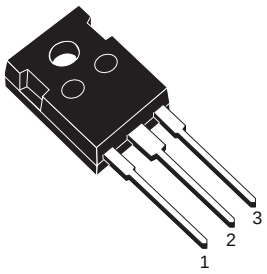
BUT70W

HIGH POWER NPN TRANSISTOR

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



TO-247

APPLICATION

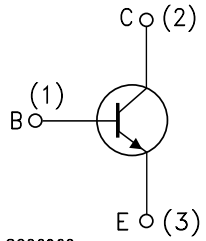
- SWITCHING REGULATORS
- MOTOR CONTROL
- HIGH FREQUENCY AND EFFICENCY CONVERTERS

DESCRIPTION

The BUT70W is a Multiepitaxial planar NPN transistor in TO-247 plastic package.

It's intented for use in high frequency and efficiency converters such us 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 °C	200	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max Operating Junction Temperature	150	°C

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	0.63	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CER}	Collector Cut-off Current (R_{BE} = 5Ω)	V_{CE} = 200 V V_{CE} = 200 V T_C = 100^{o}C			1 5	mA mA
I_{CEV}	Collector Cut-off Current (V_{BE} = -1.5V)	V_{CE} = 200 V V_{CE} = 200 V T_C = 100^{o}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_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 I_C = 70 A I_B = 7 A T_C = 100^{o}C I_C = 35 A I_B = 1.75 A I_C = 35 A I_B = 1.75 A T_C = 100^{o}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_C = 100^{o}C I_C = 35 A I_B = 1.75 A I_C = 35 A I_B = 1.75 A T_C = 100^{o}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 V R_C = 0 I_{B1} = 3.5 A t_p = 3 µs T_C = 100^{o}C	140			A/µs

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

INDUCTIVE LOAD

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

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