



# BUX48C/BUV48C BUV48CFI

## HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTORS

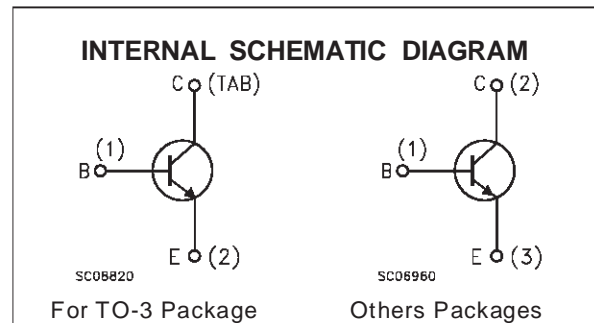
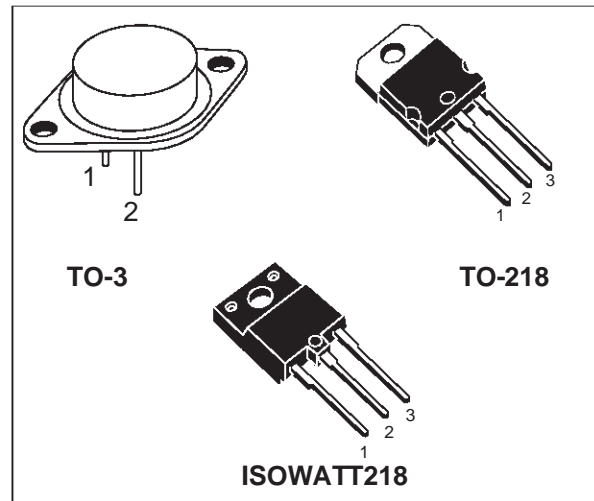
- NPN TRANSISTORS
- HIGH VOLTAGE CAPABILITY
- FAST SWITCHING SPEED

### 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
		<b>TO-3</b>	<b>TO-218</b>	<b>ISOWATT218</b>	
$P_{tot}$	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	$^\circ C$

# BUX48C/BUV48C/BUV48CFI

## THERMAL DATA

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

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CER}$	Collector Cut-off Current ( $R_{BE} = 10\ \Omega$ )	$V_{CE} = 1200\text{ V}$ $V_{CE} = 1200\text{ V}$ $T_{case} = 125\text{ °C}$			500 4	$\mu\text{A}$ mA
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = 1200\text{ V}$ $V_{CE} = 1200\text{ V}$ $T_{case} = 125\text{ °C}$			500 3	$\mu\text{A}$ 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  $\mu\text{s}$ , duty cycle 1.5 %

