

## SWITCHMODE SERIES NPN POWER TRANSISTORS

... designed for use in high-voltage, high-speed, power switching in inductive circuit, they are particularly suited for 220 V switchmode power supply, DC motor control.

### FEATURES:

\*Collector-Emitter Sustaining Voltage-

$$V_{CEO(SUS)} = 400 \text{ V (Min) BUV46}$$

$$= 450 \text{ V (Min) BUV46A}$$

\* Collector-Emitter Saturation Voltage -

$$V_{CE(sat)} = 1.5 \text{ V (Max.) @ } I_C = 2.5 \text{ A / 2.0A, } I_B = 0.5 \text{ A / 0.4A}$$

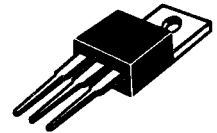
\* Switching Time -  $t_r = 0.8 \text{ us (Max.) @ } I_C = 2.5\text{A}/2.0\text{A}$

**NPN**  
**BUV46**  
**BUV46A**

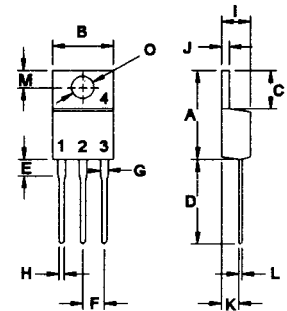
**6 AMPERE**  
**POWER**  
**TRANSISTORS**  
**400-450 VOLTS**  
**70 WATTS**

### MAXIMUM RATINGS

Characteristic	Symbol	BUV46	BUV46A	Unit
Collector-Emitter Voltage	$V_{CEO}$	400	450	V
Collector-Emitter Voltage	$V_{CEX}$	850	1000	V
Emitter-Base Voltage	$V_{EBO}$	7.0		V
Collector Current - Continuous - Peak	$I_C$ $I_{CM}$	6.0 8.0		A
Base current	$I_B$	2.0		A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	70 0.56		W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +150		$^\circ\text{C}$



**TO-220**

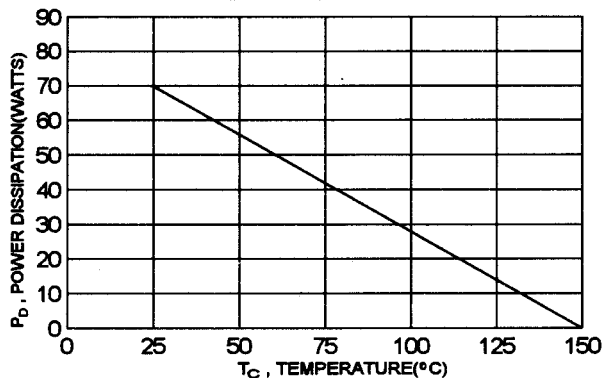


PIN 1. BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR(CASE)

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.78	$^\circ\text{C/W}$

FIGURE -1 POWER DERATING



DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

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

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Emitter Sustaining Voltage ( $I_C = 0.2\text{ A}, I_B = 0, L = 25\text{ mH}$ )	BUV46 BUV46A	$V_{CEO(sus)}$	400 450	V
Collector Cutoff Current ( $V_{CE} = 850\text{ V}, R_{BE} \leq 10\text{ ohm}$ ) ( $V_{CE} = 1000\text{ V}, R_{BE} \leq 10\text{ ohm}$ )	BUV46 BUV46A	$I_{CER}$	300 300	$\mu\text{A}$
Collector Cutoff Current ( $V_{CE} = 850\text{ V}, V_{BE} = -2.5\text{ V}$ ) ( $V_{CE} = 1000\text{ V}, V_{BE} = -2.5\text{ V}$ )	BUV46 BUV46A	$I_{CEX}$	100 100	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 7.0\text{ V}, I_C = 0$ )		$I_{EBO}$	1.0	mA

**ON CHARACTERISTICS (1)**

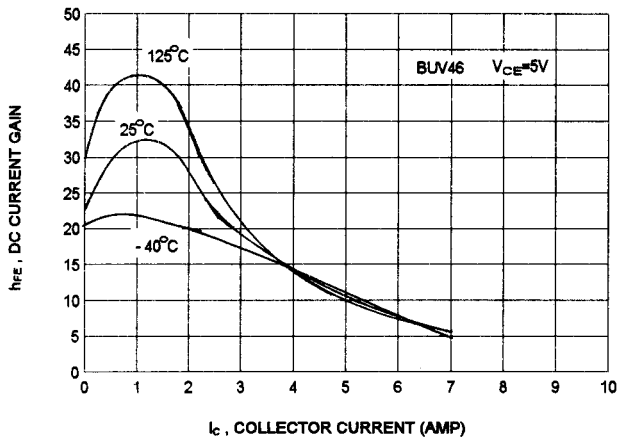
Collector-Emitter Saturation Voltage ( $I_C = 2.5\text{ A}, I_B = 0.5\text{ A}$ ) ( $I_C = 2.0\text{ A}, I_B = 0.4\text{ A}$ ) ( $I_C = 3.5\text{ A}, I_B = 0.7\text{ A}$ ) ( $I_C = 3.0\text{ A}, I_B = 0.6\text{ A}$ )	BUV46 BUV46A BUV46 BUV46A	$V_{CE(sat)}$	1.5 1.5 5.0 5.0	V
Base-Emitter Saturation Voltage ( $I_C = 2.5\text{ A}, I_B = 0.5\text{ A}$ ) ( $I_C = 2.0\text{ A}, I_B = 0.4\text{ A}$ )	BUV46 BUV46A	$V_{BE(sat)}$	1.3 1.3	V

