

## HIGH POWER NPN SILICON TRANSISTOR

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

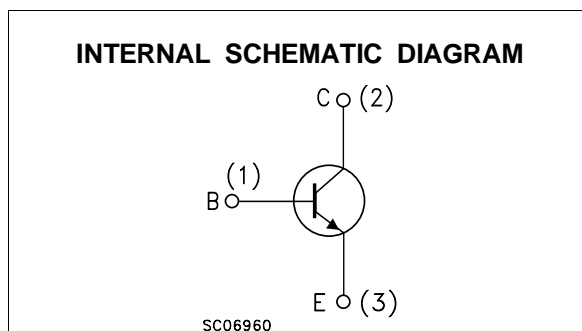
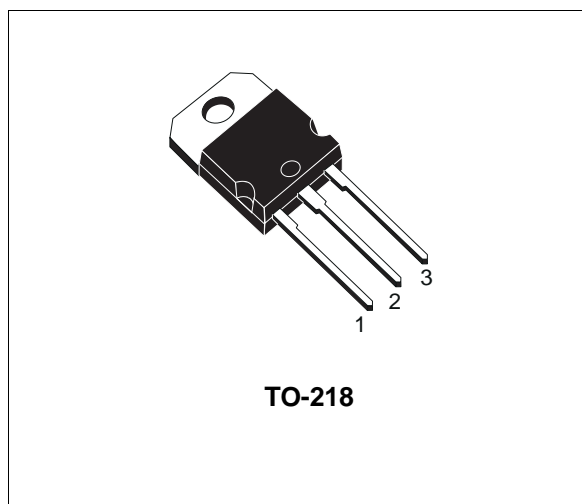
### APPLICATION

- 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.



### 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 $T_{case} < 25\text{ }^\circ\text{C}$	200	W
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_j$	Max Operating Junction Temperature	150	$^\circ\text{C}$

## BUT70

### THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	0.63	$^{\circ}C/W$
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### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CER}$	Collector Cut-off Current ( $R_{BE} = 5\Omega$ )	$V_{CE} = V_{CEV}$ $V_{CE} = V_{CEV} \quad T_C = 100^{\circ}C$			1 5	mA mA
$I_{CEV}$	Collector Cut-off Current	$V_{CE} = V_{CEV} \quad V_{BE} = -1.5V$ $V_{CE} = V_{CEV} \quad V_{BE} = -1.5V \quad T_C = 100^{\circ}C$			1 4	mA mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = -5V$			1	mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage	$I_C = 0.2A$ $L = 25mH$	125			V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )	$I_E = 50mA$	7			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 70A \quad I_B = 7A$ $I_C = 70A \quad I_B = 7A \quad T_j = 100^{\circ}C$ $I_C = 35A \quad I_B = 1.75A$ $I_C = 35A \quad I_B = 1.75A \quad T_j = 100^{\circ}C$			0.9 1.5 0.9 1.2	V V V V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 70A \quad I_B = 7A$ $I_C = 70A \quad I_B = 7A \quad T_j = 100^{\circ}C$ $I_C = 35A \quad I_B = 1.75A$ $I_C = 35A \quad I_B = 1.75A \quad T_j = 100^{\circ}C$			1.8 1.9 1.4 1.4	V V V V
$di_c/d_t*$	Rated of Rise of on-state Collector Current	$V_{CC} = 100V \quad R_C = 0 \quad I_{B1} = 3.5A$ $t_p = 3\mu S \quad T_j = 100^{\circ}C$	140			A/ $\mu s$

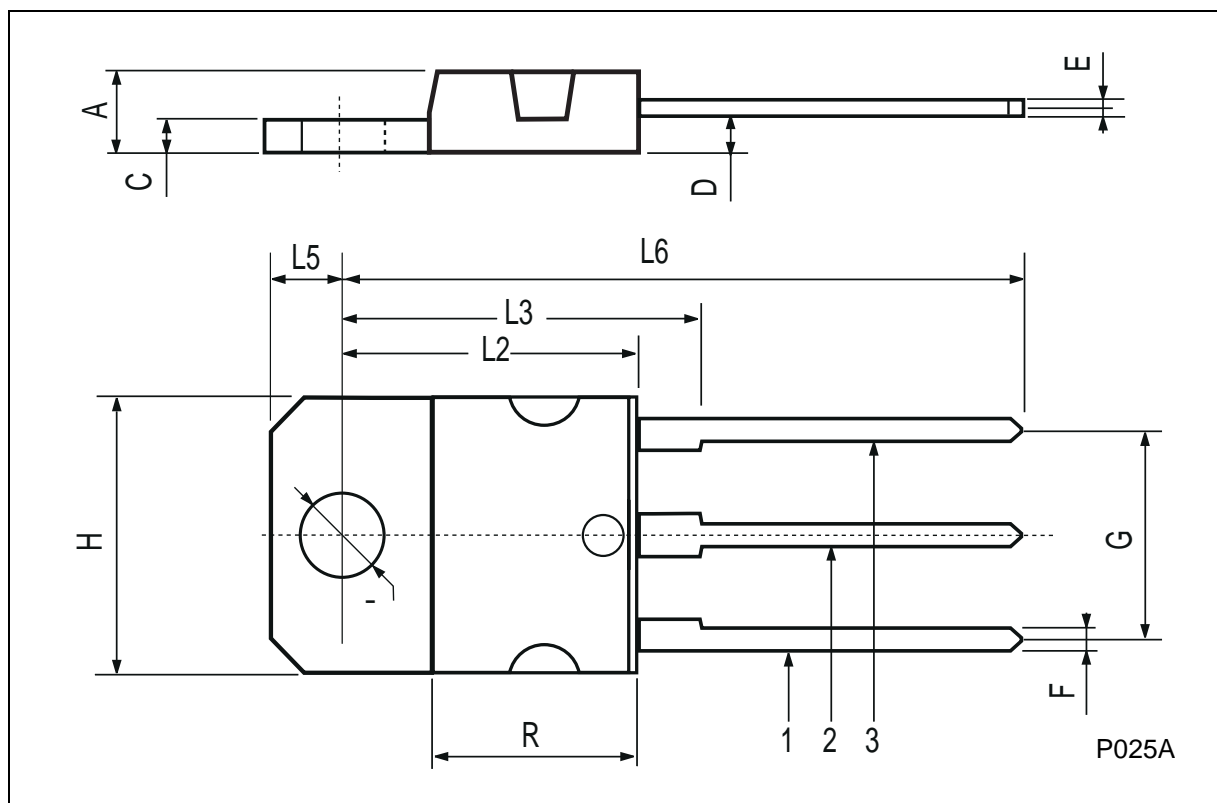
\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle < 2%

### INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_r$	Rise Time	$V_{CC} = 90V$			1.8	$\mu s$
$t_s$	Storage Time	$V_{BB} = -5V$			0.2	$\mu s$
$t_f$	Fall Time	$R_{B2} = 1.4\Omega$ $L_C = 0.13mH$ $V_{CLAMP} = 125V$			0.35	$\mu s$
		$I_C = 35A$ $I_{B1} = 1.75A$ $T_j = 100^{\circ}C$				

**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



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