



BUX48C/BUV48C BUV48CFI

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTORS

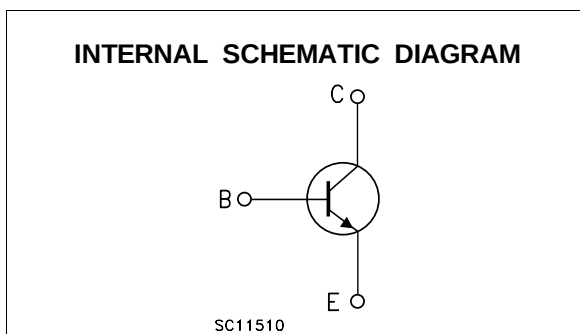
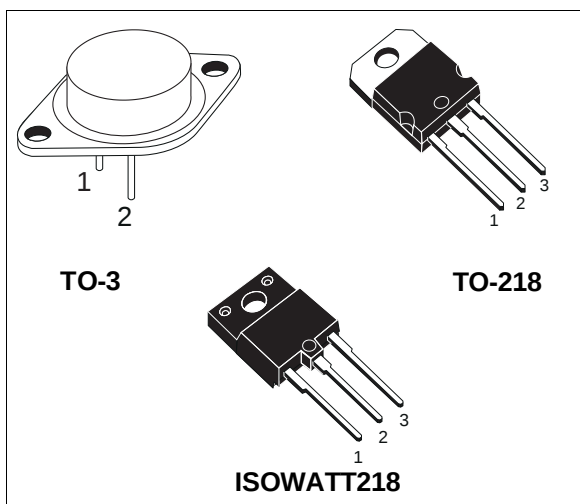
- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTORS
- HIGH VOLTAGE CAPABILITY
- FAST SWITCHING SPEED

APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The BUX48C, BUV48C and BUV48CFI are silicon multiepitaxial mesa NPN transistors mounted respectively in TO-3 metal case, TO-218 plastic package and ISOWATT218 fully isolated package. They are particularly intended for switching and industrial applications from single and three-phase mains.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
V_{CER}	Collector-Emitter Voltage ($R_{BE} = 10\Omega$)	1200			V
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	1200			V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	700			V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	7			V
I_C	Collector Current	15			A
I_{CM}	Collector Peak Current ($t_p < 5ms$)	30			A
I_{CP}	Collector Peak Current non repetitive ($t_p < 20\mu s$)	55			A
I_B	Base Current	4			A
I_{BM}	Base Peak Current ($t_p < 5ms$)	20			A
		TO-3	TO-218	ISOWATT218	
P_{tot}	Total Dissipation at $T_c = 25^\circ C$	175	125	55	W
T_{stg}	Storage Temperature	-65 to 200	-65 to 150	-65 to 150	$^\circ C$
T_j	Max. Operating Junction Temperature	200	150	150	$^\circ C$

THERMAL DATA

		TO-3	TO-218	ISOWATT218	
$R_{thj-case}$	Thermal Resistance Junction-case Max	1	1	2.2	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CER}	Collector Cut-off Current ($R_{BE} = 10\ \Omega$)	$V_{CE} = 1200\text{ V}$ $V_{CE} = 1200\text{ V}$ $T_{case} = 125\text{ }^{\circ}\text{C}$			500 4	μA mA
I_{CES}	Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = 1200\text{ V}$ $V_{CE} = 1200\text{ V}$ $T_{case} = 125\text{ }^{\circ}\text{C}$			500 3	μA mA
I_{CEO}	Collector Cut-off Current ($I_B = 0$)	$V_{CE} = V_{CEO}$			1	mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 6\text{ V}$			1	mA
$V_{CEO(SUS)}^*$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100\text{ mA}$	700			V
$V_{CER(SUS)}^*$	Collector-Emitter Sustaining Voltage ($R_{BE} = 10\ \Omega$)	$I_C = 0.5\text{ A}$ $V_{clamp} = 1200\text{ V}$ $L = 2\text{ mH}$	1200			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 6\text{ A}$ $I_B = 1.5\text{ A}$ $I_C = 10\text{ A}$ $I_B = 4\text{ A}$			1.5 3	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 6\text{ A}$ $I_B = 1.5\text{ A}$ $I_C = 10\text{ A}$ $I_B = 4\text{ A}$			1.5 2	V V

