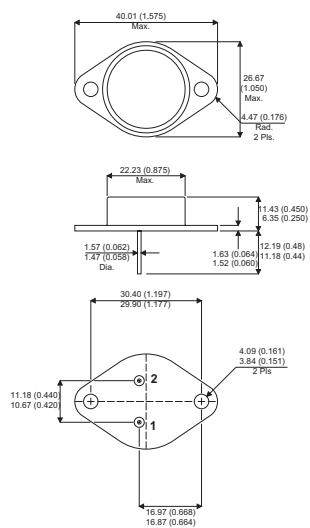


MECHANICAL DATA
Dimensions in mm(inches)



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.

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise stated)		BUX33	BUX33A	BUX33B
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 ($T_{case} = 25^\circ C$ unless otherwise stated)

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
$V_{CEO(sus)*}$	Collector - Emitter Sustaining Voltage	$I_C = 200mA$	$I_B = 0$	400		V
$V_{BE(sat)}$	Emitter – Base Voltage	$I_C = 8A$	$I_B = 2A$		1.3	V
I_{CEX}	Collector Cut-off Current	$V_{CE} = 800V$	$V_{BE} = -1.5V$		0.1	mA
			$T_C = 100^\circ C$		1.0	
I_{EBO}	Emitter Cut-off Current	$I_C = 0$	$V_{BE} = -8V$		2	
$V_{CE(sat)*}$	Collector – Emitter Saturation Voltage	$I_C = 8A$	$I_B = 2A$		1	V
		$I_C = 12A$	$I_B = 3A$		4	
h_{FE}^*	DC Current Gain	$I_C = 8A$	$V_{CE} = 3V$	6	40	—
f_T	Transition Frequency	$I_C = 0.2A$	$V_{CE} = 10V$	15	60	MHz
t_d	Turn-On Delay Time	$V_{CC} = 240V$	$t_p = 20\mu s$		0.1	
t_r	Rise Time	$I_C = 8A$	$I_{B1} = 2A$		0.45	
t_s	Storage Time	$V_{CC} = 240V$	$t_p = 20\mu s$		3.0	
t_f	Fall Time	$I_C = 8A$	$I_{B2} = -2A$		0.4	

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

THERMAL CHARACTERISTICS

$R_{\theta JC}$	Thermal Resistance Junction to Case		1.0		$^\circ C/W$
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ELECTRICAL CHARACTERISTICS BUX33A ($T_{case} = 25^\circ C$ unless otherwise stated)

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
$V_{CEO(sus)*}$	Collector - Emitter Sustaining Voltage	$I_C = 200mA$	$I_B = 0$	450		V
$V_{BE(sat)}$	Emitter – Base Voltage	$I_C = 8A$	$I_B = 2A$		1.3	V
I_{CEX}	Collector Cut-off Current	$V_{CE} = 900V$	$V_{BE} = -1.5V$		0.1	mA
			$T_C = 100^\circ C$		1.0	
I_{EBO}	Emitter Cut-off Current	$I_C = 0$	$V_{BE} = -8V$		2	
$V_{CE(sat)*}$	Collector – Emitter Saturation Voltage	$I_C = 8A$	$I_B = 2A$		1	V
		$I_C = 12A$	$I_B = 3A$		4	
h_{FE}^*	DC Current Gain	$I_C = 8A$	$V_{CE} = 3V$	6	40	—
f_T	Transition Frequency	$I_C = 0.2A$	$V_{CE} = 10V$	15	60	MHz
t_d	Turn-On Delay Time	$V_{CC} = 240V$	$t_p = 20\mu s$		0.1	
t_r	Rise Time	$I_C = 8A$	$I_{B1} = 2A$		0.45	
t_s	Storage Time	$V_{CC} = 240V$	$t_p = 20\mu s$		3.0	
t_f	Fall Time	$I_C = 8A$	$I_{B2} = -2A$		0.4	

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

THERMAL CHARACTERISTICS

R_{0JC}	Thermal Resistance Junction to Case		1.0		$^\circ C/W$
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ELECTRICAL CHARACTERISTICS BUX33B ($T_{case} = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
$V_{CEO(sus)*}$	Collector - Emitter Sustaining Voltage	$I_C = 200\text{mA}$	$I_B = 0$	500		V
$V_{BE(sat)}$	Emitter – Base Voltage	$I_C = 8\text{A}$	$I_B = 2\text{A}$		1.3	V
I_{CEX}	Collector Cut-off Current	$V_{CE} = 1000\text{V}$	$V_{BE} = -1.5\text{V}$		0.1	
			$T_C = 100^\circ\text{C}$		1.0	mA
I_{EBO}	Emitter Cut-off Current	$I_C = 0$	$V_{BE} = -8\text{V}$		2	
$V_{CE(sat)*}$	Collector – Emitter Saturation Voltage	$I_C = 8\text{A}$	$I_B = 2\text{A}$		1	V
		$I_C = 12\text{A}$	$I_B = 3\text{A}$		4	
h_{FE}^*	DC Current Gain	$I_C = 8\text{A}$	$V_{CE} = 3\text{V}$	6	40	—
f_T	Transition Frequency	$I_C = 0.2\text{A}$	$V_{CE} = 10\text{V}$	15	60	MHz
t_d	Turn-On Delay Time	$V_{CC} = 240\text{V}$	$t_p = 20\mu\text{s}$		0.1	
t_r	Rise Time	$I_C = 8\text{A}$	$I_{B1} = 2\text{A}$		0.45	
t_s	Storage Time	$V_{CC} = 240\text{V}$	$t_p = 20\mu\text{s}$		3.0	
t_f	Fall Time	$I_C = 8\text{A}$	$I_{B2} = -2\text{A}$		0.4	

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

THERMAL CHARACTERISTICS

R_{0JC}	Thermal Resistance Junction to Case		1.0		$^\circ\text{C/W}$
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