

HIGH POWER NPN SILICON TRANSISTOR

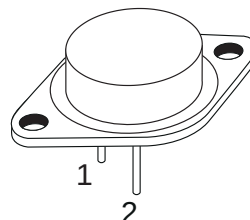
- STMicroelectronics PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- HIGH RUGGEDNESS

APPLICATION

- MOTOR CONTROL
- UNINTERRUPTABLE POWER SUPPLY

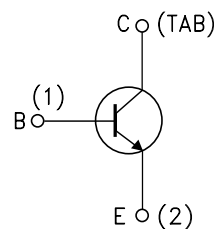
DESCRIPTION

The BUT100 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



SC08820

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	Emitter Current	50	A
I_{EM}	Emitter Peak Current	150	A
I_B	Base Current	10	A
I_{BM}	Base Peak Current	30	A
P_{tot}	Total Dissipation at $T_c < 25\text{ }^{\circ}\text{C}$	300	W
T_{stg}	Storage Temperature	-65 to 200	$^{\circ}\text{C}$
T_j	Max. Operating Junction Temperature	200	$^{\circ}\text{C}$

BUT100

THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	0.58	$^{\circ}C/W$
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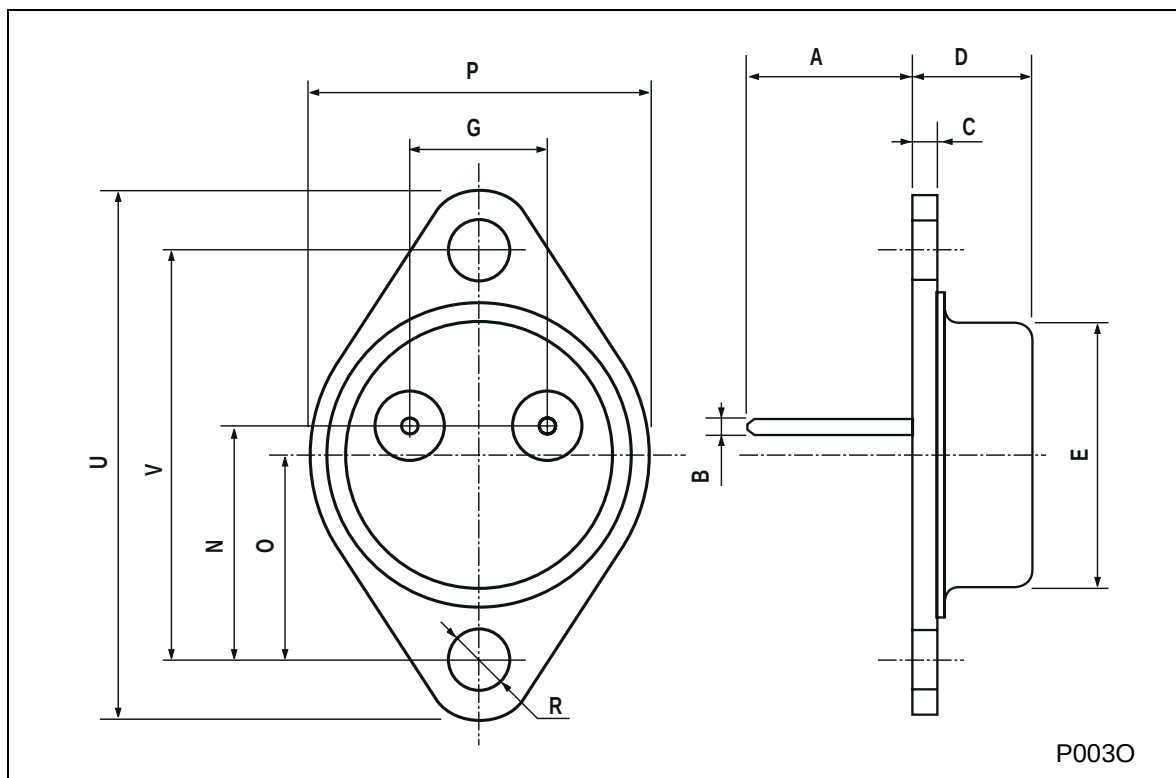
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CER}	Collector Cut-off Current ($R_{BE} = 5\Omega$)	$V_{CE} = V_{CEV}$ $V_{CE} = V_{CEV}$ $T_C = 100^{\circ}C$			1 5	mA mA
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5V$)	$V_{CE} = V_{CEV}$ $V_{CE} = V_{CEV}$ $T_C = 100^{\circ}C$			1 4	mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5V$			1	mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 0.2A$ $L = 25mH$	125			V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	$I_E = 50mA$	7			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 50A$ $I_B = 2.5A$ $I_C = 100A$ $I_B = 10A$ $I_C = 50A$ $I_B = 2.5A$ $T_C = 100^{\circ}C$ $I_C = 100A$ $I_B = 10A$ $T_C = 100^{\circ}C$			0.9 0.9 1.2 1.5	V V V V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 50A$ $I_B = 2.5A$ $I_C = 100A$ $I_B = 10A$ $I_C = 50A$ $I_B = 2.5A$ $T_C = 100^{\circ}C$ $I_C = 100A$ $I_B = 10A$ $T_C = 100^{\circ}C$			1.4 2 1.4 2.1	V V V V
di_C/dt	Rate of Rise of on-state Collector Current	$V_{CC} = 100V$ $R_C = 0$ $I_{B1} = 5A$ $T_P = 3\mu s$ $T_C = 100^{\circ}C$	180			A/ μs
t_s t_f t_c	INDUCTIVE LOAD Storage time Fall Time Crossover Time	$V_{CC} = 90V$ $V_{clamp} = 125V$ $I_C = 50A$ $I_{B1} = 2.5A$ $V_{BB} = -5V$ $L_C = 80\mu H$ $R_{B2} = 1\Omega$ $T_C = 100^{\circ}C$			2 0.2 0.35	μs μs μs
V_{CEW}	Maximum Collector Emitter Voltage without Snubber	$V_{CC} = 90V$ $I_{CWoff} = 150A$ $V_{BB} = -5V$ $I_{B1} = 10A$ $L_C = 30\mu H$ $R_{B2} = 1\Omega$ $T_C = 125^{\circ}C$	125			V

* Pulsed: Pulse duration = $3\mu s$, 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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