

HIGH POWER NPN SILICON TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- FULLY CHARACTERIZED AT 125°C

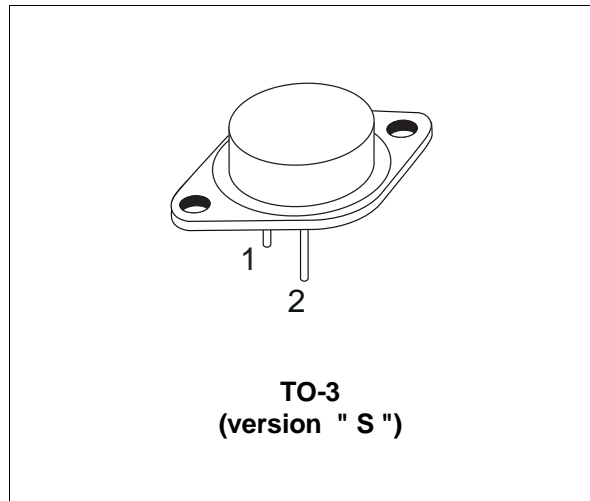
APPLICATION

- SWITCHING REGULATORS
- MOTOR CONTROL

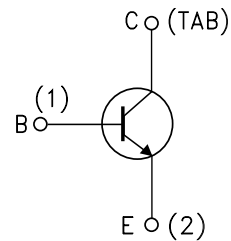
DESCRIPTION

The BUV61 is a Multiepitaxial planar NPN transistor in TO-3 metal case.

It's intended for use in high frequency and efficiency converters such as motor controllers and industrial equipment.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-emitter Voltage ($V_{BE} = -1.5V$)	300	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	200	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	7	V
I_C	Collector Current	50	A
I_{CM}	Collector Peak Current	75	A
I_B	Base Current	8	A
I_{BM}	Base Peak Current	15	A
P_{Base}	Reverse Bias Base Dissipation (B.E. junction in avalanche)	2	W
P_{tot}	Total Power Dissipation at $T_{case} < 25\text{ }^\circ\text{C}$	250	W
T_{stg}	Storage Temperature	-65 to 200	°C
T_j	Max Operating Junction Temperature	200	°C

BUV61

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	0.7	°C/W
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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} = 10Ω)	V _{CE} = V _{CEV} V _{CE} = V _{CEV} T _C = 100°C			1 5	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°C			1 4	mA mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V			1	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage	I _C = 0.2A L = 25 mH	200			V
V _{EBO}	Emitter-base Voltage (I _C = 0)	I _E = 50 mA	7			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 12.5A I _B = 0.625A I _C = 25A I _B = 2.5A I _C = 40A I _B = 5A I _C = 12.5A I _B = 0.625A T _j = 100°C I _C = 25A I _B = 2.5A T _j = 100°C I _C = 40A I _B = 5A T _j = 100°C		0.65 0.4 0.6 0.5 0.5 0.75	0.9 0.9 1.2 1.2 1.5 1.9	V V V V V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 25A I _B = 2.5A I _C = 40A I _B = 5A I _C = 25A I _B = 2.5A T _j = 100°C I _C = 40A I _B = 5A T _j = 100°C		1.05 1.35 1.1 1.35	1.4 1.8 1.7 1.8	V V V V
di _c /dt*	Rated of Rise of on-state Collector Current	V _{CC} = 160V R _C = 0 I _{B1} = 3.75A T _j = 25°C T _j = 100°C	70 60	130 110		A/μs A/μs
V _{CE(2μs)}	Collector Emitter Dynamic Voltage	V _{CC} = 160V R _C = 6.4Ω I _{B1} = 2.5A T _j = 25°C T _j = 100°C		1.3 1.8	3 5	V V
V _{CE(4μs)}	Collector Emitter Dynamic Voltage	V _{CC} = 160V R _C = 6.4Ω I _{B1} = 2.5A T _j = 25°C T _j = 100°C		0.95 1.1	2 3	V V

