

## 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  $\mu$ 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

### 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 $25^\circ\text{C}$	$P_D$	50 400		Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150		$^\circ\text{C}$

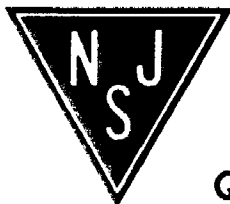
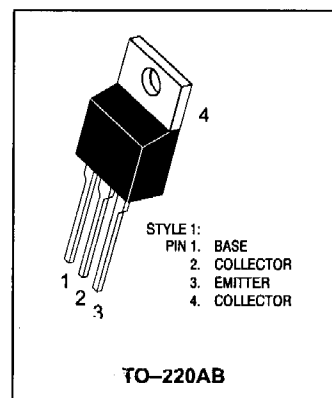
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$
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  $\leq 10\%$ .

## BUX85

2 AMPERES  
POWER TRANSISTOR  
NPN SILICON  
450 VOLTS  
50 WATTS



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Quality Semi-Conductors

# BUX85

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS (1)

Collector-Emitter Sustaining Voltage ( $I_C = 100\text{ mAdc}$ , $L = 25\text{ mH}$ ) See fig. 1	$V_{CE(sus)}$	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

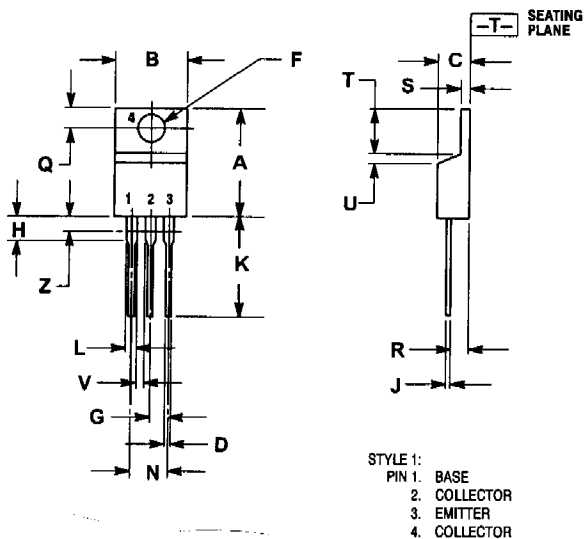
Turn-on Time	$V_{CC} = 250\text{ Vdc}$ , $I_C = 1\text{ A}$ $I_{B1} = 0.2\text{ A}$ , $I_{B2} = 0.4\text{ A}$ See fig. 2	$t_{on}$	—	0.3	0.5	$\mu\text{s}$
Storage Time		$t_s$	—	2	3.5	$\mu\text{s}$
Fall Time		$t_f$	—	0.3	—	$\mu\text{s}$
Fall Time	Same above cond. at $T_C = 95^\circ\text{C}$	$t_f$	—	—	1.4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

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

# BUX85

## PACKAGE DIMENSIONS

### TO-220AB



#### NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
- 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