

# Transistor, NPN TO-3

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## Description:

High voltage power transistor.

Designed for use in high-voltage, high-speed, power switching in inductive circuit, motor control, solenoid and relay drivers.

## Features:

- Collector-emitter sustaining voltage -  $V_{CEO(sus)} = 4,000V$  (Min.)
- Low collector-emitter saturation voltage -  $V_{CE(sat)} = 3V$  (Max.) at  $I_C = 8A$ ,  $I_B = 2.5A$

## Maximum Ratings

Characteristic	Symbol	BUX80	Unit
Collector-Emitter Voltage	$V_{CEO}$	400	V
Collector-Emitter Voltage ( $V_{BE} = 0$ )	$V_{CES}$	800	
Emitter-Base Voltage	$V_{EBO}$	10	
Collector Current - Continuous -Peak	$I_C$	10 15	A
Base Current-Continuous	$I_B$	5	
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	100 0.8	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +200	$^\circ C$

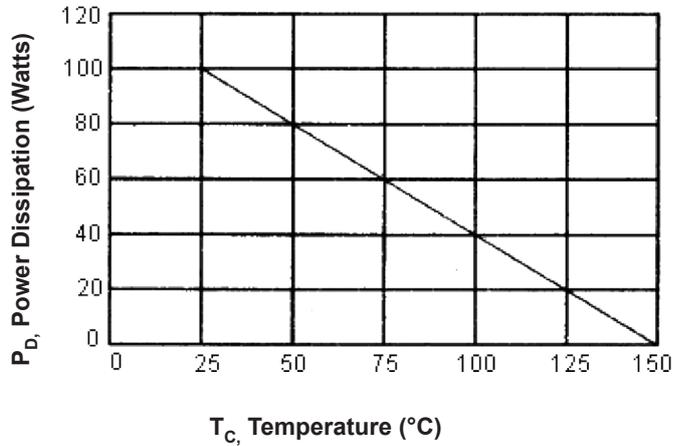
## Thermal Characteristics

Characteristics	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.25	$^\circ C/W$

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Power Derating



## Electrical Characteristics (TC = 25°C unless otherwise noted)

Characteristic	Symbol	Min.	Max.	Unit
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### Off Characteristics

Collector-Emitter Sustaining Voltage (1) ( $I_C = 100\text{mA}$ , $I_B = 0$ , $L = 25\text{mH}$ )	V	400	-	V
Collector Cut off Current ( $V_{CE} = 800\text{V}$ , $V_{BE} = 0$ ) ( $V_{CE} = 800\text{V}$ , $V_{BE} = 0$ , $T_C = 125^\circ\text{C}$ )	$I_{CES}$	-	1 3	mA
Emitter Cut off Current ( $V_{EB} = 10\text{V}$ , $I_C = 0$ )	$I_{EBO}$	-	10	

### On Characteristics (1)

DC Current Gain ( $I_C = 1.2\text{A}$ , $V_{CE} = 5\text{V}$ )	h	30 (typical)	-	-
Collector-Emitter Saturation Voltage ( $I_C = 5\text{A}$ , $I_B = 1\text{mA}$ ) ( $I_C = 8\text{A}$ , $I_B = 2.5\text{mA}$ )	$V_{CE(sat)}$	-	1.5 3	V
Base-Emitter Saturation Voltage ( $I_C = 5.0\text{A}$ , $I_B = 1\text{mA}$ ) ( $I_C = 8.0\text{A}$ , $I_B = 2.5\text{mA}$ )	$V_{BE(sat)}$	-	1.4 1.8	

