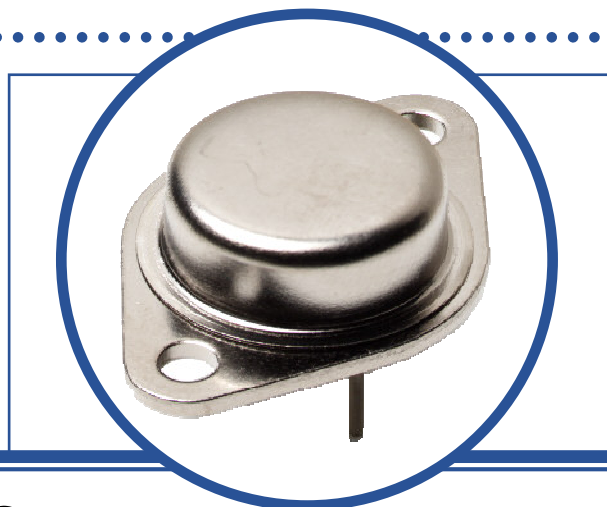


SILICON EPITAXIAL NPN TRANSISTOR

BUX39

- High Current Capability.
- Hermetic TO3 Metal package.
- Ideally suited for Motor Control, Switching and Linear Applications
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

V_{CBO}	Collector – Base Voltage		120V
V_{CEX}	Collector – Emitter Voltage	$V_{BE} = -1.5V$	120V
V_{CER}	Collector – Emitter Voltage	$R_{BE} = 100\Omega$	110V
V_{CEO}	Collector – Emitter Voltage		90V
V_{EBO}	Emitter – Base Voltage		7V
I_C	Continuous Collector Current		30A
I_{CM}	Peak Collector Current	$t_p = 10ms$	40A
I_B	Base Current		6A
P_D	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	120W
		Derate Above 25°C	0.68W/ $^\circ\text{C}$
T_J	Junction Temperature Range		-65 to $+200^\circ\text{C}$
T_{stg}	Storage Temperature Range		-65 to $+200^\circ\text{C}$

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	1.46	$^\circ\text{C/W}$

Semelab Limited 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.



SILICON EPITAXIAL NPN TRANSISTOR BUX39

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
I_{CEO}	Collector Cut-Off Current	$V_{CE} = 70\text{V}$ $I_B = 0$			1.0	mA
I_{CEX}	Collector Cut-Off Current	$V_{CE} = 100\text{V}$ $V_{BE} = -1.5\text{V}$			1.0	
		$T_C = 125^\circ\text{C}$			5	
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 5\text{V}$ $I_C = 0$			1.0	
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $I_B = 0$	90			V
$V_{(BR)EBO}^{(1)}$	Emitter-Base Breakdown Voltage	$I_E = 50\text{mA}$ $I_C = 0$	7			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 12\text{A}$ $I_B = 1.2\text{A}$		0.4	1.2	
		$I_C = 20\text{A}$ $I_B = 2.5\text{A}$		0.7	1.6	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 20\text{A}$ $I_B = 2.5\text{A}$		1.3	2.5	
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 12\text{A}$ $V_{CE} = 4\text{V}$	15		45	
		$I_C = 20\text{A}$ $V_{CE} = 4\text{V}$	8			
$I_{S/B}$	Second Breakdown Collector Current	$V_{CE} = 45\text{V}$	1.0			A
		$V_{CE} = 30\text{V}$				

DYNAMIC CHARACTERISTICS

f_T	Transition Frequency	$I_C = 1.0\text{A}$ $V_{CE} = 15\text{V}$ $f = 5\text{MHz}$	8			MHz
t_{on}	Turn-On Time	$I_C = 20\text{A}$ $V_{CC} = 30\text{V}$ $I_{B1} = 2.5\text{A}$		0.8	1.5	μs
t_s	Storage Time	$I_C = 20\text{A}$ $V_{CC} = 30\text{V}$		0.55	1.0	
t_f	Fall Time	$I_{B1} = -I_{B2} = 2.5\text{A}$		0.15	0.3	

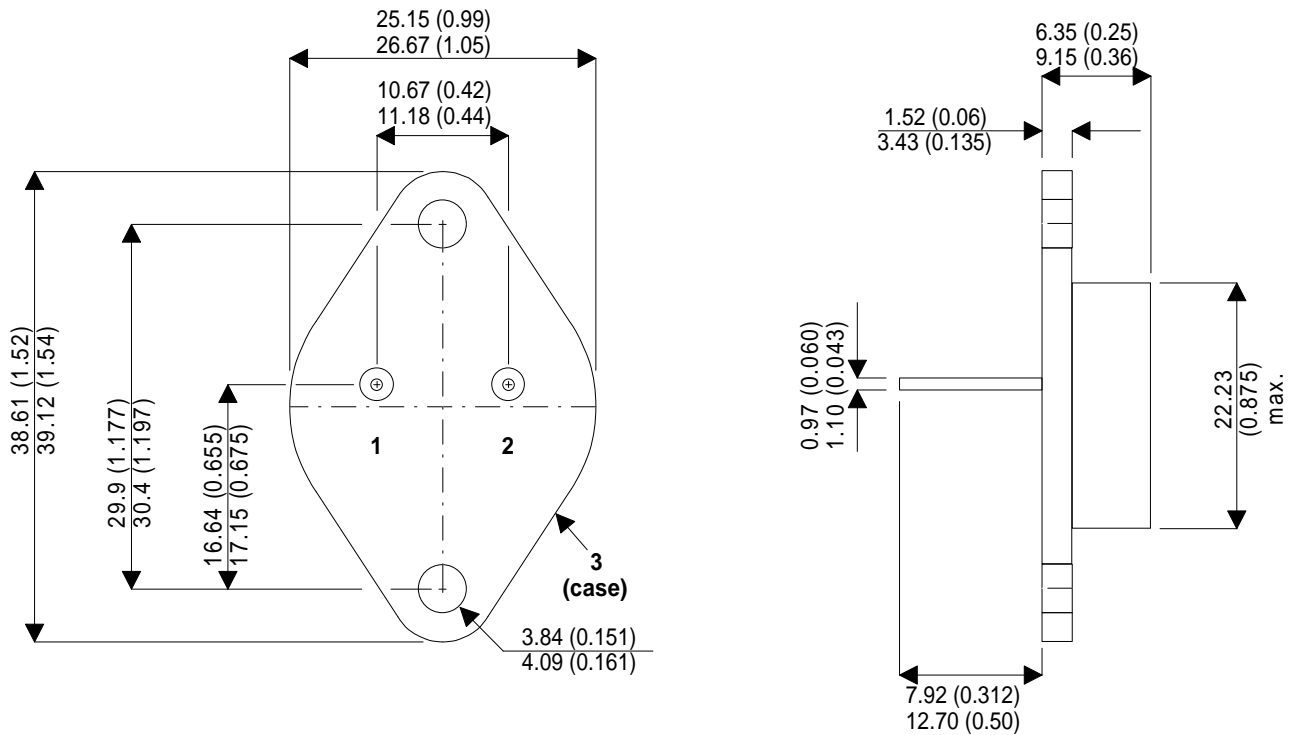
Notes

(1) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$

SILICON EPITAXIAL NPN TRANSISTOR BUX39

MECHANICAL DATA

Dimensions in mm (inches)



TO3 (TO-204AA) METAL PACKAGE Underside View

Pin 1 - Base

Pin 2 - Emitter

Case - Collector