

HIGH POWER NPN TRANSISTOR

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

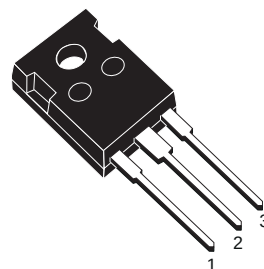
APPLICATION

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

DESCRIPTION

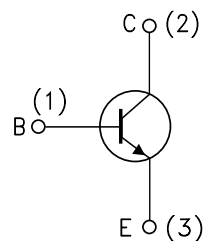
The BUT70W is a Multiepitaxial planar NPN transistor in TO-247 plastic package.

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



TO-247

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

BUT70W

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	0.63	°C/W
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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} = 200 V V _{CE} = 200 V T _C = 100°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°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°C I _C = 35 A I _B = 1.75 A I _C = 35 A I _B = 1.75 A T _C = 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 _C = 100°C I _C = 35 A I _B = 1.75 A I _C = 35 A I _B = 1.75 A T _C = 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 _C = 100°C	140			A/μs

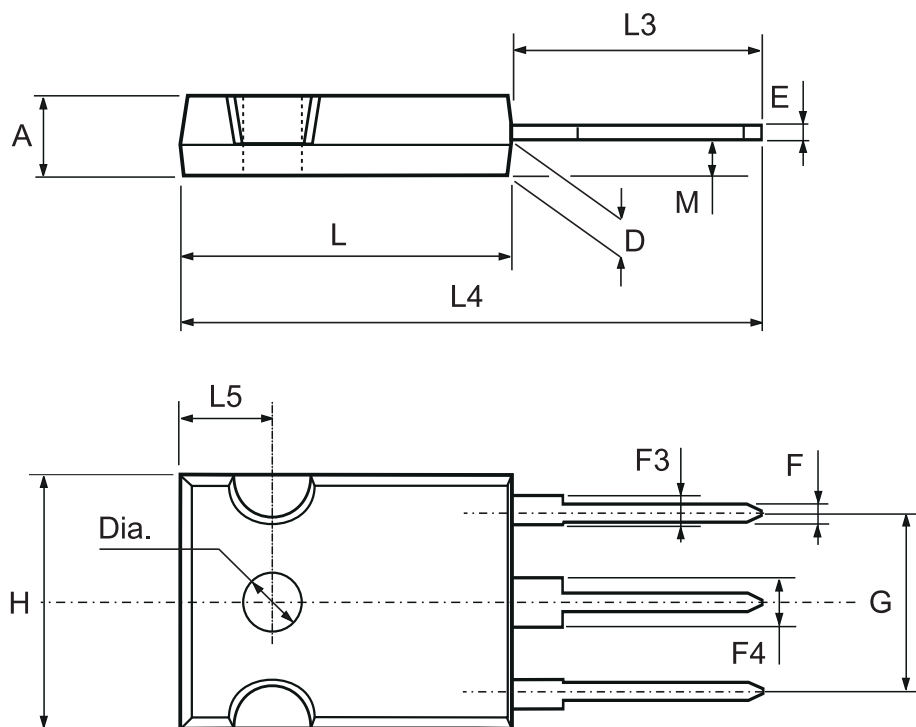
* Pulsed: Pulse duration = 300 μs, duty cycle < 2 %

INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t _s	Storage Time	I _C = 35 A V _{CC} = 90 V			1.8	μs
t _f	Fall Time	V _{BB} = -5 V R _{B2} = 1.4 Ω			0.2	μs
t _c	Cross Over Time	I _{B1} = 1.75 A L _C = 0.15 mH V _{CLAMP} = 125V T _C = 100°C			0.35	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



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