



# THE DATASHEET OF BUW48



## HIGH POWER NPN SILICON TRANSISTORS

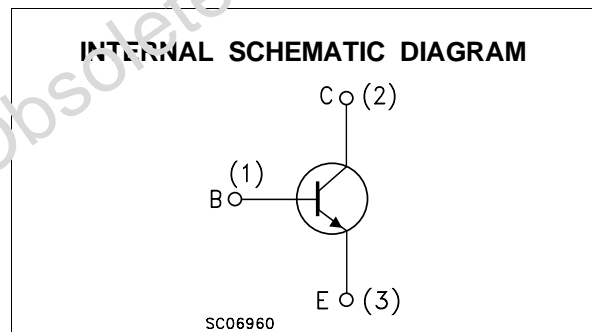
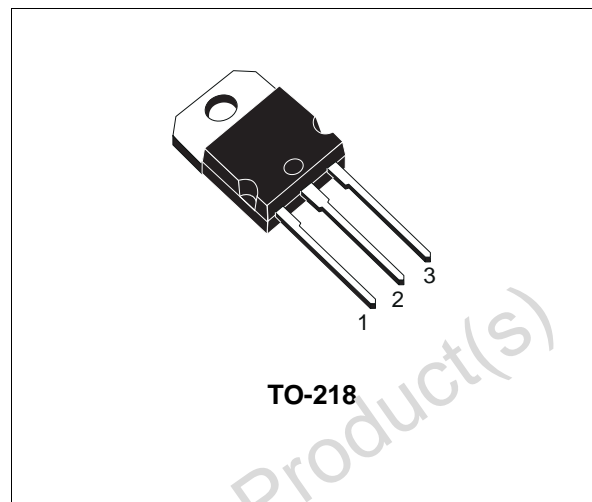
- STMicroelectronics PREFERRED SALESTYPES
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- VERY LOW SATURATION VOLTAGE AND HIGH GAIN

### 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 ( $V_{BE} = -1.5\text{ V}$ )	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 ( $t_p < 5\text{ ms}$ )	45	40	A
$I_B$	Base Current	8	6	A
$I_{BM}$	Base Peak Current ( $t_p < 5\text{ ms}$ )	12	10	A
$P_{tot}$	Total Dissipation at $T_c = 25\text{ }^\circ\text{C}$	150		W
$T_{stg}$	Storage Temperature	-65 to 175		$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	175		$^\circ\text{C}$

## BUW48 BUW49

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1	°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> V <sub>CE</sub> = V <sub>CEX</sub> T <sub>C</sub> = 125°C			1 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> = 0.2A    L = 25 mH for <b>BUW48</b> for <b>BUW49</b>	60 80			V V
V <sub>EBO</sub>	Emitter-base Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = 50 mA	7			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 20A    I <sub>B</sub> = 2A    for <b>BUW48</b> I <sub>C</sub> = 40A    I <sub>B</sub> = 4A    for <b>BUW48</b> I <sub>C</sub> = 15A    I <sub>B</sub> = 1.5A for <b>BUW49</b> I <sub>C</sub> = 30A    I <sub>B</sub> = 3A    for <b>BUW49</b>			0.6 1.4 0.5 1.2	V V V V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 40A    I <sub>B</sub> = 4A    for <b>BUW48</b> I <sub>C</sub> = 30A    I <sub>B</sub> = 3A    for <b>BUW49</b>			2.1 2	V V
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 1A      V <sub>CE</sub> = 15V    f = 15 MHz		8		MHz

