

## FAST NPN SWITCHING TRANSISTOR

high speed transistors suited for low voltage application:

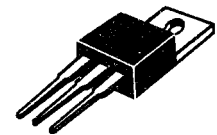
- \* High Frequency and Efficiency Converters
- \* Switching Regulators
- \* Motor Control

### FEATURES

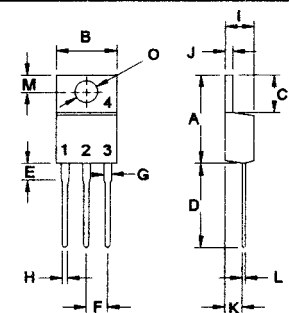
- \* Low Saturation Voltage
- \* Fast Turn-on and Turn-off

**NPN  
BUV28**

**10 AMPERE  
POWER TRANSISTOR  
NPN SILICON  
200 VOLTS  
70 WATTS**



**TO-220**



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

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

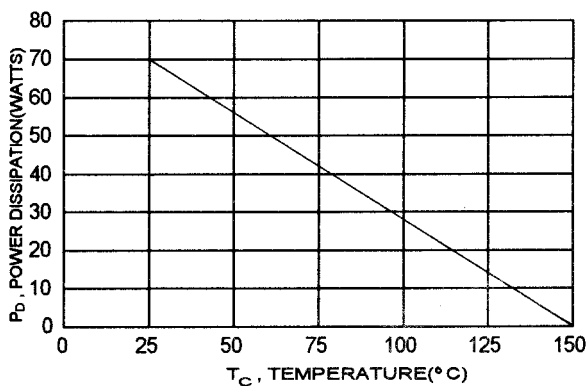
### MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO}$	200	V
Collector-Base Voltage	$V_{CBO}$	400	V
Emitter-Base Voltage	$V_{EBO}$	7.0	V
Collector Current - Continuous	$I_C$	10	A
Base Current-Continuous	$I_B$	2.0	A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	70 0.56	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ C$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R^{\theta}_{jc}$	1.785	$^\circ C/W$

FIGURE -1 POWER DERATING



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

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Emitter Breakdown Voltage ( $I_C = 30\text{ mA}$ , $I_B = 0$ )	$V_{(BR)CEO}$	200		V
Collector Cutoff Current ( $V_{CB} = 300\text{ V}$ , $I_E = 0$ )	$I_{CBO}$		1.0	mA
Emitter Cutoff Current ( $V_{EB} = 5.0\text{ V}$ , $I_C = 0$ )	$I_{EBO}$		1.0	mA

**ON CHARACTERISTICS (1)**

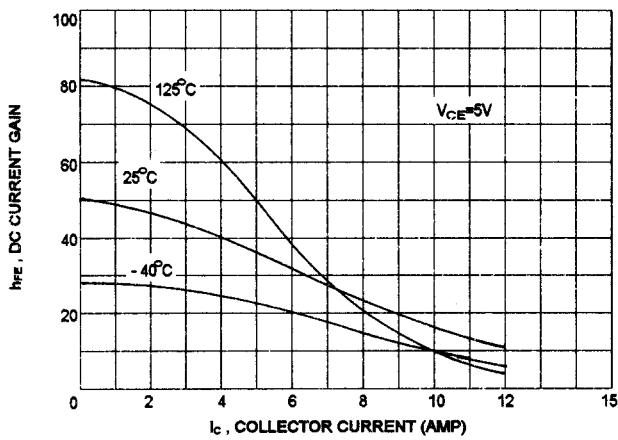
Collector-Emitter Saturation Voltage ( $I_C = 3.0\text{ A}$ , $I_B = 300\text{ mA}$ ) ( $I_C = 6.0\text{ A}$ , $I_B = 600\text{ mA}$ )	$V_{CE(sat)}$		0.7 1.5	V
Base-Emitter Saturation Voltage ( $I_C = 6.0\text{ A}$ , $I_B = 600\text{ mA}$ )	$V_{BE(sat)}$		2.0	V

