

## HIGH POWER NPN TRANSISTOR

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

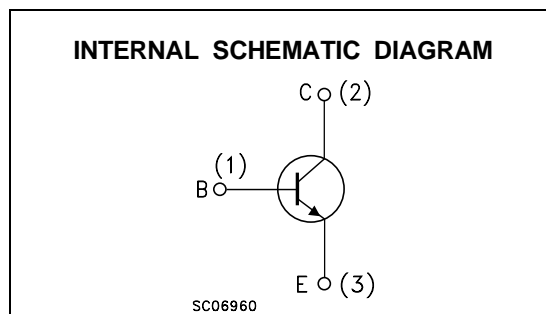
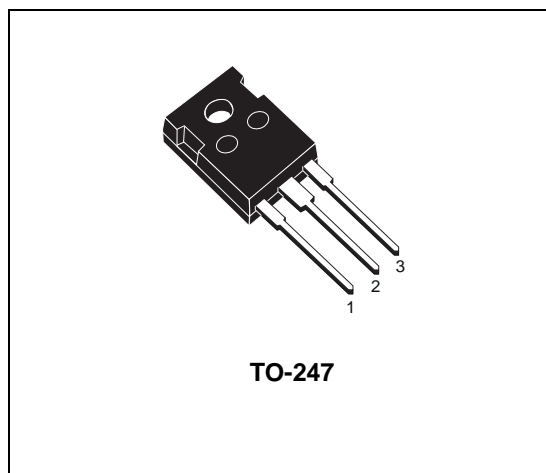
### APPLICATION

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

### DESCRIPTION

The BUT70W is a Multiepitaxial planar NPN transistor in TO-247 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	$^\circ\text{C}$

## BUT70W

### 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 ( $R_{BE} = 5\Omega$ )	$V_{CE} = 200 V$			1	mA
		$V_{CE} = 200 V$ $T_C = 100^{\circ}C$			5	mA
$I_{CEV}$	Collector Cut-off Current ( $V_{BE} = -1.5V$ )	$V_{CE} = 200 V$			1	mA
		$V_{CE} = 200 V$ $T_C = 100^{\circ}C$			4	mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5 V$			1	mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 0.2 A$ $L = 25 mH$	125			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_C = 0$ )	$I_E = 50 mA$	7			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 70 A$ $I_B = 7 A$			0.9	V
		$I_C = 70 A$ $I_B = 7 A$ $T_C = 100^{\circ}C$			1.5	V
		$I_C = 35 A$ $I_B = 1.75 A$			0.9	V
		$I_C = 35 A$ $I_B = 1.75 A$ $T_C = 100^{\circ}C$			1.2	V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 70 A$ $I_B = 7 A$			1.8	V
		$I_C = 70 A$ $I_B = 7 A$ $T_C = 100^{\circ}C$			1.9	V
		$I_C = 35 A$ $I_B = 1.75 A$			1.4	V
		$I_C = 35 A$ $I_B = 1.75 A$ $T_C = 100^{\circ}C$			1.4	V
$di_C/d_t^*$	Rated of Rise of on-state Collector Current	$V_{CC} = 100 V$ $R_C = 0$ $I_{B1} = 3.5 A$ $t_p = 3 \mu s$ $T_C = 100^{\circ}C$	140			A/ $\mu s$

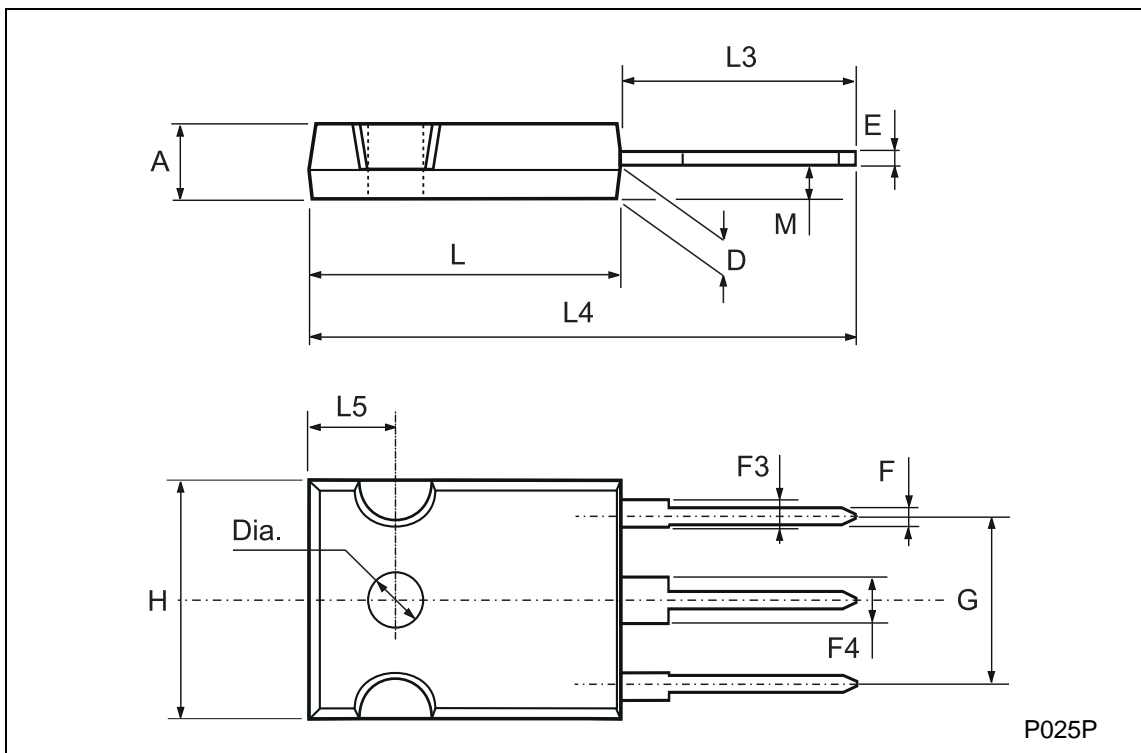
\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle < 2 %

### INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_s$	Storage Time	$I_C = 35 A$ $V_{CC} = 90 V$			1.8	$\mu s$
$t_f$	Fall Time	$V_{BB} = -5 V$ $R_{B2} = 1.4 \Omega$			0.2	$\mu s$
$t_c$	Cross Over Time	$I_{B1} = 1.75 A$ $L_C = 0.15 mH$			0.35	$\mu s$
		$V_{CLAMP} = 125V$ $T_C = 100^{\circ}C$				

**TO-247 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		5.3	0.185		0.209
D	2.2		2.6	0.087		0.102
E	0.4		0.8	0.016		0.031
F	1		1.4	0.039		0.055
F3	2		2.4	0.079		0.094
F4	3		3.4	0.118		0.134
G		10.9			0.429	
H	15.3		15.9	0.602		0.626
L	19.7		20.3	0.776		0.779
L3	14.2		14.8	0.559		0.582
L4		34.6			1.362	
L5		5.5			0.217	
M	2		3	0.079		0.118



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