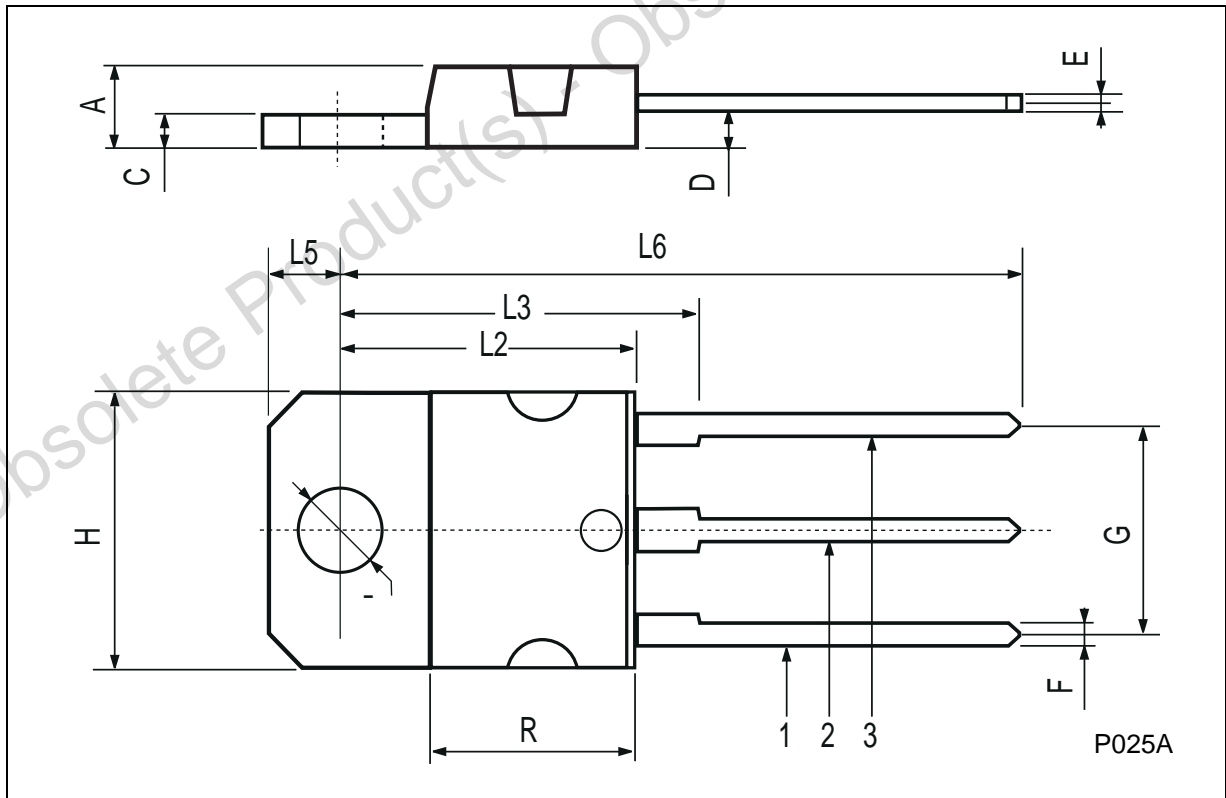
### RESISTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t <sub>on</sub> t <sub>s</sub> t <sub>f</sub>	Turn-on Time Storage Time Fall Time	for BUW48 V <sub>CC</sub> = 60V      I <sub>C</sub> = 40A I <sub>B1</sub> = -I <sub>B2</sub> = 4A		1.2 0.6 0.17	1.5 1.1 0.25	μs μs μs
t <sub>s</sub> t <sub>f</sub>	Storage Time Fall Time	for BUW48 V <sub>CC</sub> = 60V      I <sub>C</sub> = 40A I <sub>B1</sub> = -I <sub>B2</sub> = 4A      T <sub>C</sub> = 100°C			1.65 0.5	μs μs
t <sub>on</sub> t <sub>s</sub> t <sub>f</sub>	Turn-on Time Storage Time Fall Time	for BUW49 V <sub>CC</sub> = 80V      I <sub>C</sub> = 30A I <sub>B1</sub> = -I <sub>B2</sub> = 4A		0.8 0.6 0.15	1.2 1.1 0.25	μs μs μs
t <sub>s</sub> t <sub>f</sub>	Storage Time Fall Time	for BUW49 V <sub>CC</sub> = 80V      I <sub>C</sub> = 30A I <sub>B1</sub> = -I <sub>B2</sub> = 4A      T <sub>C</sub> = 100°C			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



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