

BUX85

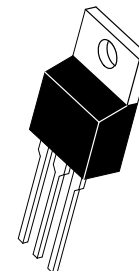
**SWITCHMODE
NPN Silicon Power Transistors**

The BUX85 is designed for high voltage, high speed power switching applications like converters, inverters, switching regulators, motor control systems.

SPECIFICATIONS FEATURES:

- $V_{CEO(sus)}$ 450 V
- $V_{CES(sus)}$ 1000 V
- Fall time = 0.3 μ s (typ) at $I_C = 1.0$ A
- $V_{CE(sat)}$ = 1.0 V (max) at $I_C = 1.0$ A, $I_B = 0.2$ A

**2 AMPERES
POWER TRANSISTOR
NPN SILICON
450 VOLTS
50 WATTS**



**CASE 221A-06
TO-220AB**

MAXIMUM RATINGS

Rating	Symbol	BUX84	BUX85	Unit
Collector–Emitter Voltage	$V_{CEO(sus)}$	400	450	Vdc
Collector–Emitter Voltage	V_{CES}	800	1000	Vdc
Emitter Base Voltage	V_{EBO}	5		Vdc
Collector Current — Continuous — Peak (1)	I_C I_{CM}	2 3.0		Adc
Base Current — Continuous — Peak (1)	I_B I_{BM}	0.75 1.0		Adc
Reverse Base Current — Peak	I_{BM}	1		Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 400		Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purpose: 1/8" from Case for 5 Seconds	T_L	275	$^\circ\text{C}$

(1) Pulse Test: Pulse Width = 5 ms, Duty Cycle \leq 10%.

SWITCHMODE is a trademark of Motorola, Inc.

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BUX85**ELECTRICAL CHARACTERISTICS** ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS (1)					
Collector–Emitter Sustaining Voltage ($I_C = 100\text{ mA}$, $L = 25\text{ mH}$) See fig. 1	$V_{CEO(sus)}$	450	—	—	Vdc
Collector Cutoff Current ($V_{CES} = \text{Rated Value}$) ($V_{CES} = \text{Rated Value}$, $T_C = 125^\circ\text{C}$)	I_{CES}	— —	— —	0.2 1.5	mAdc
Emitter Cutoff Current ($V_{EB} = 5\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	—	1	mAdc

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 0.1\text{ Adc}$, $V_{CE} = 5\text{ V}$)	h_{FE}	30	50	—	—
Collector–Emitter Saturation Voltage ($I_C = 0.3\text{ Adc}$, $I_B = 30\text{ mAdc}$) ($I_C = 1\text{ Adc}$, $I_B = 200\text{ mAdc}$)	$V_{CE(sat)}$	— —	— —	0.8 1	Vdc
Base–Emitter Saturation Voltage ($I_C = 1\text{ Adc}$, $I_B = 0.2\text{ Adc}$)	$V_{BE(sat)}$	—	—	1.1	Vdc

DYNAMIC CHARACTERISTICS

Current–Gain — Bandwidth Product ($I_C = 500\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1\text{ MHz}$)	f_T	4	—	—	MHz
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SWITCHING CHARACTERISTICS

Turn–on Time	$V_{CC} = 250\text{ Vdc}$, $I_C = 1\text{ A}$ $I_{B1} = 0.2\text{ A}$, $I_{B2} = 0.4\text{ A}$ See fig. 2	t_{on}	—	0.3	0.5	μs
Storage Time		t_s	—	2	3.5	μs
Fall Time		t_f	—	0.3	—	μs
Fall Time		Same above cond. at $T_C = 95^\circ\text{C}$	t_f	—	—	1.4

