

FAST-SWITCHING POWER TRANSISTOR

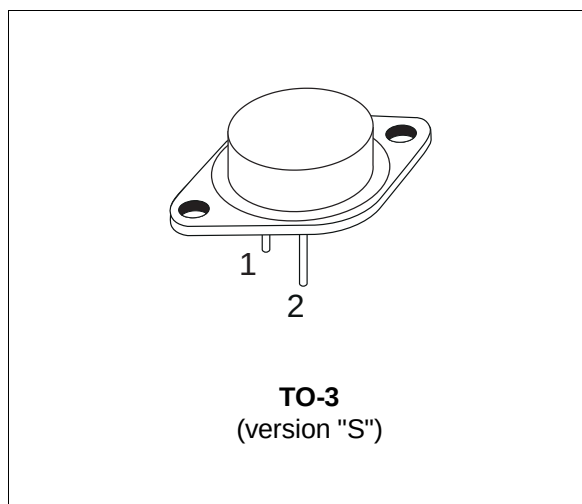
- STMicroelectronics PREFERRED SALESTYPE
- NPN TRANSISTOR
- $h_{FE} > 10$ AT $I_C = 35A$
- HIGH EFFICIENCY SWITCHING
- VERY LOW SATURATION VOLTAGE
- RECTANGULAR SAFE OPERATING AREA
- WIDE ACCIDENTAL OVERLOAD AREA

APPLICATIONS

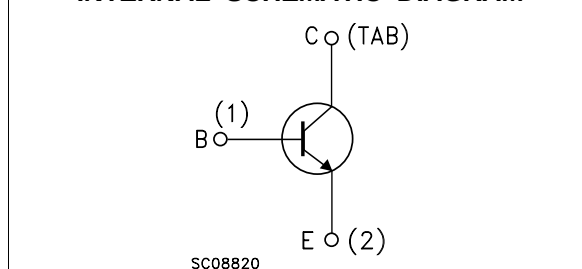
- UNINTERRUPTABLE POWER SUPPLY
- SWITCH MODE POWER SUPPLIES
- MOTOR CONTROL

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.



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
-----------------------	----------------------------------	-----	-----	------

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

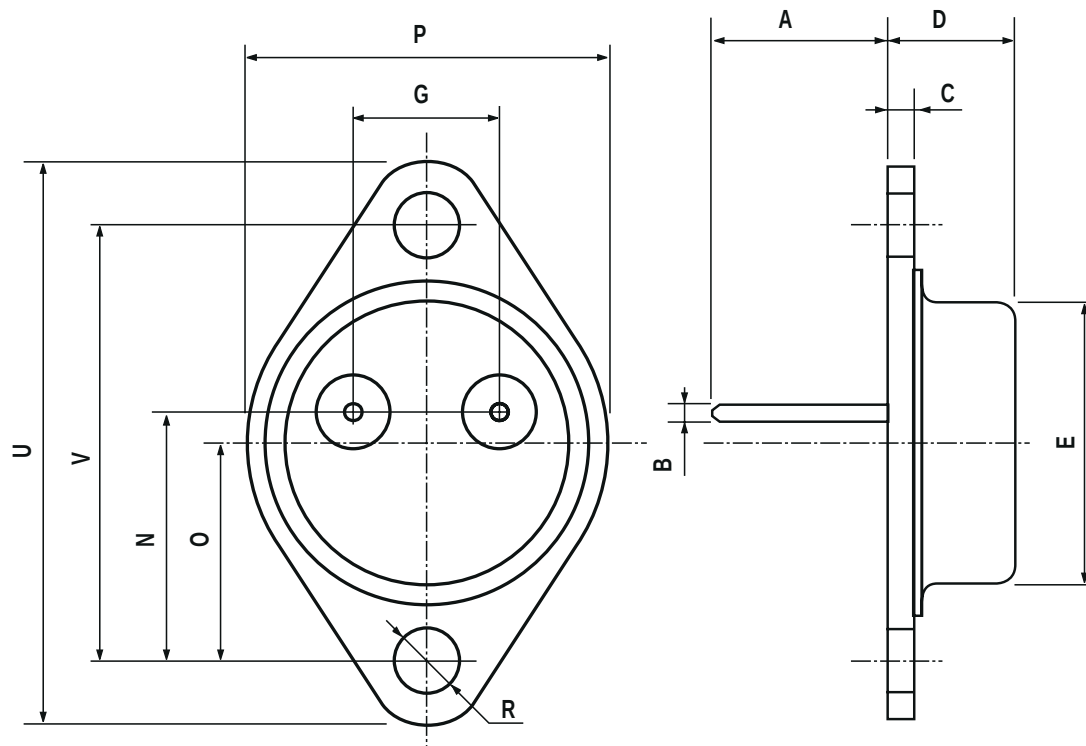
INDUCTIVE LOAD

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



P0030

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 2003 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>