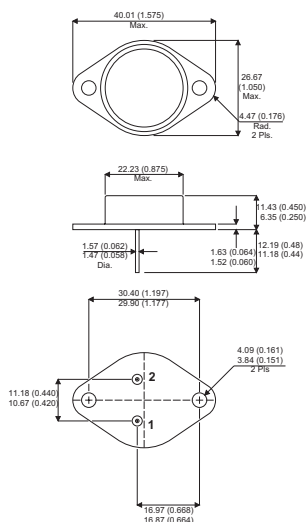


**MECHANICAL DATA**  
Dimensions in mm(inches)



**TO-3 PACKAGE (TO-204AA)**

**PIN 1 — Base    PIN 2 — Emitter    Case is Collector.**

**HIGH VOLTAGE**  
**HIGH SPEED**  
**HIGH POWER TRANSISTORS**

**DESCRIPTION**

The BUX33 series of silicon NPN power transistors in modified Jedec TO-3 metal case, feature high voltage capability, fast switching speeds and low saturation voltages.

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_C = 25^\circ\text{C}$ unless otherwise stated)		<b>BUX33</b>	<b>BUX33A</b>	<b>BUX33B</b>
$V_{CEV}$	Collector – Emitter Voltage ( $V_{BE} = 1.5\text{V}$ )	800V	900V	1000V
$V_{CER}$	Collector – Emitter Voltage ( $R_{BE} = 10\Omega$ )	800V	900V	1000V
$V_{CEX}$	Collector – Emitter Voltage ( $V_{BE} = -1.5\text{V}$ )	450V	500V	550V
$V_{CEO}$	Collector – Emitter Voltage ( $I_C = 0$ )	400V	450V	500V
$V_{EBO}$	Emitter– Base Voltage		8v	
$I_C$	Collector Current		12A	
$I_{CM}$	Maximum Collector Current		15A	
$I_B$	Base Current		4	
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^\circ\text{C}$		150W	
$T_{stg}, T_J$	Maximum Storage and Junction Temperature		-65 to 200°C	

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.



## ELECTRICAL CHARACTERISTICS BUX33 (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>CEO(sus)</sub> * Collector - Emitter Sustaining Voltage	I <sub>C</sub> = 200mA      I <sub>B</sub> = 0	400			V
V <sub>BE(sat)</sub> Emitter – Base Voltage	I <sub>C</sub> = 8A      I <sub>B</sub> = 2A			1.3	V
I <sub>CEX</sub> Collector Cut-off Current	V <sub>CE</sub> = 800V      V <sub>BE</sub> = -1.5V			0.1	mA
	T <sub>C</sub> = 100°C			1.0	
I <sub>EBO</sub> Emitter Cut-off Current	I <sub>C</sub> = 0      V <sub>BE</sub> = -8V			2	
V <sub>CE(sat)</sub> * Collector – Emitter Saturation Voltage	I <sub>C</sub> = 8A      I <sub>B</sub> = 2A			1	V
	I <sub>C</sub> = 12A      I <sub>B</sub> = 3A			4	
h <sub>FE</sub> * DC Current Gain	I <sub>C</sub> = 8A      V <sub>CE</sub> = 3V	6		40	—
f <sub>T</sub> Transition Frequency	I <sub>C</sub> = 0.2A      V <sub>CE</sub> = 10V	15		60	MHz
t <sub>d</sub> Turn-On Delay Time	V <sub>CC</sub> = 240V      t <sub>p</sub> = 20μs			0.1	μs
t <sub>r</sub> Rise Time	I <sub>C</sub> = 8A      I <sub>B1</sub> = 2A			0.45	
t <sub>s</sub> Storage Time	V <sub>CC</sub> = 240V      t <sub>p</sub> = 20μs			3.0	
t <sub>f</sub> Fall Time	I <sub>C</sub> = 8A      I <sub>B2</sub> = -2A			0.4	