## RESISTIVE SWITCHING TIMES

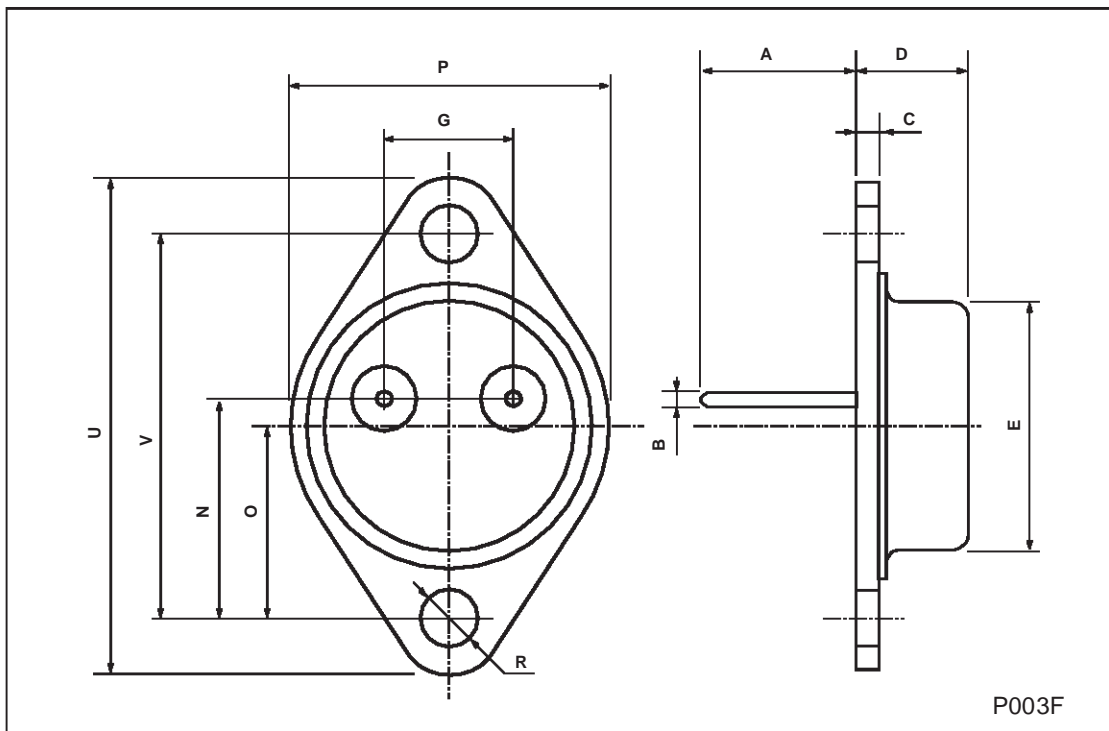
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{on}$	Turn-on Time	$V_{CC} = 250\text{ V}$ $I_C = 6\text{ A}$		0.5	1	$\mu\text{s}$
$t_s$	Storage Time	$I_{B1} = - I_{B2} = 1.5\text{ A}$		1.5	3	$\mu\text{s}$
$t_f$	Fall Time			0.2	0.7	$\mu\text{s}$

