

SWITCHMODE SERIES NPN POWER TRANSISTORS

... designed for use in high-voltage, high-speed, power switching regulators, converters, inverters, motor control system application.

FEATURES:

*Collector-Emitter Sustaining Voltage-

$$V_{CE(sus)} = 400 \text{ V (Min)} \text{ --BUX48}$$

$$= 450 \text{ V (Min)} \text{ --BUX48A}$$

* Collector-Emitter Saturation Voltage -

$$V_{CE(sat)} = 1.5 \text{ V (Max.)} @ I_C = 10 \text{ A --BUX48}$$

$$I_C = 8 \text{ A --BUX48A}$$

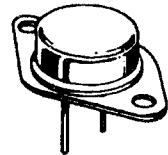
* Switching Time - $t_r = 0.8 \text{ us (Max.)} @ I_C = 10 \text{ A --BUX48}$
 $I_C = 8 \text{ A --BUX48A}$

NPN
BUX48
BUX48A

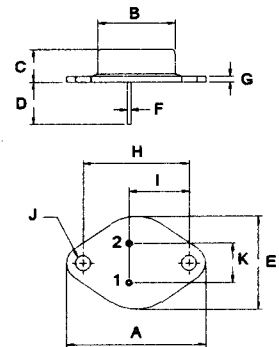
15 AMPERE
POWER
TRANSISTORS
400 - 450 VOLTS
175 WATTS

MAXIMUM RATINGS

Characteristic	Symbol	BUX48	BUX48A	Unit
Collector-Emitter Voltage	V_{CEO}	400	450	V
Collector-Emitter Voltage ($V_{BE} = -2.5V$)	V_{CEX}	800	1000	V
Emitter-Base Voltage	V_{EBO}	7		V
Collector Current - Continuous - Peak	I_C I_{CM}	15 30		A
Base current	I_B	4		A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	175 1.0		W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200		$^\circ C$



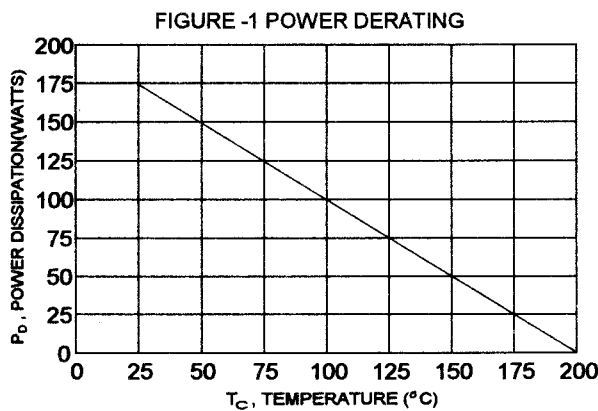
TO-3



PIN 1. BASE
 2. EMITTER
 COLLECTOR (CASE)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.0	$^\circ C/W$



DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Collector - Emitter Sustaining Voltage (1) ($I_C = 200\text{ mA}$, $I_B = 0$, $L = 25\text{ mH}$) BUX48 BUX48A	$V_{CE(sus)}$	400 450		V
Collector Cutoff Current ($V_{CE} = V_{CEX}$, $V_{BE} = -2.5\text{ V}$) ($V_{CE} = V_{CEX}$, $V_{BE} = -2.5\text{ V}$, $T_C = 125^\circ\text{C}$)	I_{CEX}		0.2 2.0	mA
Collector Cutoff Current ($V_{CE} = V_{CEX}$, $R_{BE} < 10\text{ ohm}$) ($V_{CE} = V_{CEX}$, $R_{BE} < 10\text{ ohm}$, $T_C = 125^\circ\text{C}$)	I_{CER}		0.5 4.0	mA
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$, $I_C = 0$)	I_{EBO}		1.0	mA

ON CHARACTERISTICS (1)

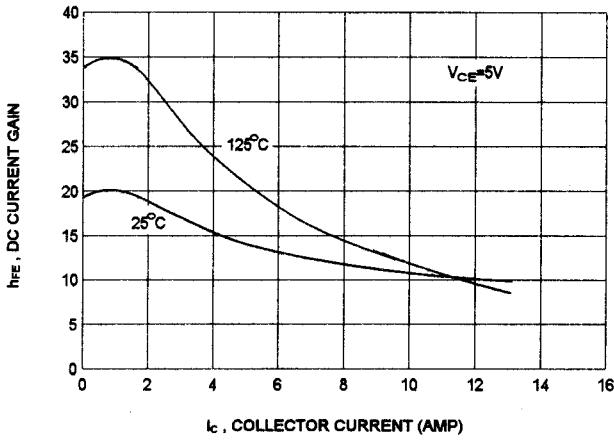
Collector - Emitter Saturation Voltage ($I_C = 10\text{ A}$, $I_B = 2.0\text{ A}$) ($I_C = 8.0\text{ A}$, $I_B = 1.6\text{ A}$) ($I_C = 15\text{ A}$, $I_B = 3.0\text{ A}$) ($I_C = 12\text{ A}$, $I_B = 2.4\text{ A}$) BUX48 BUX48A BUX48 BUX48A	$V_{CE(sat)}$		1.5 1.5 5.0 5.0	V
Base - Emitter Saturation Voltage ($I_C = 10\text{ A}$, $I_B = 2.0\text{ A}$) ($I_C = 8.0\text{ A}$, $I_B = 1.6\text{ A}$) BUX48 BUX48A	$V_{BE(sat)}$		1.6 1.6	V