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

RESISTIVE SWITCHING TIMES

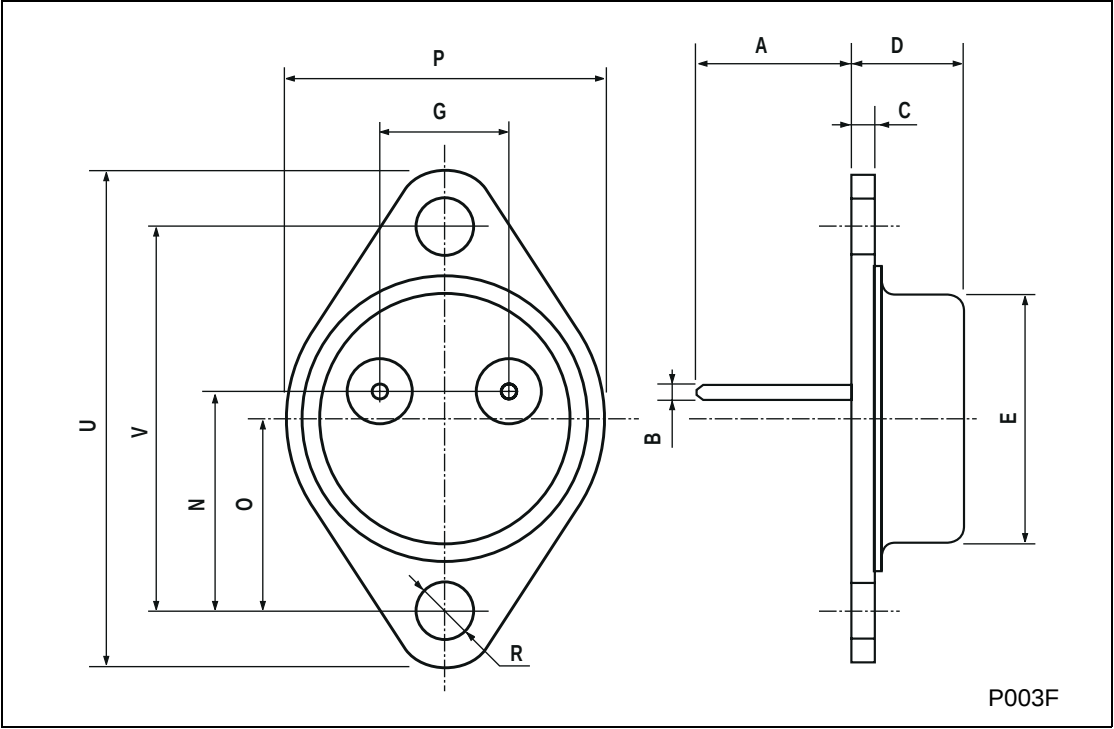
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{on}	Turn-on Time	$V_{CC} = 250\text{ V}$ $I_C = 6\text{ A}$ $I_{B1} = - I_{B2} = 1.5\text{ A}$		0.5	1	μs
t_s	Storage Time			1.5	3	μs
t_f	Fall Time			0.2	0.7	μs

INDUCTIVE SWITCHING TIMES

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_s	Storage Time	$V_{CC} = 250\text{ V}$ $I_C = 6\text{ A}$ $I_{B1} = - I_{B2} = 1.5\text{ A}$		2		μs
t_f	Fall Time			0.15		μs
t_s	Storage Time	$V_{CC} = 250\text{ V}$ $I_C = 6\text{ A}$ $I_{B1} = - I_{B2} = 1.5\text{ A}$ $T_C = 125\text{ }^{\circ}\text{C}$		3	6	μs
t_f	Fall Time			0.33	0.60	μs