**SWITCHING CHARACTERISTICS**

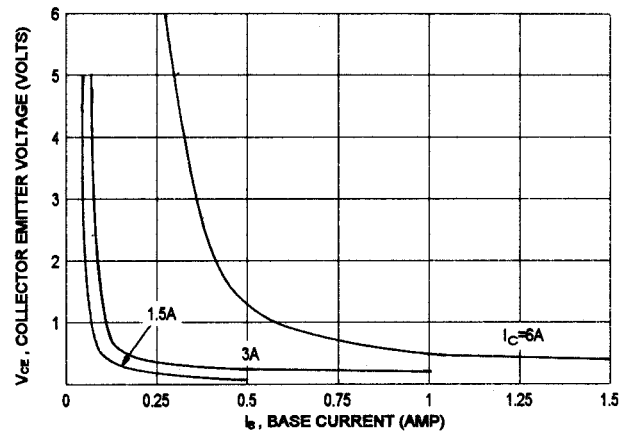
Turn-On Time	$V_{CC} = 150\text{ V}$ , $I_C = 5.0\text{ A}$ $I_{B1} = I_{B2} = 0.5\text{ A}$	$t_{on}$	1.0	us
Storage Time		$t_s$	1.5	us
Fall Time		$t_f$	0.3	us

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

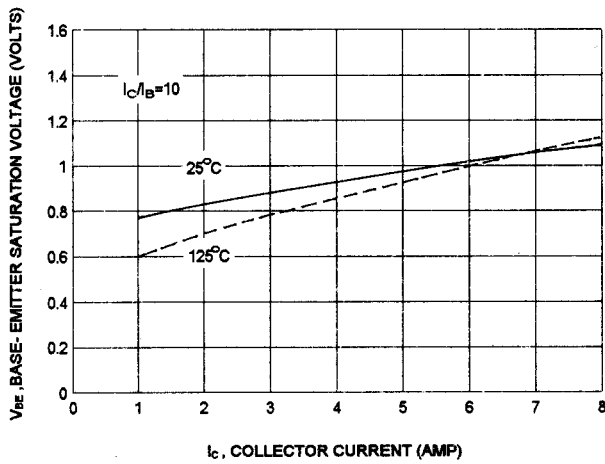
DC CURRENT GAIN



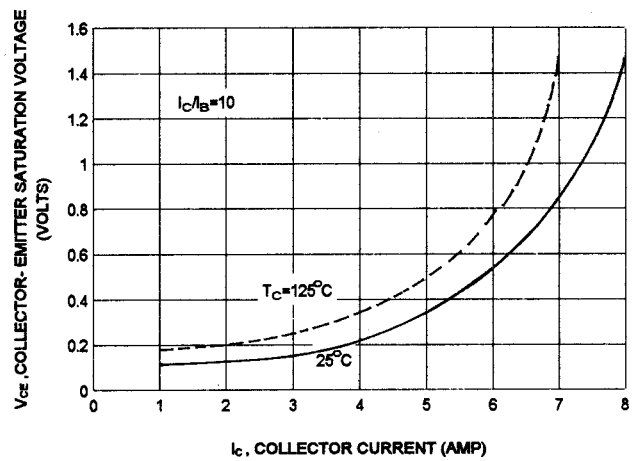
COLLECTOR SATURATION REGION



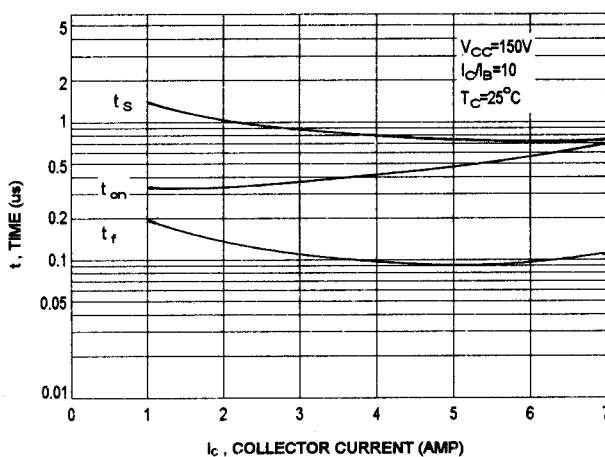
BASE-EMITTER SATURATION VOLTAGE



COLLECTOR-EMITTER SATURATION VOLTAGE



SWITCHING TIME



ACTIVE-REGION SAFE OPERATING AREA