## INDUCTIVE SWITCHING TIMES

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

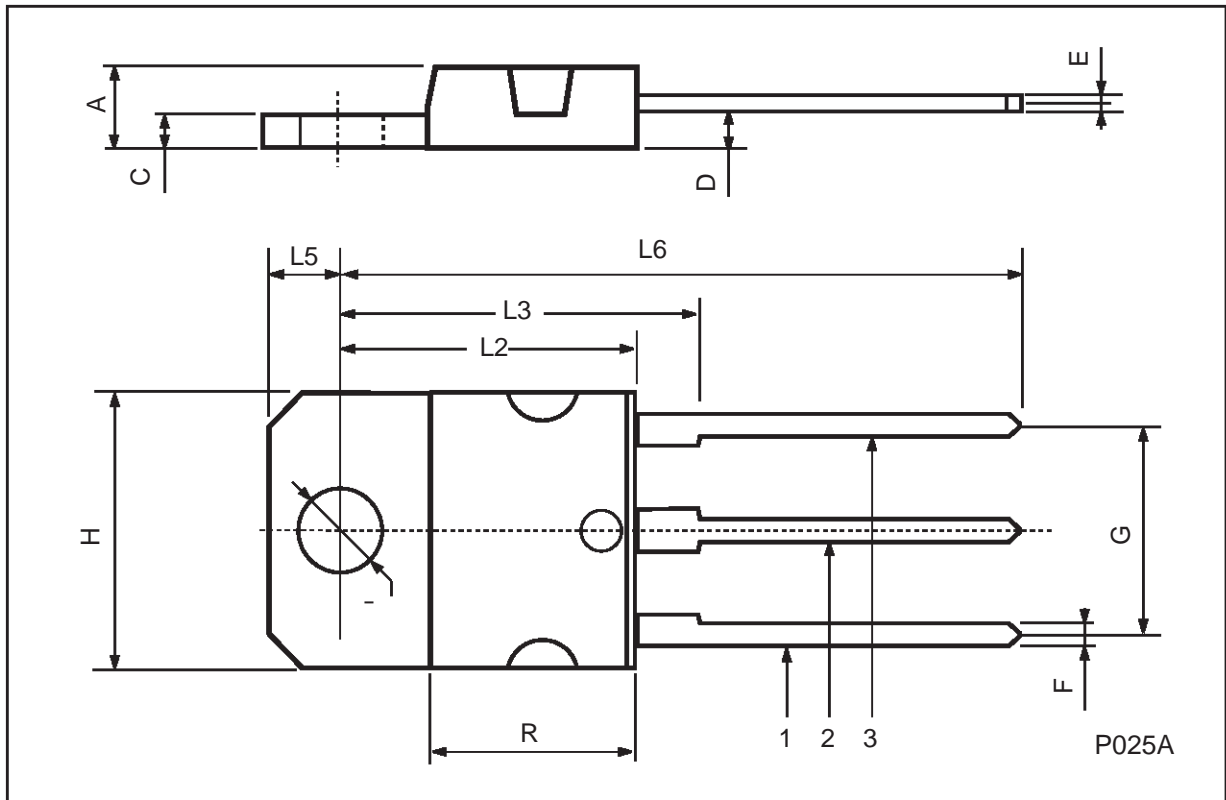
**TO-3 MECHANICAL DATA**

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



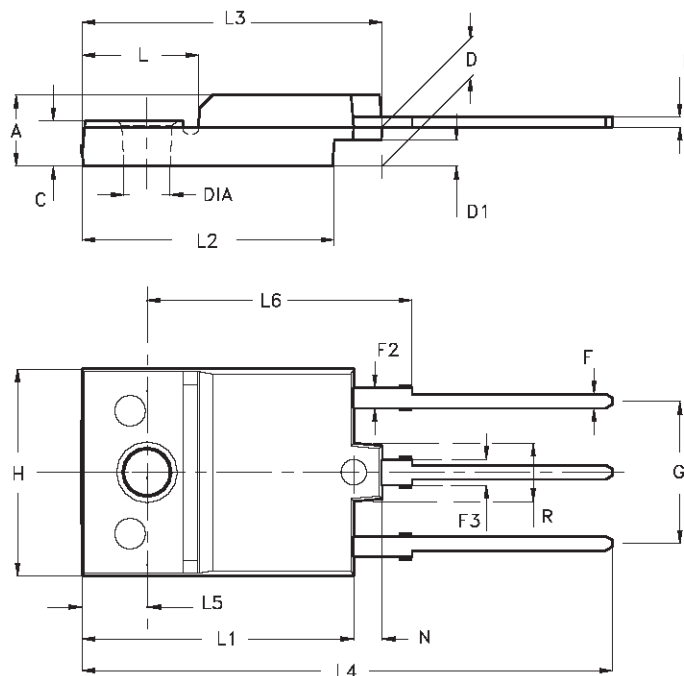
**TO-218 (SOT-93) MECHANICAL DATA**

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	0.211		0.222
C	3.30		3.80	0.130		0.150
D	2.90		3.10	0.114		0.122
D1	1.88		2.08	0.074		0.082
E	0.75		0.95	0.030		0.037
F	1.05		1.25	0.041		0.049
F2	1.50		1.70	0.059		0.067
F3	1.90		2.10	0.075		0.083
G	10.80		11.20	0.425		0.441
H	15.80		16.20	0.622		0.638
L		9			0.354	
L1	20.80		21.20	0.819		0.835
L2	19.10		19.90	0.752		0.783
L3	22.80		23.60	0.898		0.929
L4	40.50		42.50	1.594		1.673
L5	4.85		5.25	0.191		0.207
L6	20.25		20.75	0.797		0.817
N	2.1		2.3	0.083		0.091
R		4.6			0.181	
DIA	3.5		3.7	0.138		0.146



- Weight : 4.9 g (typ.)
- Maximum Torque (applied to mounting flange) Recommended 0.8 Nm; Maximum: 1 Nm
- The side of the dissipator must be flat within 80 µm

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