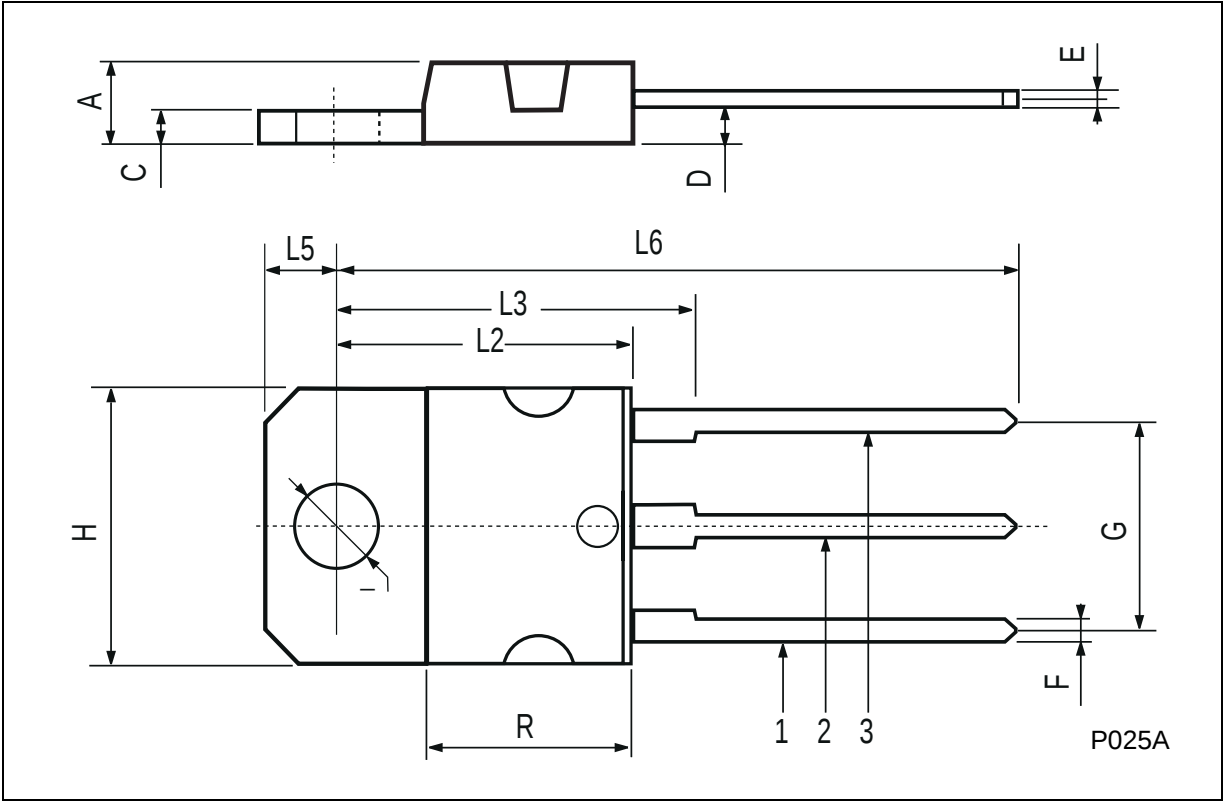
TO-3 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
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



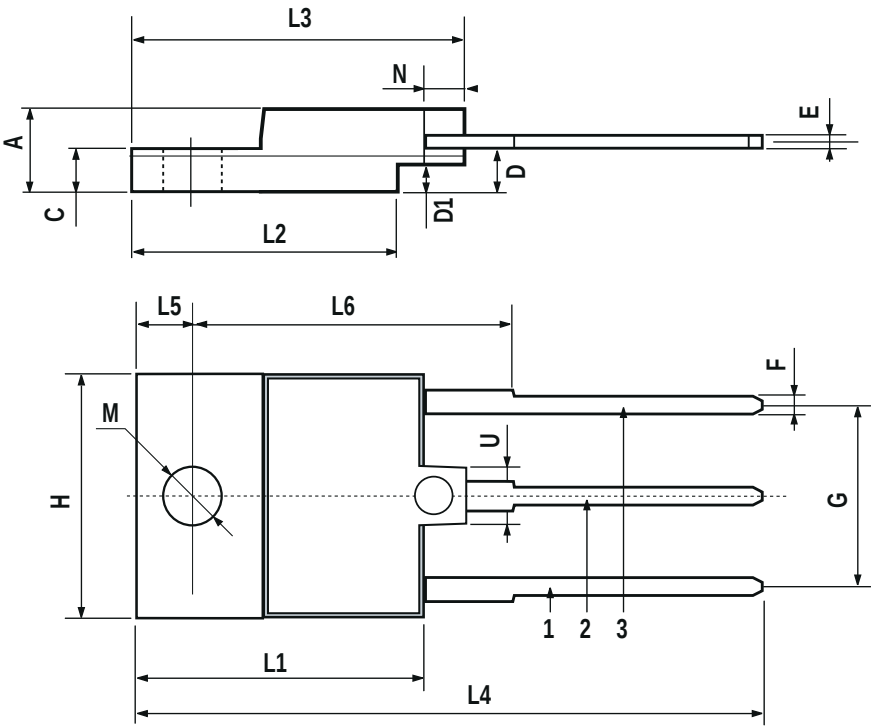
TO-218 (SOT-93) MECHANICAL DATA

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



ISOWATT218 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.210		0.222
C	3.3		3.8	0.130		0.149
D	2.9		3.1	0.114		0.122
D1	1.88		2.08	0.074		0.081
E	0.75		1	0.029		0.039
F	1.05		1.25	0.041		0.049
G	10.8		11.2	0.425		0.441
H	15.8		16.2	0.622		0.637
L1	20.8		21.2	0.818		0.834
L2	19.1		19.9	0.752		0.783
L3	22.8		23.6	0.897		0.929
L4	40.5		42.5	1.594		1.673
L5	4.85		5.25	0.190		0.206
L6	20.25		20.75	0.797		0.817
M	3.5		3.7	0.137		0.145
N	2.1		2.3	0.082		0.090
U		4.6			0.181	



P025C

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

© 1998 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.