

FAST-SWITCHING POWER TRANSISTOR

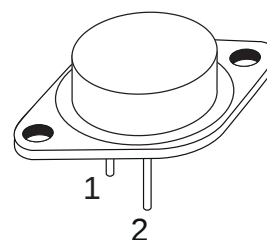
- STMicroelectronics PREFERRED SALESTYPE
- NPN TRANSISTOR
- $h_{FE} > 10$ AT $I_C = 35A$
- HIGH EFFICIENCY SWITCHING
- VERY LOW SATURATION VOLTAGE
- RECTANGULAR SAFE OPERATING AREA
- WIDE ACCIDENTAL OVERLOAD AREA

APPLICATIONS

- UNINTERRUPTABLE POWER SUPPLY
- SWITCH MODE POWER SUPPLIES
- MOTOR CONTROL

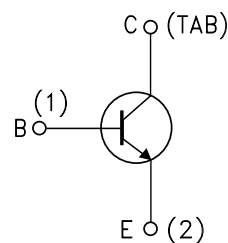
DESCRIPTION

The BUT92 is a Multiepitaxial Planar NPN Transistor in TO-3 package. It is intended for use in high frequency and efficiency converters, switching regulators and motor control.



TO-3
(version "S")

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-Emitter Voltage ($V_{BE} = -1.5 V$)	350	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	250	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	7	V
I_E	Emitter Current	50	A
I_{EM}	Emitter Peak Current ($t_p = 10 ms$)	75	A
I_B	Base Current	10	A
I_{BM}	Base Peak Current ($t_p = 10 ms$)	15	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25 ^\circ C$	250	W
T_{stg}	Storage Temperature	-65 to 200	$^\circ C$
T_j	Junction Temperature	200	$^\circ C$

BUT92

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	0.7	°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} = 10 Ω)	V _{CE} = V _{CEV} V _{CE} = V _{CEV} T _c = 100 °C			0.4 4	mA mA
I _{CEV}	Collector Cut-off Current (V _{BE} = -1.5V)	V _{CE} = V _{CEV} V _{CE} = V _{CEV} T _c = 100 °C			0.2 2	mA mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 7 V			1	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 0.2 A L = 25 mH	250			V
V _{EB0}	Emitter-Base Voltage (I _C = 0)	I _E = 50 mA	7			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 35 A I _B = 3.5 A I _C = 35 A I _B = 3.5 A T _c = 100 °C		0.8 1.25	1.2 1.9	V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 35 A I _B = 3.5 A I _C = 35 A I _B = 3.5 A T _c = 100 °C		1.2 1.2	1.5 1.5	V V
di _C /dt	Rated of Rise on-state Collector Current	V _{CC} = 200V I _{B1} = 5.25 A R _C = 0 t _p = 3μs T _c = 100 °C	125	200		A/μs
V _{CE(3μs)*}	Collector-Emitter Dynamic Voltage	V _{CC} = 200V I _{B1} = 5.25 A R _C = 5.7 Ω T _c = 100 °C		3	6	V
V _{CE(5μs)*}	Collector-Emitter Dynamic Voltage	V _{CC} = 200V I _{B1} = 5.25 A R _C = 5.7 Ω T _c = 100 °C		1.8	3	V

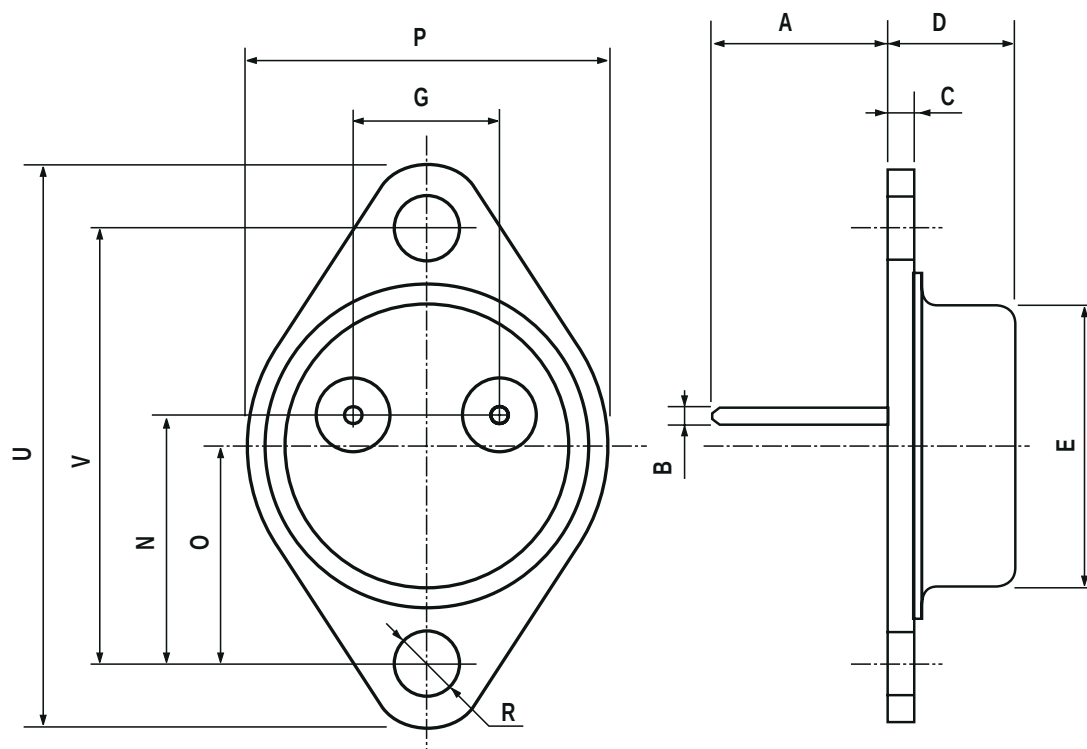
INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t _s	Storage Time	V _{CC} = 200 V V _{Clamp} = 250 V		1.4	3	μs
t _f	Fall Time	I _C = 35 A I _{B1} = 3.5 A		0.15	0.4	μs
t _c	Crossover Time	V _{BB} = -5 V L _C = 0.28 mH R _{B2} = 0.7 Ω T _c = 100 °C		0.3	0.7	μs
V _{CEW}	Maximum Collector Emitter Voltage without Snubber	V _{CC} = 50 V I _{CWoff} = 52 A V _{BB} = -5 V I _{B1} = 3.5 A L _C = 48 μH R _{B2} = 0.7 Ω T _c = 125 °C	250			V

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

TO-3 (version S) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	1.47		1.60	0.058		0.063
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50		39.30	1.515		1.547
V	30.00		30.30	1.187		1.193



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