

HIGH POWER NPN SILICON TRANSISTOR

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

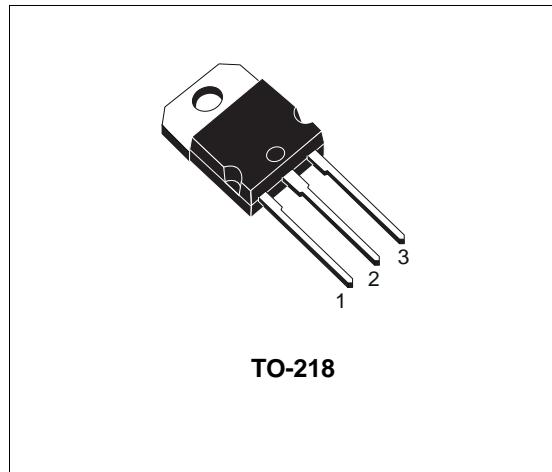
APPLICATION

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

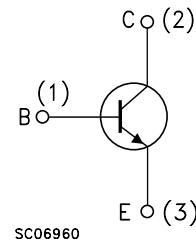
DESCRIPTION

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.



INTERNAL SCHEMATIC DIAGRAM



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	$^{\circ}\text{C}/\text{W}$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

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

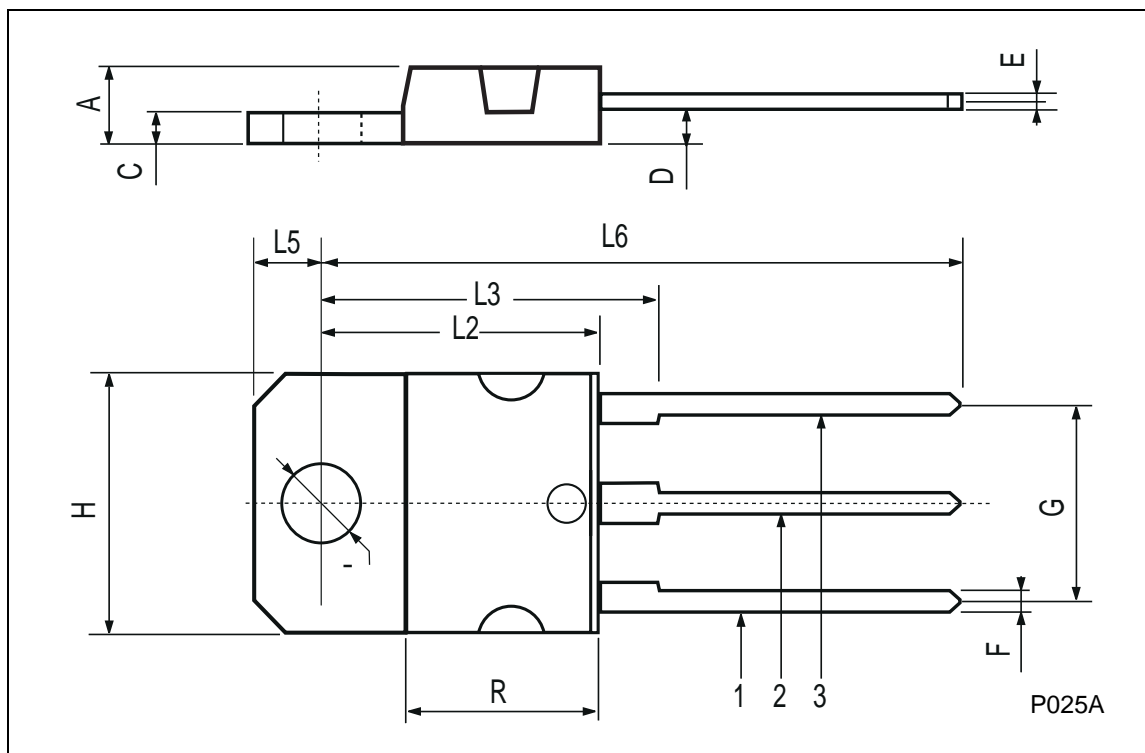
* Pulsed: Pulse duration = 300 μs , duty cycle < 2 %

INDUCTIVE LOAD

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



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