

BUX48/48A BUV48A/V48AFI

HIGH POWER NPN SILICON TRANSISTORS

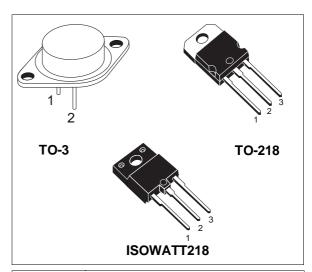
- STMicroelectronics PREFERRED SALESTYPES
- NPN TRANSISTOR
- HIGH VOLTAGE CAPABILITY
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED

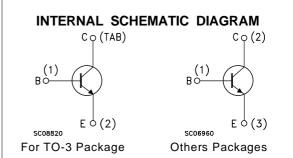
APPLICATIONS

- SWITCH MODE POWER SUPPLIES
- FLYBACK AND FORWARD SINGLE TRANSISTOR LOW POWER CONVERTERS



The BUX48/A, BUV48A and BUV48AFI are silicon Multiepitaxial Mesa NPN transistors mounted respectively in TO-3 metal case, TO-218 plastic package and ISOWATT218 fully isolated package. They are particulary intended for switching and industrial applications from single and tree-phase mains.





ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value		Unit
		BUX4	8	BUX48A BUV48A BUV48AFI	
V _{CER}	Collector-Emitter Voltage ($R_{BE} = 10\Omega$)	850		1000	V
V _{CES}	Collector-Emitter Voltage (V _{BE} = 0)	850		1000	V
V _{CEO}	Collector-Emitter Voltage (I _B = 0)	400 450			V
VEBO	Emitter-Base Voltage (Ic = 0)	7			V
Ic	Collector Current	15			Α
I _{CM}	Collector Peak Current		30		Α
I _{CP}	Collector Peak Current non repetitive (t _p <20µs)		55		Α
I _B	Base Current		4		Α
I _{BM}	Base Peak Current		20		Α
		TO-3	TO-218	ISOWATT218	
P _{tot}	Total Dissipation at T _c = 25 °C	175	125	55	W
T _{stg}	Storage Temperature	-65 to200	-65 to 150	-65 to 150	°C
Tj	Max. Operating Junction Temperature	200	150	150	°C

January 2000 1/7

BUX48 / BUX48A / BUV48A / BUV48AFI

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 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
Ices	Collector Cut-off Current (V _{BE} = 0)	V_{CE} = rated V_{CES} V_{CE} = rated V_{CES} , T_c = 125 $^{\circ}C$			200 2	μA mA
I _{CER}	Collector Cut-off Current ($R_{BE} = 10 \Omega$)	V_{CE} = rated V_{CER} V_{CE} = rated V_{CER} , T_c = 125 $^{\circ}C$			500 4	μA mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V			1	mA
V _{CEO(SUS)} *	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 200 mA L= 25mH for BUX48 for BUX48A/V48A/V48AFI	400 450			< <
V _{EBO}	Emitter-Base Voltage (I _C = 0)	I _E = 50 mA	7		30	٧
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	$\begin{array}{llllllllllllllllllllllllllllllllllll$			1.5 3.5 5 1.5 5	>>>>>>
VBE(sat)*	Base-Emitter Saturation Voltage	for BUX48 I _C = 10 A I _B = 2 A for BUX48A/V48A/V48AFI I _C = 8 A I _B = 1.6 A			1.6 1.6	V V

^{*} Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %

RESISTIVE SWITCHING TIMES

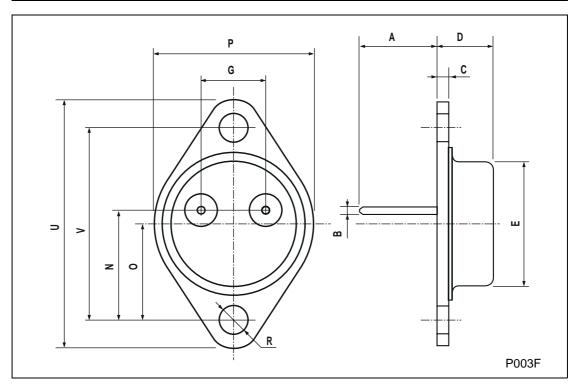
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
t _{on}	Turn-on Time	for BUX48 $V_{CC} = 150 \text{ V}$ $I_{C} = 10 \text{ A}$ $I_{B1} = 2 \text{ A}$ for BUX48A/V48A/V48AFI $V_{CC} = 150 \text{ V}$ $I_{C} = 8 \text{ A}$ $I_{B1} = 1.6 \text{ A}$			1	μs
	Ctorogo Timo					μs
t _s	Storage Time	for BUX48 $V_{CC} = 150 \text{ V}$ $I_{C} = 10 \text{ A}$ $I_{B1} = -I_{B2} = 2 \text{ A}$ for BUX48A/V48A/V48AFI $V_{CC} = 150 \text{ V}$ $I_{C} = 8 \text{ A}$ $I_{B1} = -I_{B2} = 1.6 \text{ A}$			3	μs μs
t _f	Fall Time	for BUX48 V _{CC} = 150 V			0.8	μs
		$I_{B1} = -I_{B2} = 1.6 \text{ A}$			0.8	μs

