

## HIGH CURRENT NPN SILICON TRANSISTORS

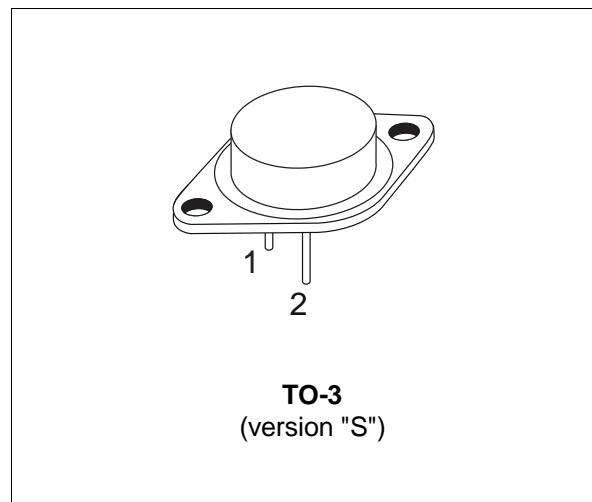
- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- HIGH RUGGEDNESS

### APPLICATIONS

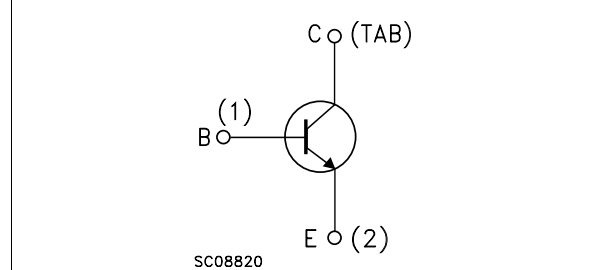
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT
- SWITCHING REGULATORS

### DESCRIPTION

The BUV20 and BUV21 are silicon multiepitaxial planar NPN transistor in jedec TO-3 metal case, intended for use in switching and linear applications in military and industrial equipment.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BUV20	BUV21	
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	160	250	V
$V_{CER}$	Collector-Emitter Voltage ( $R_{BE} = 100\Omega$ )	150	240	V
$V_{CEX}$	Collector-Emitter Voltage ( $V_{BE} = -1.5V$ )	160	250	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	125	200	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	7	7	V
$I_C$	Collector Current	50	40	A
$I_{CM}$	Collector Peak Current	60	50	A
$I_B$	Base Current	10	8	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		$^\circ C$

