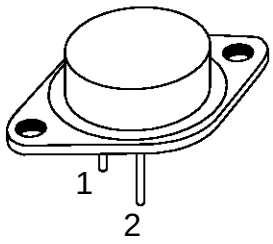
SGS-THOMSON MICROELECTRONICS

BUV60

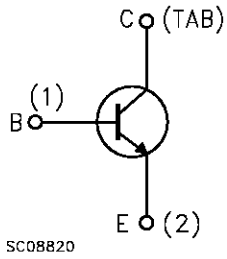
SILICON NPN SWITCHING TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- FAST SWITCHING TIMES
- LOW SWITCHING LOSSES
- VERY LOW SATURATION VOLTAGE AND HIGH GAIN FOR REDUCED LOAD OPERATION



TO-3

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-emitter Voltage (V_{BE} = -1.5V)	250	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	125	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	7	V
I_C	Collector Current	50	V
I_{CM}	Collector Peak Current	80	V
I_B	Base Current	10	A
I_{BM}	Base Peak Current	18	A
P_{Base}	Reverse Bias Base Dissipation (B.E. junction in avalanche)	3	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25\ ^oC$	250	W
T_{stg}	Storage Temperature	-65 to 200	^oC
T_j	Max Operating 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} = 10Ω)	V_{CE} = V_{CEV} **V**$_{CE}$ = V_{CEV} T_c = 100^{o}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^{o}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	125			V
V_{EB0}	Emitter-base Voltage (I_c = 0)	I_E = 50 mA	7			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 25A I_B = 1.25A I_C = 50A I_B = 5A I_C = 60A I_B = 7.5A I_C = 25A I_B = 1.25A T_j = 100^{o}C I_C = 50A I_B = 5A T_j = 100^{o}C I_C = 60A I_B = 7.5A T_j = 100^{o}C		0.45 0.65 0.75 0.45 0.7 0.9	0.9 0.9 1.2 1.2 1.5 1.8	 V V V V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 50A I_B = 5A I_C = 60A I_B = 7.5A I_C = 50A I_B = 5A T_j = 100^{o}C I_C = 60A I_B = 7.5A T_j = 100^{o}C		1.4 1.55 1.45 1.65	1.6 1.8 1.7 1.9	V V V V
di_c/d_t*	Rated of Rise of on-state Collector Current	V_{CC} = 100V R_C = 0 I_{B1} = 7.5A T_j = 25^{o}C T_j = 100^{o}C	 100 90	 160 150		 A/µs A/µs
$V_{CE(2\mu s)}$	Collector Emitter Dynamic Voltage	V_{CC} = 100V I_{B1} = 5A R_C = 2Ω T_j = 25^{o}C T_j = 100^{o}C		 2.5 3	 3 4.5	 V V
$V_{CE(4\mu s)}$	Collector Emitter Dynamic Voltage	VCC = 100V I_{B1} = 5A R_C = 2Ω T_j = 25^{o}C T_j = 100^{o}C		 1.8 1.9	 2.2 3	 V V

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

ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_r	**RESISTIVE LOAD**				0.5	0.8	µs
t_s	Rise Time	V_{CC} = 100V	I_C = 60A		0.6	1.1	µs
t_f	Storage Time	V_{BB} = -5V	I_{B1} = 7.5A		0.06	0.2	µs
	Fall Time	R_{B2} = 0.33Ω	T_p = 30µs				
	INDUCTIVE LOAD						
t_s	Storage Time	V_{CC} = 100V	V_{clamp} = 125V		0.5	1.2	µs
t_f	Fall Time	I_C = 50A	I_B = 5A		0.05	0.15	µs
t_t	Tail Time in Turn-on	V_{BB} = -5V	R_{B2} = 0.5Ω		0.01	0.05	µs
t_c	Crossover Time	L_C = 0.1mH			0.1	0.3	µs
t_s	Storage Time	VCC = 100V	V_{clamp} = 125V		0.85	1.5	µs
t_f	Fall Time	I_C = 50A	I_B = 5A		0.12	0.25	µs
t_t	Tail Time in Turn-on	V_{BB} = -5V	R_{B2} = 0.5Ω		0.04	0.1	µs
t_c	Crossover Time	L_C = 0.1mH	T_j = 100°C		0.2	0.5	µs
t_s	Storage Time	V_{CC} = 100V	V_{clamp} = 125V		1.5		µs
t_f	Fall Time	I_C = 50A	I_B = 5A		1.3		µs
t_t	Tail Time in Turn-on	V_{BB} = 0	R_{B2} = 1.5Ω		0.4		µs
		L_C = 0.1mH					
t_s	Storage Time	V_{CC} = 100V	V_{clamp} = 125V		2.7		µs
t_f	Fall Time	I_C = 50A	I_B = 5A		1.8		µs
t_t	Tail Time in Turn-on	V_{BB} = 0	R_{B2} = 1.5Ω		0.6		µs
		L_C = 0.1mH	T_j = 100°C				

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

TO-3 (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