SWITCHING CHARACTERISTICS

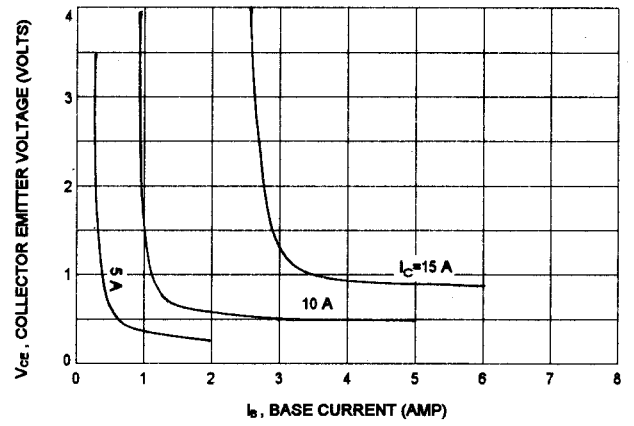
Turn On Time	$I_C = 10\text{ A}$, $I_{B1} = 2.0\text{ A}$, $I_{B2} = -2.0\text{ A}$ BUX48 $V_{CC} = 150\text{ V}$ $I_C = 8\text{ A}$, $I_{B1} = 1.6\text{ A}$, $I_{B2} = -1.6\text{ A}$ BUX48A	t_{on}	1.0	us
Storage Time		t_s	3.0	us
Fall Time		t_f	0.8	us

(1) Pulse Test: Pulse width = 300 us , Duty Cycle $\leq 2.0\%$

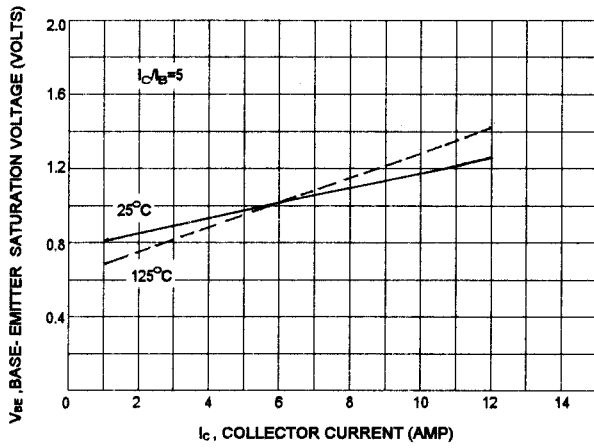
DC CURRENT GAIN



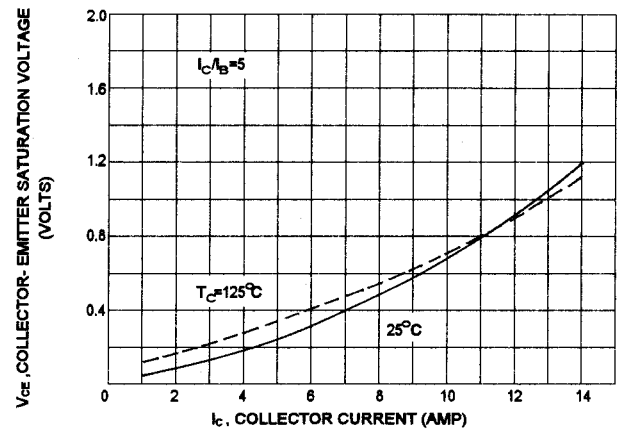
COLLECTOR SATURATION REGION



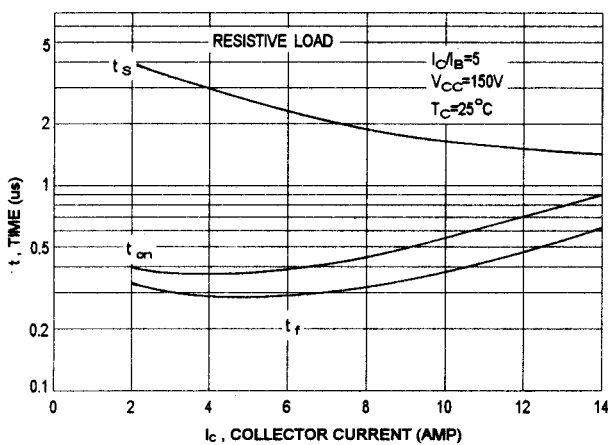
BASE-EMITTER SATURATION VOLTAGE



COLLECTOR-EMITTER SATURATION VOLTAGE



SWITCHING TIME



ACTIVE-REGION SAFE OPERATING AREA

