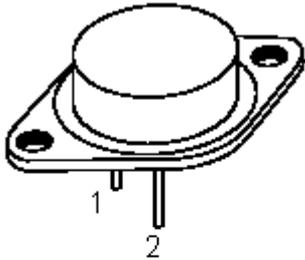
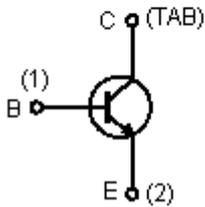




TO-3



Internal Schematic Diagram



For TO-3 Package

## Features:

- NPN transistor
- High voltage capability
- High current capability
- Fast switching speed

## Applications:

Switch mode power supplies  
Fly back and forward single transistor low power converters

## Description:

They are silicon multi-epitaxial mesa NPN transistors mounted respectively in TO-3 fully isolated package. They are particularly intended for switching and industrial applications from single and three-phase mains

## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage ( $R_{BE} = 10 \Omega$ )	$V_{CER}$	1,000	V
Collector-Emitter Voltage ( $V_{BE} = 0$ )	$V_{CES}$		
Collector-Emitter Voltage ( $I_B = 0$ )	$V_{CEO}$		
Emitter-Base Voltage ( $I_C = 0$ )	$V_{EBO}$	7	
Collector Current	$I_C$	15	A
Collector Peak Current	$I_{CM}$	30	
Collector Peak Current Non Repetitive ( $t_p < 20 \mu s$ )	$I_{CP}$	55	
Base Current	$I_B$	4	
Base Peak Current	$I_{BM}$	20	
Total Dissipation at $T_C = 25^\circ C$	$P_{tot}$	175	W
Storage Temperature	$T_{stg}$	-65 to 200	$^\circ C$
Maximum Operating Junction Temperature	$T_j$	200	

## Thermal Data

Maximum Thermal Resistance Junction-Case	$R_{thj-case}$	1	$^\circ C / W$
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## Electrical Characteristics ( $T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Test Conditions	Symbol	Minimum	Maximum	Unit
Collector Cut-off Current ( $V_{\text{BE}} = 0$ )	$V_{\text{CE}} = \text{rated } V_{\text{CES}}$ $V_{\text{CE}} = \text{rated } V_{\text{CES}}, T_{\text{C}} = 125^{\circ}\text{C}$	$I_{\text{CES}}$	-	200 2	$\mu\text{A}$ mA
Collector Cut-off Current ( $R_{\text{BE}} = 10$ )	$V_{\text{CE}} = \text{rated } V_{\text{CER}}$ $V_{\text{CE}} = \text{rated } V_{\text{CER}}, T_{\text{C}} = 125^{\circ}\text{C}$	$I_{\text{CER}}$	-	500 4	$\mu\text{A}$ mA
Emitter Cut-off Current ( $I_{\text{C}} = 0$ )	$V_{\text{EB}} = 5 \text{ V}$	$I_{\text{EBO}}$		1	mA
Collector-Emitter Sustaining Voltage ( $I_{\text{B}} = 0$ )	$I_{\text{C}} = 200 \text{ mA } L = 25 \text{ mH } \mathbf{BUX48A}$	$V_{\text{CEO (sus)*}}$	450	-	V
Emitter-Base Voltage ( $I_{\text{C}} = 0$ )	$I_{\text{E}} = 50 \text{ mA}$	$V_{\text{EBO}}$	7	30	
Collector-Emitter Saturation Voltage	$I_{\text{C}} = 8 \text{ A } I_{\text{B}} = 1.6 \text{ A } \mathbf{BUX48A}$ $I_{\text{C}} = 12 \text{ A } I_{\text{B}} = 2.4 \text{ A}$	$V_{\text{CE (sat)*}}$	-	1.5 5	
Base-Emitter Saturation Voltage	$I_{\text{C}} = 8 \text{ A } I_{\text{B}} = 1.6 \text{ A } \mathbf{BUX48A}$	$V_{\text{BE (sat)*}}$	-	1.6	