## BUV20 / BUV21

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	0.7	°C/W
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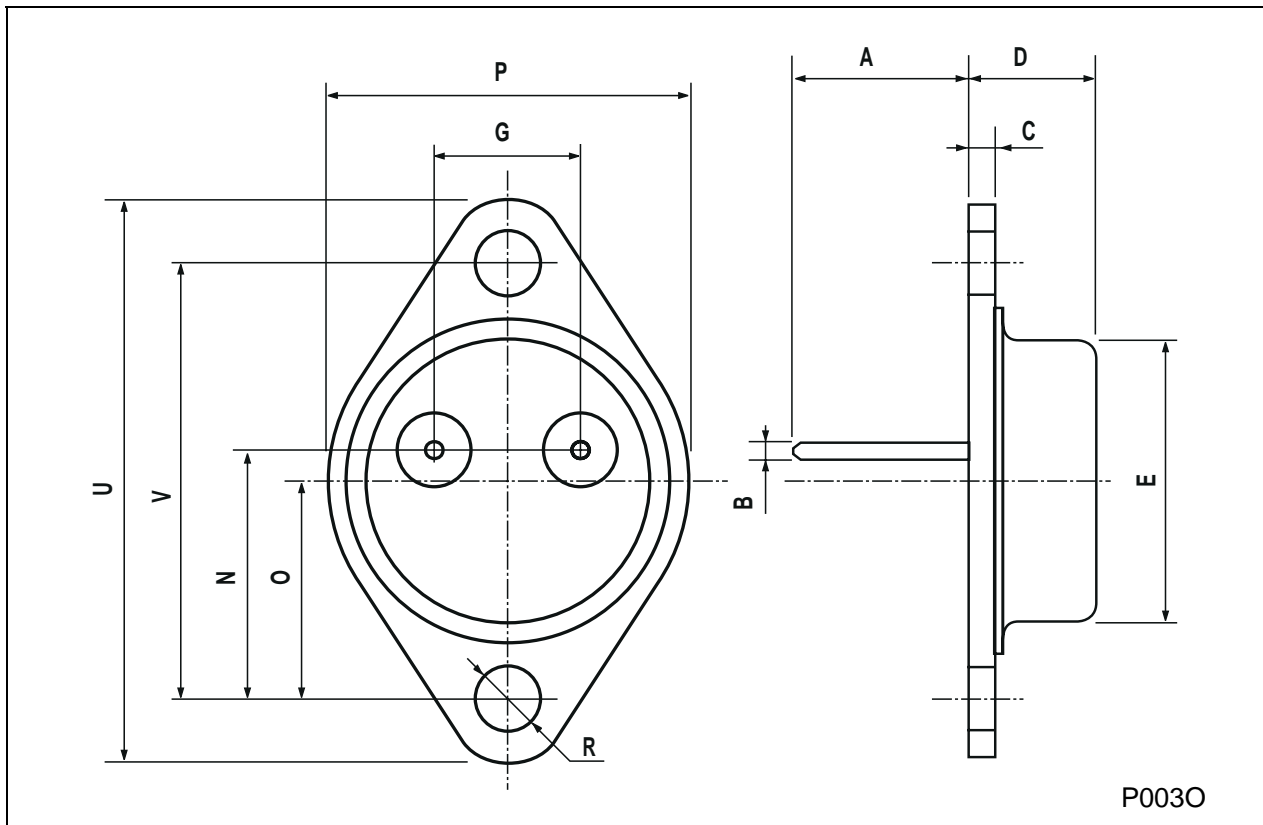
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CEX</sub>	Collector Cut-off Current (V <sub>BE</sub> = -1.5V)	V <sub>CE</sub> = V <sub>CEX</sub> for <b>BUV20</b> for <b>BUV21</b> at T <sub>case</sub> = 125 °C for <b>BUV20</b> for <b>BUV21</b>			3 3 12 12	mA mA mA mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	for <b>BUV20</b> V <sub>CE</sub> = 100 V for <b>BUV21</b> V <sub>CE</sub> = 160 V			3 3	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 200 mA L = 25 mH for <b>BUV20</b> for <b>BUV21</b>	125 200			V V
V <sub>(BR)EB0*</sub>	Emitter-base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = 50 mA	7			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	for <b>BUV20</b> I <sub>C</sub> = 25 A I <sub>B</sub> = 2.5 A I <sub>C</sub> = 50 A I <sub>B</sub> = 5 A for <b>BUV21</b> I <sub>C</sub> = 12 A I <sub>B</sub> = 1.2 A I <sub>C</sub> = 25 A I <sub>B</sub> = 3 A		0.3 0.7 0.2 0.9	0.6 1.2 0.6 1.5	V V V V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	for <b>BUV20</b> I <sub>C</sub> = 50 A I <sub>B</sub> = 5 A for <b>BUV21</b> I <sub>C</sub> = 25 A I <sub>B</sub> = 3 A		1.4 1.2	2 1.5	V V
h <sub>FE*</sub>	DC Current Gain	for <b>BUV20</b> V <sub>CE</sub> = 2 V I <sub>C</sub> = 25 A V <sub>CE</sub> = 4 V I <sub>C</sub> = 50 A for <b>BUV21</b> V <sub>CE</sub> = 2 V I <sub>C</sub> = 12 A V <sub>CE</sub> = 4 V I <sub>C</sub> = 25 A	20 10 20 10		60 60	
f <sub>T</sub>	Transition frequency	V <sub>CE</sub> = 15 V I <sub>C</sub> = 2 A f = 100 MHz	8			MHz
t <sub>on</sub>	Turn-on Time	for <b>BUV20</b> I <sub>C</sub> = 50 A I <sub>B</sub> = 5 A for <b>BUV21</b> I <sub>C</sub> = 25 A I <sub>B</sub> = 3 A			1.5 1.2	μs μs
t <sub>f</sub>	Fall time	for <b>BUV20</b> I <sub>C</sub> = 50 A I <sub>B1</sub> = - I <sub>B2</sub> = 5 A for <b>BUV21</b> I <sub>C</sub> = 25 A I <sub>B1</sub> = - I <sub>B2</sub> = 3 A			0.3 0.4	μs μs
t <sub>s</sub>	Storage Time	for <b>BUV20</b> I <sub>C</sub> = 50 A I <sub>B1</sub> = - I <sub>B2</sub> = 5 A for <b>BUV21</b> I <sub>C</sub> = 25 A I <sub>B1</sub> = - I <sub>B2</sub> = 3 A			1.2 1.8	μs μs

\* 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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