $I_C$
- WIDE SURGE AREA

### DESCRIPTION

High speed transistor suited for low voltage applications.

High frequency and efficiency converters switching regulators motor control.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )	180	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	90	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	7	V
$I_C$	Emitter Current	14	A
$I_{CM}$	Collector Peak Current ( $t_p < 10ms$ )	25	A
$I_B$	Base Current	4	A
$I_{BM}$	Base Peak Current ( $t_p < 10ms$ )	6	A
$P_{tot}$	Total Dissipation at $T_c < 25\text{ }^\circ\text{C}$	85	W
$P_{tot}$	Total Dissipation at $T_c < 60\text{ }^\circ\text{C}$	65	W
$T_{stg}$	Storage Temperature	-65 to +175	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	175	$^\circ\text{C}$

**THERMAL DATA**

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.76	°C/W
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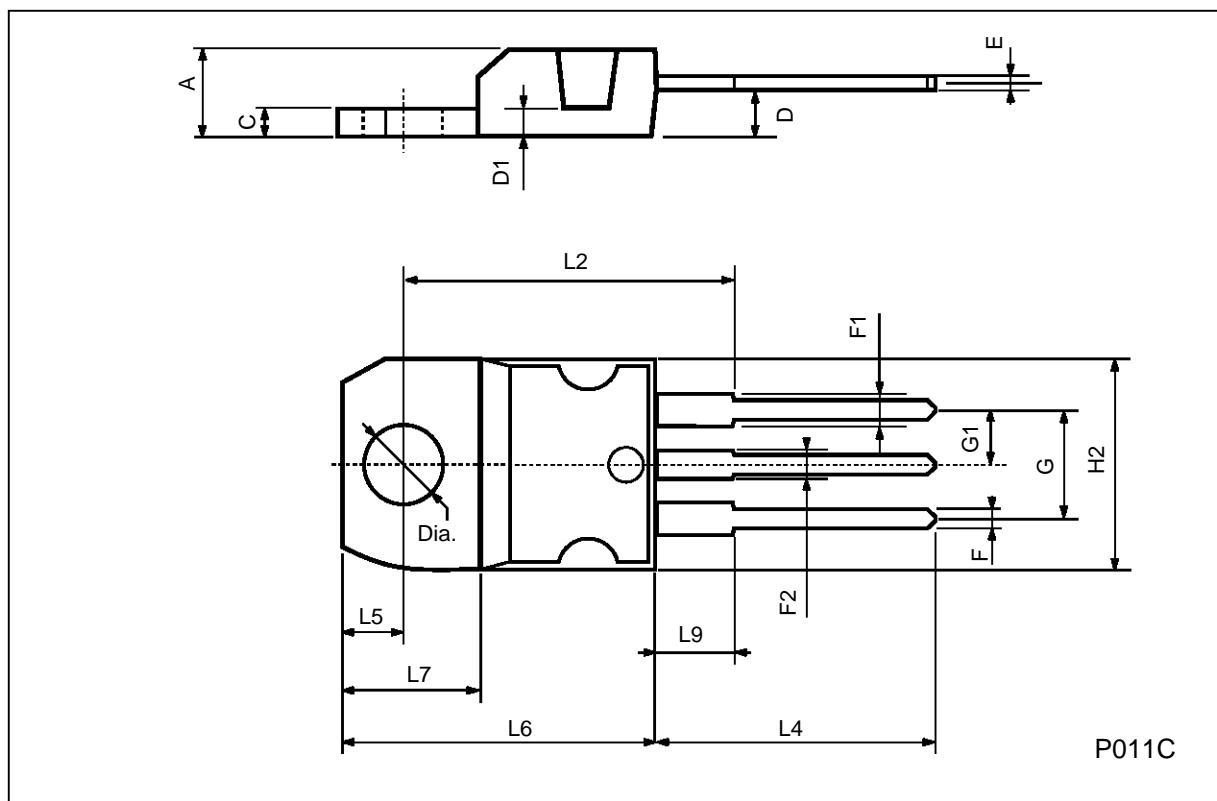
**ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CER</sub>	Collector Cut-off Current (R <sub>BE</sub> = 50Ω)	V <sub>CE</sub> = 180V T <sub>c</sub> = 125°C			3	mA
I <sub>CEX</sub>	Collector Cut-off Current	V <sub>CE</sub> = 180V V <sub>BE</sub> = -1.5V T <sub>c</sub> = 125°C			1	mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 0.2mA L = 25mH	90			V
V <sub>EBO</sub>	Emitter-Base Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = 50mA	7		30	V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 6A I <sub>B</sub> = 0.6A I <sub>C</sub> = 12A I <sub>B</sub> = 1.2A			0.6 1.5	V V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 12A I <sub>B</sub> = 1.2A			2	V
t <sub>on</sub> t <sub>s</sub> t <sub>f</sub>	<b>RESISTIVE LOAD</b> Turn-on Time Storage Time Fall Time	V <sub>CC</sub> = 50V I <sub>C</sub> = 12A V <sub>BE</sub> = - 6V I <sub>B1</sub> = 1.2A R <sub>BB</sub> = 2.5Ω		0.4 0.45 0.12	0.6 1 0.25	ms μs μs
t <sub>s</sub> t <sub>f</sub>  t <sub>s</sub> t <sub>f</sub>	<b>INDUCTIVE LOAD</b> Storage time Fall Time  Storage Time Fall Time	V <sub>CC</sub> = 50V I <sub>C</sub> = 12A V <sub>BE</sub> = - 5V I <sub>B1</sub> = 1.2A L <sub>B</sub> = - 0.5μH  V <sub>CC</sub> = 50V I <sub>C</sub> = 12 A V <sub>BE</sub> = - 5V I <sub>B1</sub> = 1.2A L <sub>B</sub> = - 0.5μH T <sub>j</sub> = 125°C		0.5 0.04	2 0.15	μs μs  μs μs

\* Pulsed: Pulse duration = 300μs, 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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