### Switching Characteristics

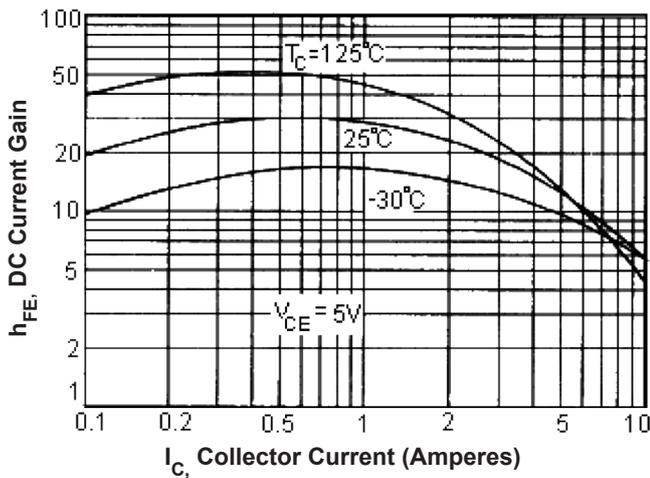
Turn On Time	$V_{CC} = 250\text{V}$ , $I_C = 5\text{A}$	$t_{on}$	-	0.5	$\mu\text{s}$
Storage Time	$I_{B1} = 1\text{A}$ , $I_{B2} = -2\text{A}$	$t_s$	-	3.5	
Fall Time	-	$t_f$	-	0.5	

(1) Pulse Test : Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

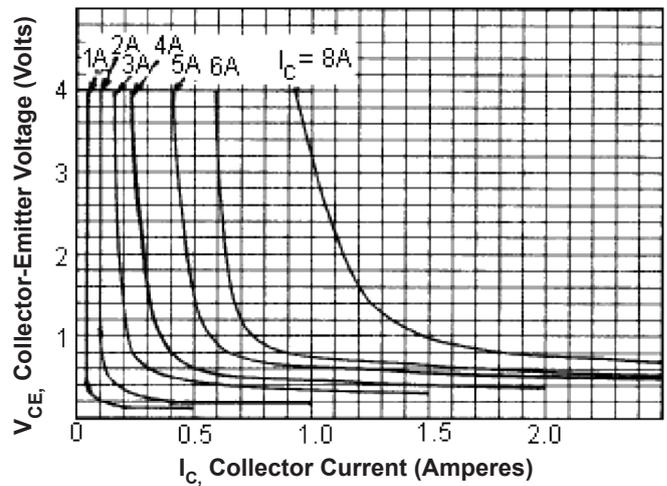
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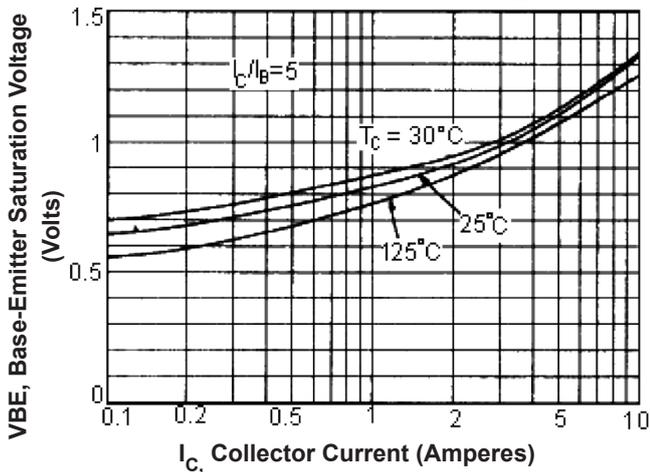
DC Current Gain



