SGS-THOMSON MICROELECTRONICS

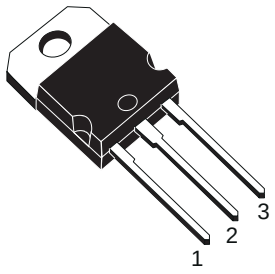
BUW48
BUW49

HIGH POWER NPN SILICON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- VERY LOW SATURATION VOLTAGE AND HIGH GAIN

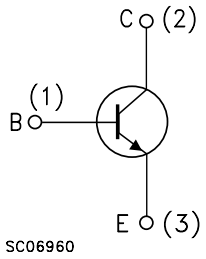
APPLICATION
- SWITCHING REGULATORS
- MOTOR CONTROL
- HIGH FREQUENCY AND EFFICENCY CONVERTERS

DESCRIPTION
The BUW48 and BUW49 are Multiepitaxial planar NPN transistor in TO-218 plastic package.
It's intented for use in high frequency and efficiency converters such us motor controllers and industrial equipment.



TO-218

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BUW48	BUW49	Unit
V_{CEV}	Collector-emitter Voltage (V_{BE} = -1.5V)	120	160	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	60	80	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	7		V
I_C	Collector Current	30		A
I_{CM}	Collector Peak Current	45	40	A
I_B	Base Current	8	6	A
I_{BM}	Base Peak Current	12	10	A
P_{tot}	Total Power Dissipation at T_{case} < 25 °C	150		W
T_{stg}	Storage Temperature	-65 to 175		°C
T_j	Max Operating Junction Temperature	175		°C

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEX}	Collector Cut-off Current	$V_{CE} = V_{CEX}$ V_{BE} = -1.5V $V_{CE} = V_{CEX}$ V_{BE} = -1.5V T_c =125^oC			1 3	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 for **BUW48** for **BUW49**	60 80			V V
V_{EB0}	Emitter-base Voltage (I_c = 0)	I_E = 50 mA	7			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 20A I_B = 2A for **BUW48** I_C = 40A I_B = 4A for **BUW49** I_C = 15A I_B = 1.5A for **BUW48** I_C = 30A I_B = 3A for **BUW49**			0.6 1.4 0.5 1.2	V V V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 40A I_B = 4A for **BUW48** I_C = 30A I_B = 3A for **BUW49**			2.1 2	V V
f_T	Transition Frequency	I_C = 1A V_{CE} = 15V f = 15 MHz		8		MHz

RESISTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{on} t_s t_f	Turn-on Time Storage Time Fall Time	for BUW48 V_{CC} = 60V I_C = 40A $I_{B1} = -I_{B2}$ = 4A		1.2 0.6 0.17	1.5 1.1 0.25	µs µs µs
t_s t_f	Storage Time Fall Time	for BUW48 V_{CC} = 60V I_C = 40A $I_{B1} = -I_{B2}$ = 4A			 1.65 0.5	 µs µs
t_{on} t_s t_f	Turn-on Time Storage Time Fall Time	for BUW49 V_{CC} = 80V I_C = 30A $I_{B1} = -I_{B2}$ = 4A		0.8 0.6 0.15	1.2 1.1 0.25	µs µs µs
t_s t_f	Storage Time Fall Time	for BUW49 V_{CC} = 80V I_C = 30A $I_{B1} = -I_{B2}$ = 4A			 1.65 0.5	 µs µs

* Pulsed: Pulse duration = 300 µs, duty cycle < 1.5 %

TO-218 (SOT-93) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	–		16.2	–		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	–		12.2	–		0.480
Ø	4		4.1	0.157		0.161