INDUCTIVE SWITCHING TIMES

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
t _s	Storage Time	for BUX48 $Vcc = 300 \text{ V} \qquad Ic = 10 \text{ A}$ $L_B = 3 \mu H$ $V_{BE} = -5 \text{ V} \qquad I_{B1} = 2 \text{ A}$ same conditions at $T_c = 125 ^{\circ}\text{C}$ for BUX48A/V48A/V48AFI $V_{CC} = 300 \text{ V} \qquad I_C = 8 \text{ A}$		2.7	5	μs μs
		$L_B = 3 \mu H$ $V_{BE} = -5 V$ $I_{B1} = 1.6 A$ same conditions at $T_c = 125$ °C		3	5	μs μs
t _f	Fall Time	for BUX48 $V_{CC} = 300 \text{ V} \qquad I_{C} = 10 \text{ A}$ $L_{B} = 3 \mu\text{H}$ $V_{BE} = -5 \text{ V} \qquad I_{B1} = 2 \text{ A}$ same conditions at $T_{c} = 125 ^{\circ}\text{C}$ for BUX48A/V48A/V48AFI $V_{CC} = 300 \text{ V} \qquad I_{C} = 8 \text{ A}$ $L_{B} = 3 \mu\text{H}$		0.16	0.4	μs μs
		$V_{BE} = -5 \text{ V}$ $I_{B1} = 1.6 \text{ A}$ same conditions at $T_c = 125 ^{\circ}\text{C}$		0.13	0.4	μs μs

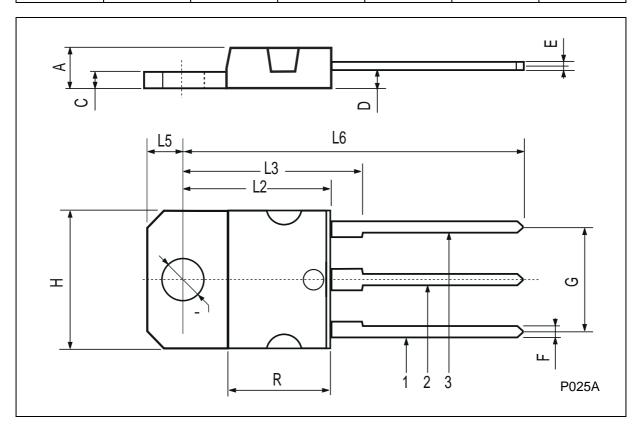
TO-3 MECHANICAL DATA

DIM.		mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
А	11.00		13.10	0.433		0.516		
В	0.97		1.15	0.038		0.045		
С	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		
Р	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		



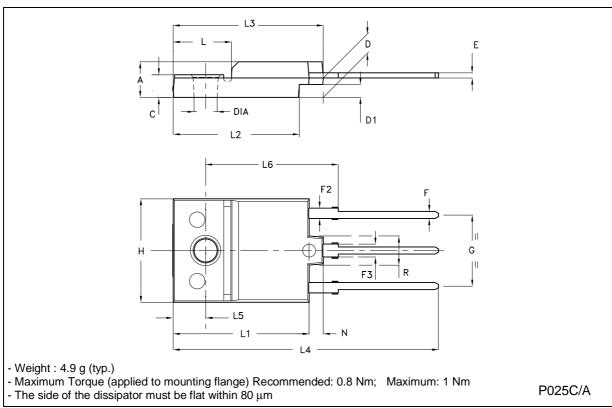
TO-218 (SOT-93) MECHANICAL DATA

DIM.	mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
А	4.7		4.9	0.185		0.193	
С	1.17		1.37	0.046		0.054	
D		2.5			0.098		
Е	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	
Н	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			
DIIVI.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Α	5.35		5.65	0.211		0.222		
С	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		
I	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		



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