

HIGH POWER NPN SILICON TRANSISTORS

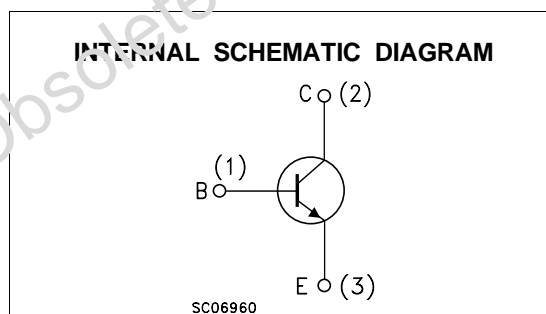
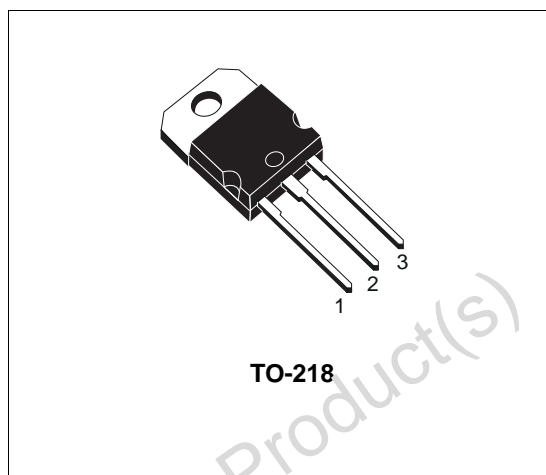
- STMicroelectronics PREFERRED SALESTYPES
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- VERY LOW SATURATION VOLTAGE AND HIGH GAIN

APPLICATION

- SWITCHING REGULATORS
- MOTOR CONTROL
- HIGH FREQUENCY AND EFFICIENCY CONVERTERS

DESCRIPTION

The BUW48 and BUW49 are Multi-Epitaxial Planar NPN transistor in TO-218 plastic package. They are intended for use in high frequency and efficiency converters such as motor controllers and industrial equipment.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BUW48	BUW49	
V_{CEV}	Collector-Emitter Voltage ($V_{BE} = -1.5$ V)	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 ($t_p < 5$ ms)	45	40	A
I_B	Base Current	8	6	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	12	10	A
P_{tot}	Total Dissipation at $T_c = 25$ °C	150		W
T_{stg}	Storage Temperature	-65 to 175		°C
T_j	Max. Operating Junction Temperature	175		°C

BUW48 BUW49

THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	1	°C/W
----------------	----------------------------------	-----	---	------

ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ °C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEX}	Collector Cut-off Current ($V_{BE} = -1.5V$)	$V_{CE} = V_{CEX}$ $V_{CE} = V_{CEX}$ $T_C = 125\text{ °C}$			1 3	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 ($I_B = 0$)	$I_C = 0.2A$ $L = 25\text{ mH}$ for BUW48 for BUW49	60 80			V V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	$I_E = 50\text{ mA}$	7			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 20A$ $I_B = 2A$ for BUW48 $I_C = 40A$ $I_B = 4A$ for BUW48 $I_C = 15A$ $I_B = 1.5A$ for BUW49 $I_C = 30A$ $I_B = 3A$ 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	$I_C = 1A$ $V_{CE} = 15V$ $f = 15\text{ MHz}$		8		MHz

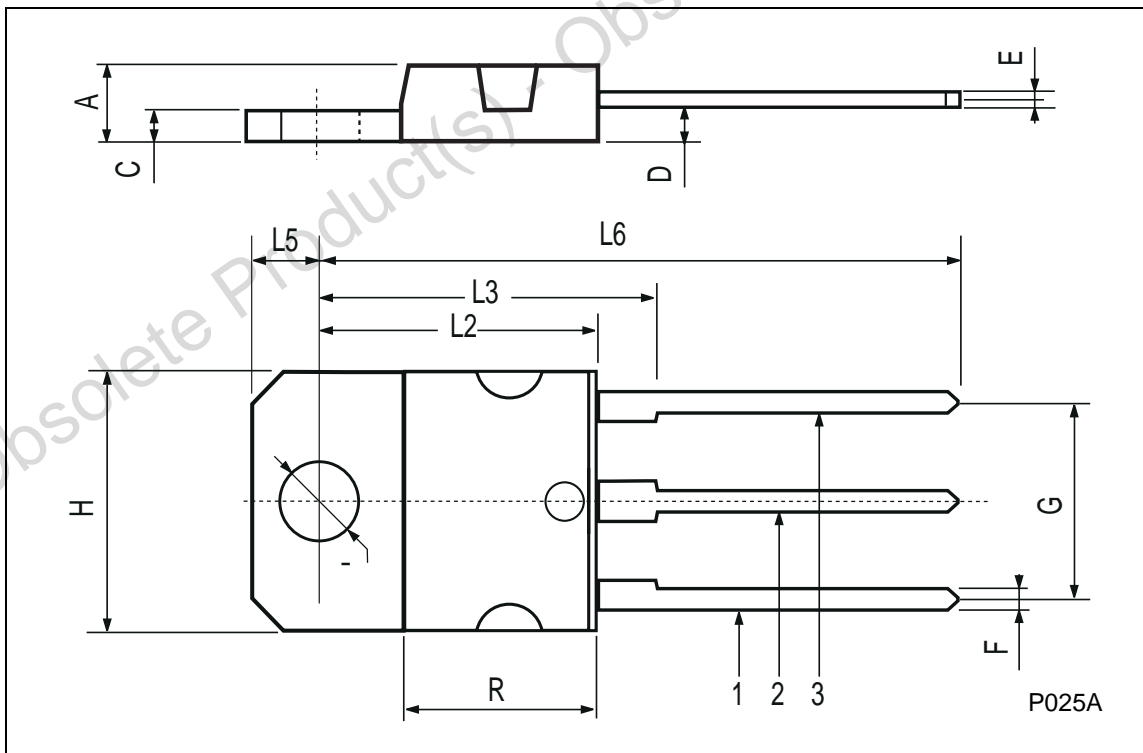
RESISTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{on}	Turn-on Time	for BUW48		1.2	1.5	μs
t_s	Storage Time	$V_{CC} = 60V$ $I_C = 40A$		0.6	1.1	μs
t_f	Fall Time	$I_{B1} = -I_{B2} = 4A$		0.17	0.25	μs
t_s	Storage Time	for BUW48			1.65	μs
t_f	Fall Time	$V_{CC} = 60V$ $I_C = 40A$ $I_{B1} = -I_{B2} = 4A$ $T_C = 100\text{ °C}$			0.5	μs
t_{on}	Turn-on Time	for BUW49		0.8	1.2	μs
t_s	Storage Time	$V_{CC} = 80V$ $I_C = 30A$		0.6	1.1	μs
t_f	Fall Time	$I_{B1} = -I_{B2} = 4A$		0.15	0.25	μs
t_s	Storage Time	for BUW49			1.65	μs
t_f	Fall Time	$V_{CC} = 80V$ $I_C = 30A$ $I_{B1} = -I_{B2} = 4$ $T_C = 100\text{ °C}$			0.5	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



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics.

All other names are the property of their respective owners.

© 2003 STMicroelectronics – All Rights reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>