



BUT100

HIGH POWER NPN SILICON TRANSISTOR

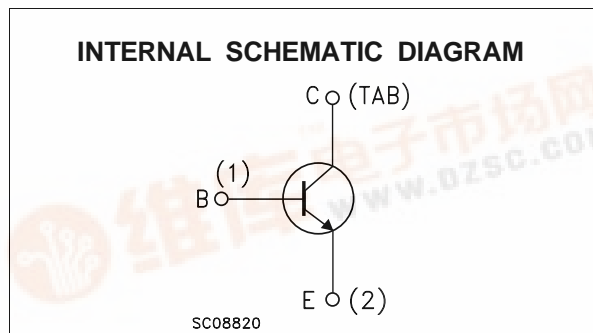
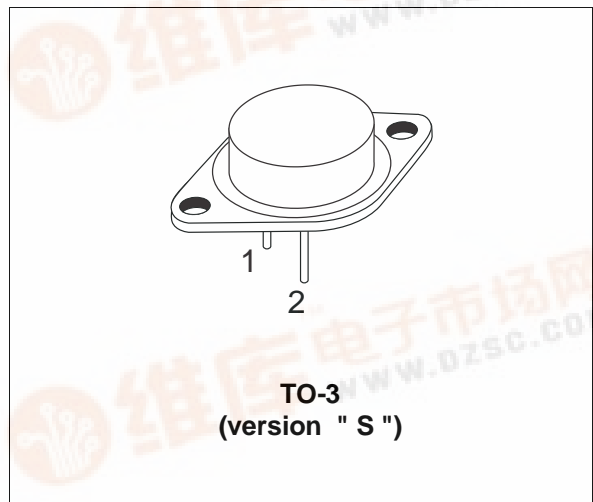
- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- HIGH RUGGEDNESS

APPLICATION

- MOTOR CONTROL
- UNINTERRUPTABLE POWER SUPPLY

DESCRIPTION

The BUT100 is a Multi-epitaxial Planar NPN Transistor in TO-3 package. It is intended for use in high frequency and efficiency converters, switching regulators and motor control.



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 $T_c < 25^\circ C$	300	W
T_{stg}	Storage Temperature	-65 to 200	$^\circ C$
T_j	Max. Operating Junction Temperature	200	$^\circ C$

BUT100

THERMAL DATA

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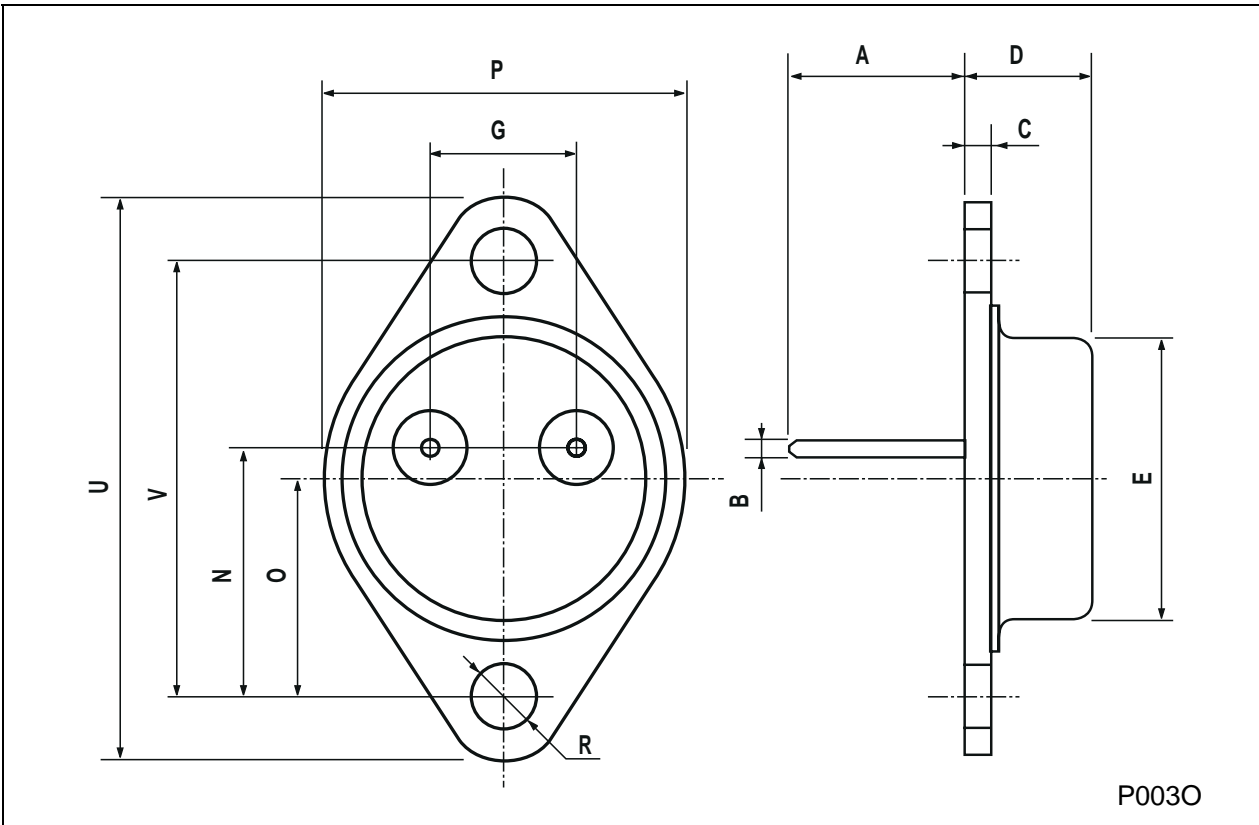
ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

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

* Pulsed: Pulse duration = 3 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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