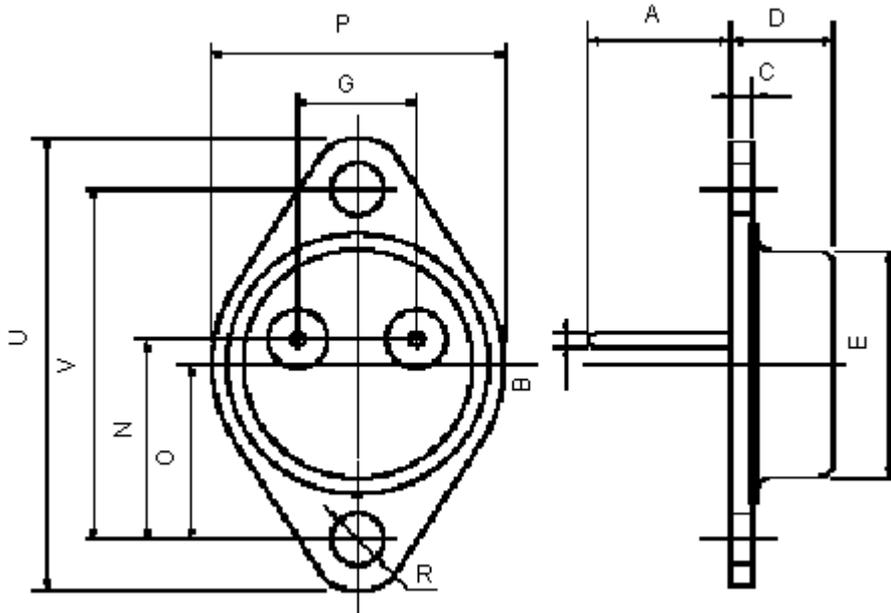
\* Pulsed : Pulse duration = 300  $\mu\text{s}$ , duty cycle  $\leq 2\%$

## Resistive Switching Times

Parameter	Test Conditions	Symbol	Minimum	Maximum	Unit
Turn-on Time	$V_{\text{CC}} = 150 \text{ V } I_{\text{C}} = 8 \text{ A } \mathbf{BUX48A}$ $I_{\text{B1}} = 1.6 \text{ A}$	$t_{\text{on}}$	-	1	$\mu\text{s}$
Storage Time	$V_{\text{CC}} = 150 \text{ V } I_{\text{C}} = 8 \text{ A } \mathbf{BUX48A}$ $I_{\text{B1}} = -I_{\text{B2}} = 1.6 \text{ A}$	$t_{\text{s}}$	-	3	
Fall Time	$V_{\text{CC}} = 150 \text{ V } I_{\text{C}} = 8 \text{ A } \mathbf{BUX48A}$ $I_{\text{B1}} = -I_{\text{B2}} = 1.6 \text{ A}$	$t_{\text{f}}$	-	0.8	

## Inductive Switching Times

Parameter	Test Conditions	Symbol	Minimum	Typical	Maximum	Unit
Storage Time	$V_{\text{CC}} = 300 \text{ V } I_{\text{C}} = 8 \text{ A } \mathbf{BUX48A}$ $L_{\text{B}} = 3 \mu\text{H}$ $V_{\text{BE}} = -5 \text{ V } I_{\text{B1}} = 1.6 \text{ A}$ Same Conditions at $T_{\text{C}} = 125^{\circ}\text{C}$	$t_{\text{s}}$	-	3	5	$\mu\text{s}$
Fall Time	$V_{\text{CC}} = 300 \text{ V } I_{\text{C}} = 8 \text{ A } \mathbf{BUX48A}$ $L_{\text{B}} = 3 \mu\text{H}$ $V_{\text{BE}} = -5 \text{ V } I_{\text{B1}} = 1.6 \text{ A}$ Same Conditions at $T_{\text{C}} = 125^{\circ}\text{C}$	$t_{\text{f}}$		0.13	0.4	



## TO-3 Mechanical Data

Dimensions	Minimum	Maximum
A	11 (0.433)	13.1 (0.516)
B	0.97 (0.038)	1.15 (0.045)
C	1.5 (0.59)	1.65 (0.065)
D	8.32 (0.327)	8.92 (0.351)
E	19 (0.748)	20 (0.787)
G	10.7 (0.421)	11.1 (0.437)
N	16.5 (0.649)	17.2 (0.677)
P	25 (0.984)	26 (1.023)
R	4 (0.157)	4.09 (0.161)
U	38.5 (1.515)	39.3 (1.547)
V	30 (1.187)	30.3 (1.193)

Dimensions : Inches (Millimetres)

## Part Number Table

Description	Part Number
Transistor, NPN, TO-3	BUX48A

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