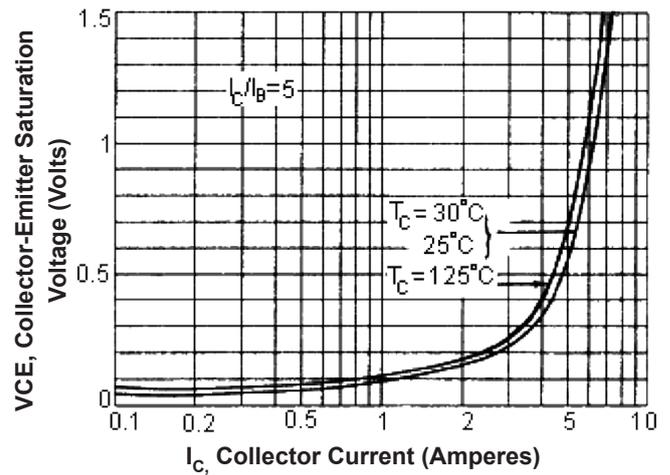
Collector Saturation Region



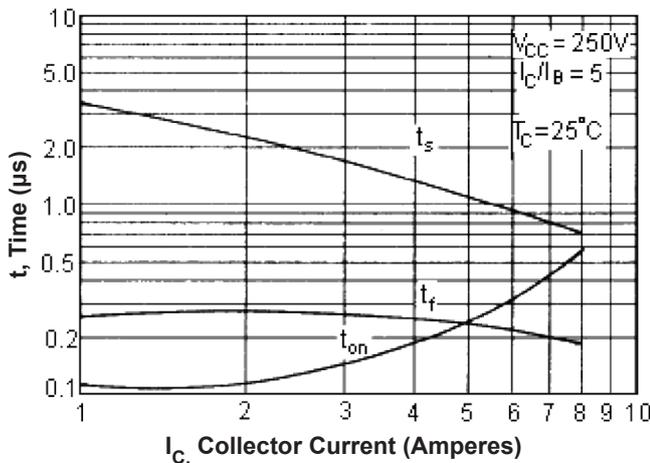
Base-Emmitter Saturation Voltage



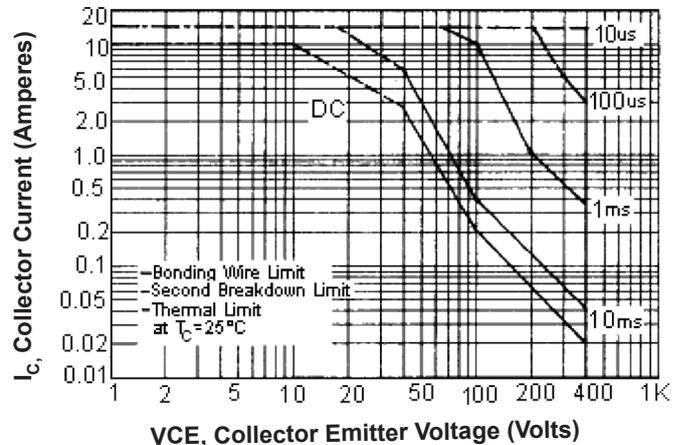
Temperature Coefficients



Switching Time



Safe Operating Area



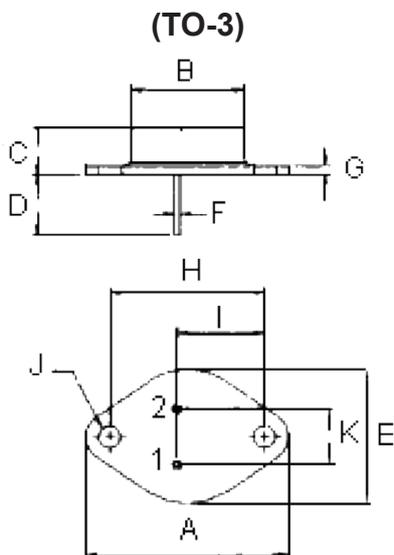
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## Dimensions



Dim.	Min.	Max.
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.2	26.67
F	0.92	1.09
G	1.38	1.62
H	29.9	30.4
I	16.64	17.3
J	3.88	4.36
K	10.67	11.18

Dimensions : (Millimetres)

## Pin Configuration

- Pin 1. Base
- 2. Emitter
- Collector (Case)

## Part Number Table

Description	Part Number
Transistor, NPN, TO-3	BUX80

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