SGS-THOMSON MICROELECTRONICS

BUT92

FAST-SWITCHING POWER TRANSISTOR

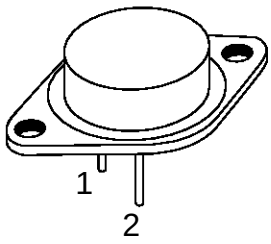
- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- h_{FE} > 10 AT I_C =35A
- HIGH EFFICIENCY SWITCHING
- VERY LOW SATURATION VOLTAGE
- RECTANGULAR SAFE OPERATING AREA
- WIDE ACCIDENTAL OVERLOAD AREA

APPLICATIONS

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

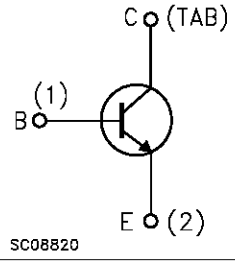
DESCRIPTION

The BUT92 is a Multiepitaxial Planar NPN Transistor in TO-3 package. It is intended for use in high frequency and efficency 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	75	A
I_B	Base Current	10	A
I_{BM}	Base Peak Current	15	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25\ ^oC$	250	W
T_{stg}	Storage Temperature	-65 to 200	^oC
T_j	Junction Temperature	200	^oC

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	0.7	$^oC/W$

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} = 10 Ω)	$V_{CE} = V_{CEV}$ $V_{CE} = V_{CEV}$ T_c = 100 ^oC			0.4 4	mA mA
I_{CEV}	Collector Cut-off Current	$V_{CE} = V_{CEV}$ V_{BE} = -1.5V $V_{CE} = V_{CEV}$ V_{BE} = -1.5V T_c = 100 ^oC			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_C = 0.2 A L = 25 mH	250			V
V_{EB0}	Emitter-Base Voltage (IC = 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_j = 100 ^oC		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_j = 100 ^oC		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_j = 100 ^oC	125	200		A/µs
$V_{CE(3\mu s)}$*	Collector-Emitter Dynamic Voltage	V_{CC} = 200V I_{B1} = 5.25 A R_C = 5.7 Ω T_j = 100 ^oC		3	6	V
$V_{CE(5\mu s)}$*	Collector-Emitter Dynamic Voltage	V_{CC} = 200V I_{B1} = 5.25 A R_C = 5.7 Ω T_j = 100 ^oC		1.8	3	V

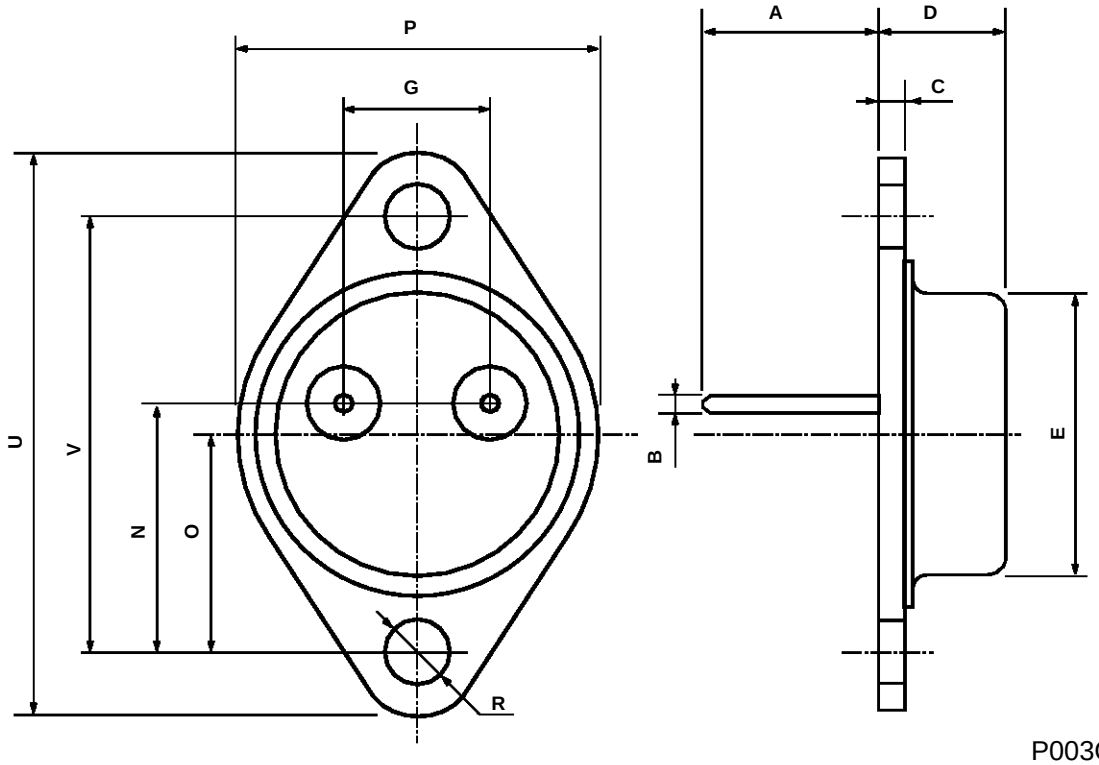
INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_s t_f t_c	Storage Time Fall Time Crossover Time	V_{CC} = 200 V V_{Clamp} = 250 V I_C = 35 A I_{B1} = 3.5 A V_{BB} = -5 V L_C = 0.28 mH R_{B2} = 0.7 Ω T_j = 100 ^oC		1.4 0.15 0.3	3 0.4 0.7	µs µs 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_j = 125 ^oC	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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