**SWITCHING CHARACTERISTICS**

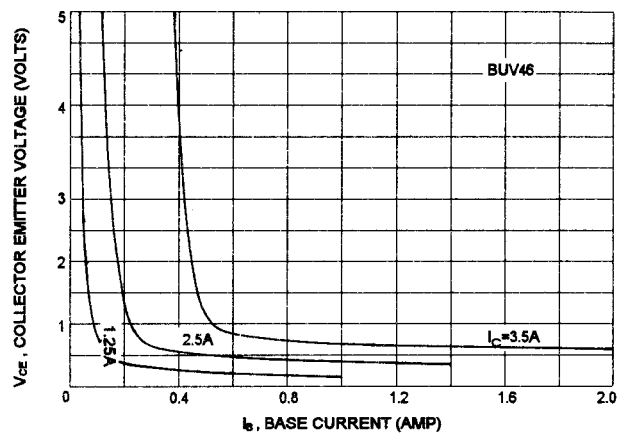
On Time	$V_{CC} = 150\text{ V}$	$I_C = 2.5\text{ A}, I_{B1} = -I_{B2} = 0.5\text{ A}$ BUV46	$t_{on}$	1.0	$\mu\text{s}$
Storage Time			$t_s$	3.0	$\mu\text{s}$
Fall Time			$t_f$	0.8	$\mu\text{s}$

(1) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

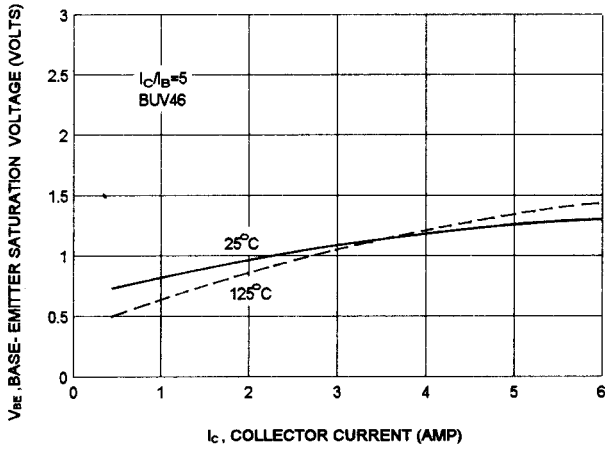
DC CURRENT GAIN



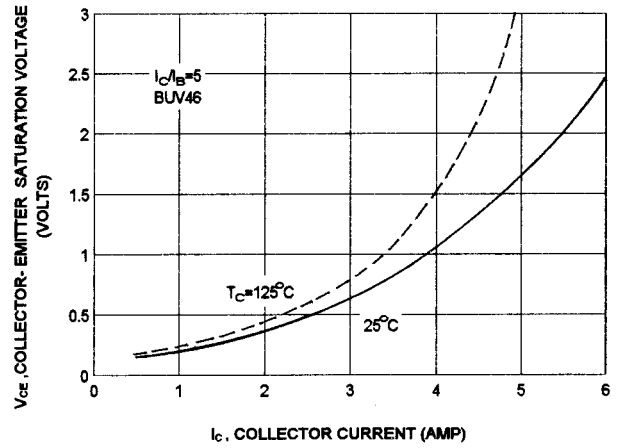
COLLECTOR SATURATION REGION



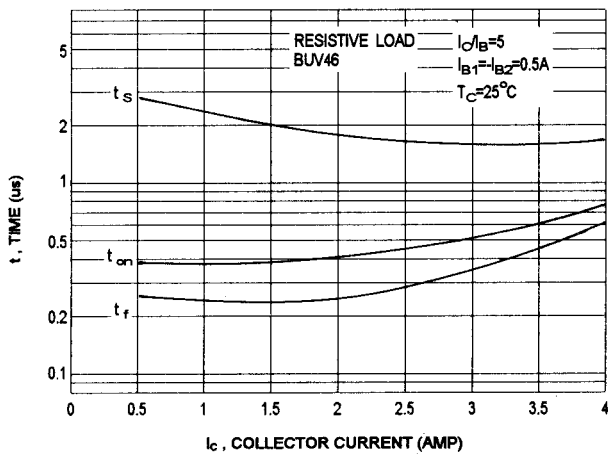
BASE-EMITTER SATURATION VOLTAGE



COLLECTOR-EMITTER SATURATION VOLTAGE



SWITCHING TIME



ACTIVE-REGION SAFE OPERATING AREA