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

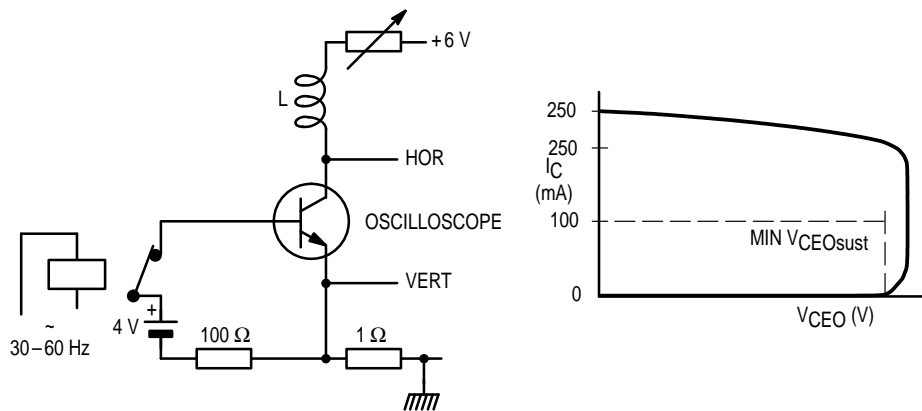


Figure 1. Test Circuit for $V_{CEOsust}$

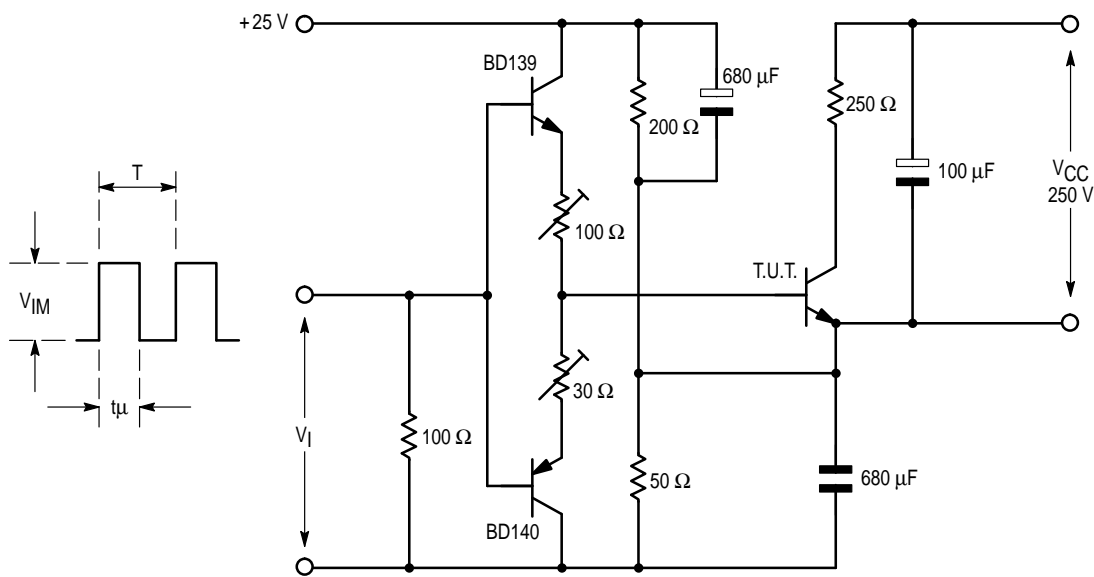
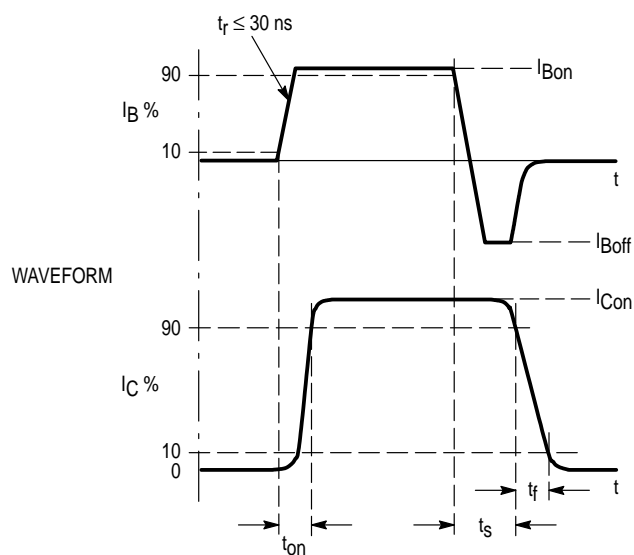
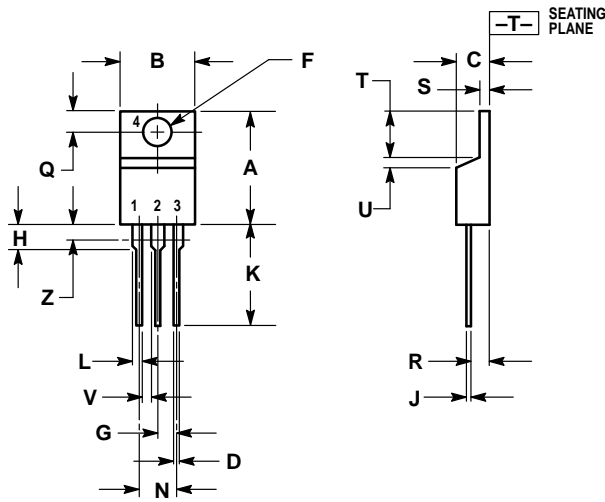


Figure 2. Switching Times/Test Circuit

PACKAGE DIMENSIONS



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

- STYLE 1:
 PIN 1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR

CASE 221A-06
 TO-220AB
 ISSUE Y

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