\* Pulsed: pulse duration = 300ms, duty cycle ≤ 2%

## THERMAL CHARACTERISTICS

R <sub>θJC</sub> Thermal Resistance Junction to Case		1.0		°C/W
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## ELECTRICAL CHARACTERISTICS BUX33A (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>CEO(sus)</sub> * Collector - Emitter Sustaining Voltage	I <sub>C</sub> = 200mA      I <sub>B</sub> = 0	450			V
V <sub>BE(sat)</sub> Emitter – Base Voltage	I <sub>C</sub> = 8A      I <sub>B</sub> = 2A			1.3	V
I <sub>CEX</sub> Collector Cut-off Current	V <sub>CE</sub> = 900V      V <sub>BE</sub> = -1.5V T <sub>C</sub> = 100°C			0.1 1.0	mA
I <sub>EBO</sub> Emitter Cut-off Current	I <sub>C</sub> = 0      V <sub>BE</sub> = -8V			2	
V <sub>CE(sat)</sub> * Collector – Emitter Saturation Voltage	I <sub>C</sub> = 8A      I <sub>B</sub> = 2A I <sub>C</sub> = 12A      I <sub>B</sub> = 3A			1 4	V
h <sub>FE</sub> * DC Current Gain	I <sub>C</sub> = 8A      V <sub>CE</sub> = 3V	6		40	
f <sub>T</sub> Transition Frequency	I <sub>C</sub> = 0.2A      V <sub>CE</sub> = 10V	15		60	MHz
t <sub>d</sub> Turn-On Delay Time	V <sub>CC</sub> = 240V      t <sub>p</sub> = 20μs			0.1	μs
t <sub>r</sub> Rise Time	I <sub>C</sub> = 8A      I <sub>B1</sub> = 2A			0.45	
t <sub>s</sub> Storage Time	V <sub>CC</sub> = 240V      t <sub>p</sub> = 20μs			3.0	
t <sub>f</sub> Fall Time	I <sub>C</sub> = 8A      I <sub>B2</sub> = -2A			0.4	

\* Pulsed: pulse duration = 300ms, duty cycle ≤ 2%

## THERMAL CHARACTERISTICS

R <sub>θJC</sub>	Thermal Resistance Junction to Case		1.0		°C/W
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## ELECTRICAL CHARACTERISTICS BUX33B (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>CEO(sus)</sub> * Collector - Emitter Sustaining Voltage	I <sub>C</sub> = 200mA      I <sub>B</sub> = 0	500			V
V <sub>BE(sat)</sub> Emitter – Base Voltage	I <sub>C</sub> = 8A      I <sub>B</sub> = 2A			1.3	V
I <sub>CEX</sub> Collector Cut-off Current	V <sub>CE</sub> = 1000V      V <sub>BE</sub> = -1.5V T <sub>C</sub> = 100°C			0.1 1.0	mA
I <sub>EBO</sub> Emitter Cut-off Current	I <sub>C</sub> = 0      V <sub>BE</sub> = -8V			2	
V <sub>CE(sat)</sub> * Collector – Emitter Saturation Voltage	I <sub>C</sub> = 8A      I <sub>B</sub> = 2A I <sub>C</sub> = 12A      I <sub>B</sub> = 3A			1 4	V
h <sub>FE</sub> * DC Current Gain	I <sub>C</sub> = 8A      V <sub>CE</sub> = 3V	6		40	
f <sub>T</sub> Transition Frequency	I <sub>C</sub> = 0.2A      V <sub>CE</sub> = 10V	15		60	MHz
t <sub>d</sub> Turn-On Delay Time	V <sub>CC</sub> = 240V      t <sub>p</sub> = 20μs			0.1	μs
t <sub>r</sub> Rise Time	I <sub>C</sub> = 8A      I <sub>B1</sub> = 2A			0.45	
t <sub>s</sub> Storage Time	V <sub>CC</sub> = 240V      t <sub>p</sub> = 20μs			3.0	
t <sub>f</sub> Fall Time	I <sub>C</sub> = 8A      I <sub>B2</sub> = -2A			0.4	

\* Pulsed: pulse duration = 300ms, duty cycle ≤ 2%

## THERMAL CHARACTERISTICS

R <sub>θJC</sub>	Thermal Resistance Junction to Case		1.0		°C/W
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