

HIGH POWER NPN SILICON TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- VERY LOW SATURATION VOLTAGE AND HIGH GAIN

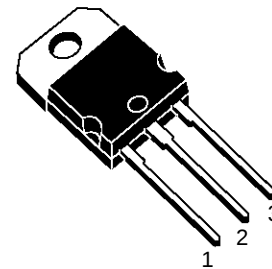
APPLICATION

- SWITCHING REGULATORS
- MOTOR CONTROL
- HIGH FREQUENCY AND EFFICIENCY CONVERTERS

DESCRIPTION

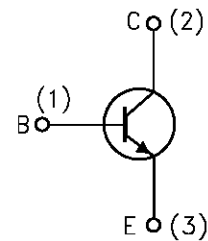
The BUT70 is a Multiepitaxial planar NPN transistor in TO-218 plastic package.

It's intended for use in high frequency and efficiency converters such as motor controllers and industrial equipment.



TO-218

INTERNAL SCHEMATIC DIAGRAM



SC06960

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-emitter Voltage ($V_{BE} = -1.5V$)	200	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	125	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	7	V
$I_{E(RMS)}$	Emitter Current	40	A
I_{EM}	Emitter Peak Current	120	A
I_B	Base Current	8	A
I_{BM}	Base Peak Current	24	A
P_{tot}	Total Power Dissipation at $T_{case} < 25\text{ }^{\circ}C$	200	W
T_{stg}	Storage Temperature	-65 to 150	$^{\circ}C$
T_j	Max Operating Junction Temperature	150	$^{\circ}C$

BUT70

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	0.63	°C/W
-----------------------	----------------------------------	-----	------	------

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CER}	Collector Cut-off Current (R _{BE} = 5Ω)	V _{CE} = V _{CEV} V _{CE} = V _{CEV} T _C = 100°C			1 5	mA mA
I _{CEV}	Collector Cut-off Current	V _{CE} = V _{CEV} V _{BE} = -1.5V V _{CE} = V _{CEV} V _{BE} = -1.5V T _C = 100°C			1 4	mA mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = -5 V			1	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage	I _C = 0.2A L = 25 mH	125			V
V _{EBO}	Emitter-base Voltage (I _C = 0)	I _E = 50 mA	7			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 70 A I _B = 7 A I _C = 70 A I _B = 7 A T _J = 100°C I _C = 35 A I _B = 1.75 A I _C = 35 A I _B = 1.75 A T _J = 100°C			0.9 1.5 0.9 1.2	V V V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 70 A I _B = 7 A I _C = 70 A I _B = 7 A T _J = 100°C I _C = 35 A I _B = 1.75 A I _C = 35 A I _B = 1.75 A T _J = 100°C			1.8 1.9 1.4 1.4	V V V V
di _C /dt*	Rated of Rise of on-state Collector Current	V _{CC} = 100 V R _C = 0 I _{B1} = 3.5 A t _p = 3 μS T _J = 100°C	140			A/μs

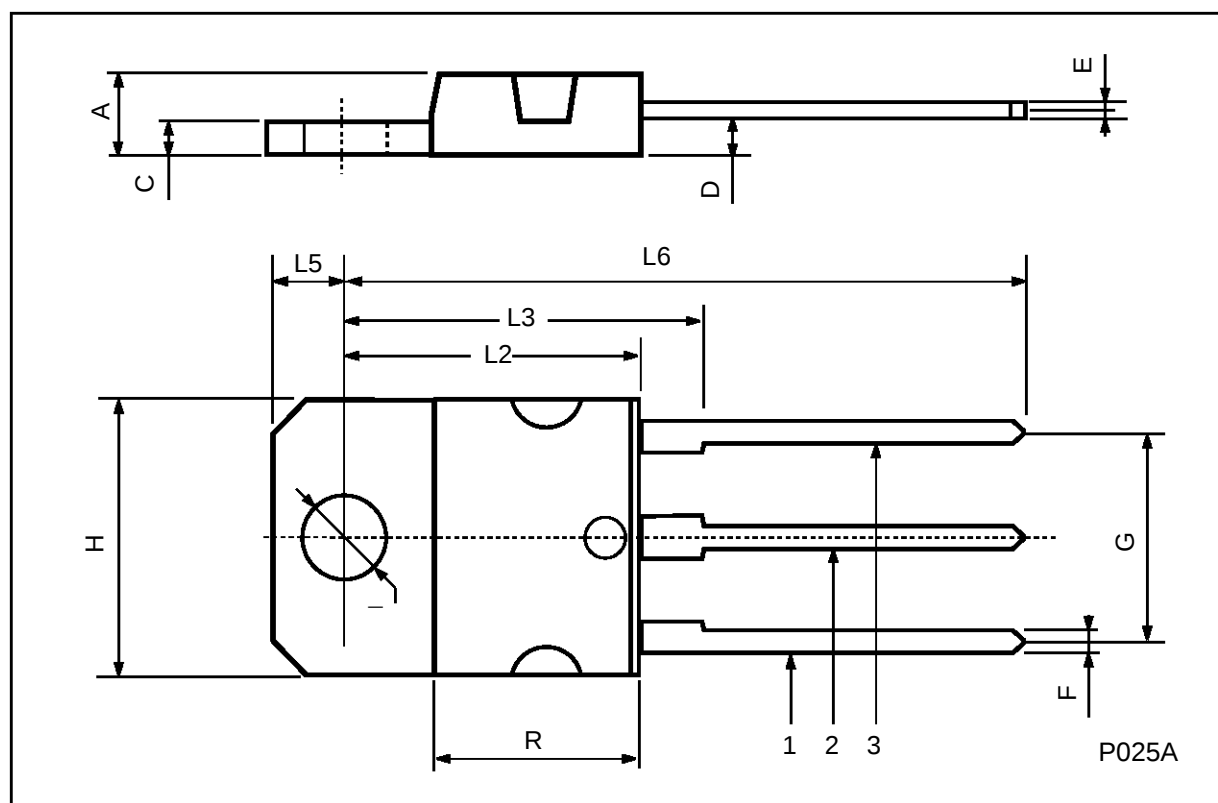
* Pulsed: Pulse duration = 300 μs, duty cycle < 2 %

INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t _r	Rise Time	V _{CC} = 90 V I _C = 35 A			1.8	μs
t _s	Storage Time	V _{BB} = -5 V I _{B1} = 1.75 A			0.2	μs
t _f	Fall Time	R _{B2} = 1.4 Ω L _C = 0.13 mH T _J = 100°C V _{CLAMP} = 125V			0.35	μs

TO-218 (SOT-93) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	–		16.2	–		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	–		12.2	–		0.480
Ø	4		4.1	0.157		0.161



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.

© 1997 SGS-THOMSON Microelectronics - Printed in Italy - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

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

...