* Pulsed: Pulse duration = 300 μs, duty cycle = 2 %

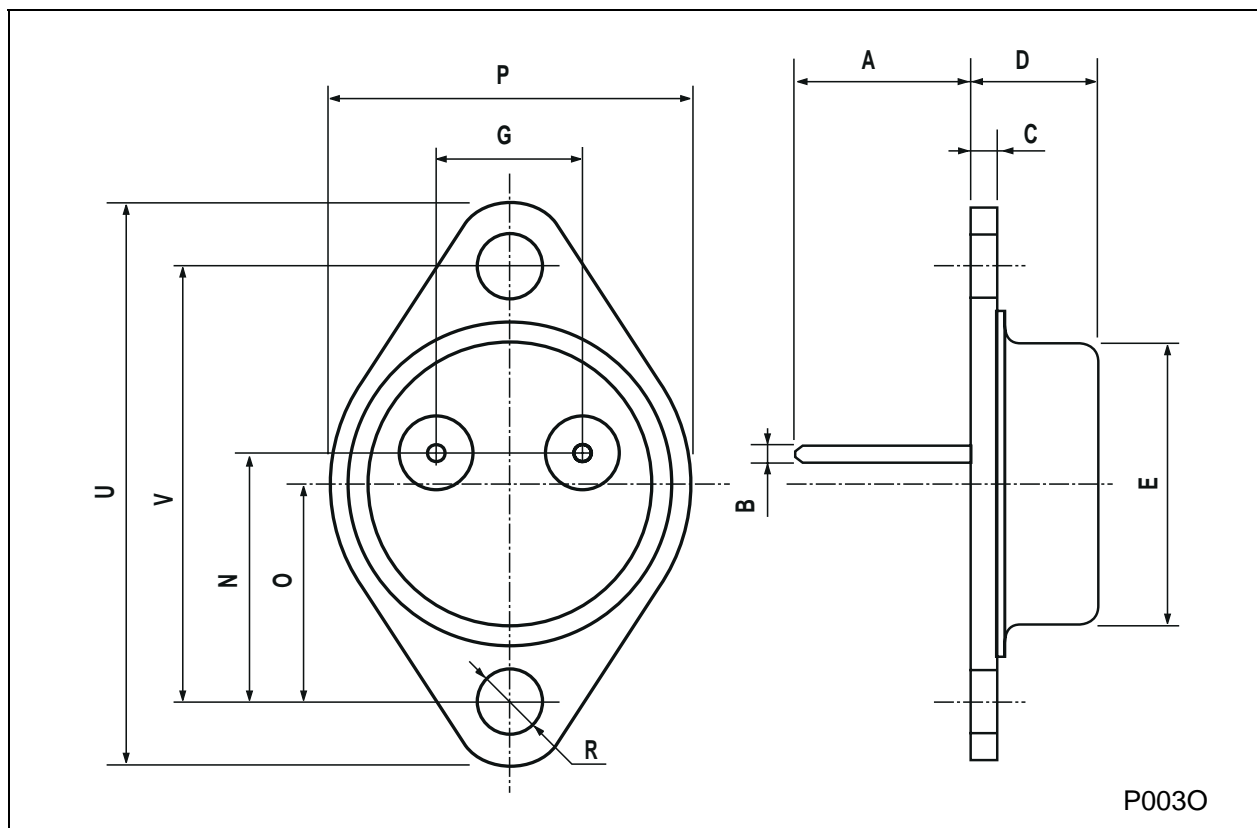
ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
	RESISTIVE LOAD					
t_r	Rise Time	$V_{CC} = 160V$ $I_C = 40A$		0.55	0.7	μs
t_s	Storage Time	$V_{BB} = -5V$ $I_{B1} = 5A$		0.6	1.2	μs
t_f	Fall Time	$R_{B2} = 0.5\Omega$ $T_p = 30\mu s$		0.07	0.3	μs
	INDUCTIVE LOAD					
t_s	Storage Time	$V_{CC} = 160V$ $V_{clamp} = 200V$		0.85	1.9	μs
t_f	Fall Time	$I_C = 25A$ $I_B = 2.5A$		0.06	0.15	μs
t_t	Tail Time in Turn-on	$V_{BB} = -5V$ $R_{B2} = 1\Omega$		0.01	0.07	μs
t_c	Crossover Time	$L_C = 0.32mH$		0.11	0.3	μs
t_s	Storage Time	$V_{CC} = 160V$ $V_{clamp} = 200V$		1.1	2.4	μs
t_f	Fall Time	$I_C = 25A$ $I_B = 2.5A$		0.08	0.25	μs
t_t	Tail Time in Turn-on	$V_{BB} = -5V$ $R_{B2} = 1\Omega$		0.02	0.15	μs
t_c	Crossover Time	$L_C = 0.32mH$ $T_j = 100^\circ C$		0.15	0.5	μs
t_s	Storage Time	$V_{CC} = 160V$ $V_{clamp} = 200V$		1.6		μs
t_f	Fall Time	$I_C = 25A$ $I_B = 2.5A$		0.7		μs
t_t	Tail Time in Turn-on	$V_{BB} = 0$ $R_{B2} = 2.7\Omega$		0.2		μs
		$L_C = 0.32mH$				
t_s	Storage Time	$V_{CC} = 160V$ $V_{clamp} = 200V$		2.7		μs
t_f	Fall Time	$I_C = 25A$ $I_B = 2.5A$		1		μs
t_t	Tail Time in Turn-on	$V_{BB} = 0$ $R_{B2} = 2.7\Omega$		0.3		μs
		$L_C = 0.32mH$ $T_j = 100^\circ C$				

* 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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