

## HIGH-POWER NPN SILICON POWER TRANSISTORS

...designed for use in general-purpose amplifier and switching application .

### FEATURES:

- \* Recommend for 125W High Fidelity Audio Frequency Amplifier Output stage
- \* Complementary to 2SA1302

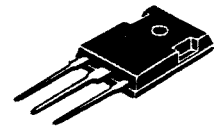
**NPN**  
**2SC3281**

**15 AMPERE**  
**POWER**  
**TRANSISTOR**

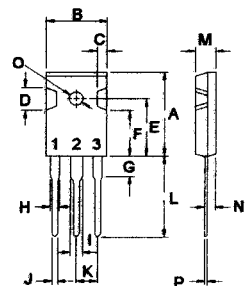
**200 VOLTS**  
**150 WATTS**

### MAXIMUM RATINGS

Characteristic	Symbol	2SC3281	Unit
Collector-Emitter Voltage	$V_{CEO}$	200	V
Collector-Base Voltage	$V_{CBO}$	200	V
Emitter-Base Voltage	$V_{EBO}$	5.0	V
Collector Current - Continuous - Peak	$I_C$ $I_{CM}$	15 20	A
Base current	$I_B$	2.0	A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	150 1.2	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$



**TO-247(3P)**



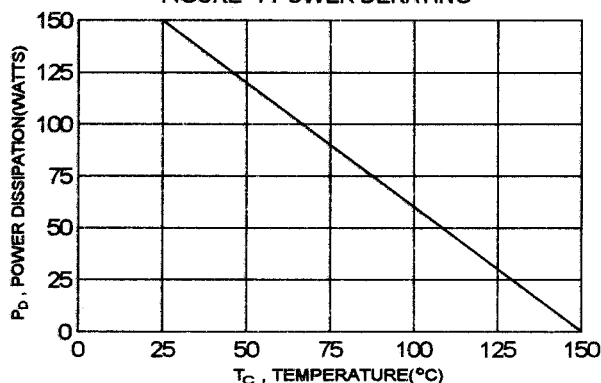
PIN 1.BASE  
2.COLLECTOR  
3.EMITTER

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R^{\theta}_{jc}$	0.83	$^\circ C/W$

DIM	MILLIMETERS	
	MIN	MAX
A	20.63	22.38
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.81	15.22
F	11.72	12.84
G	4.20	4.50
H	1.82	2.46
I	2.92	3.23
J	0.89	1.53
K	5.26	5.66
L	18.50	21.50
M	4.68	5.36
N	2.40	2.80
O	3.25	3.65
P	0.55	0.70

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 ( $I_C = 50 \text{ mA}, I_B = 0$ )	$V_{(BR)CEO}$	200		V
Collector Cutoff Current ( $V_{CB} = 200 \text{ V}, I_E = 0$ )	$I_{CBO}$		50	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 5.0 \text{ V}, I_C = 0$ )	$I_{EBO}$		10	$\mu\text{A}$

## ON CHARACTERISTICS (1)

DC Current Gain ( $I_C = 1.0 \text{ A}, V_{CE} = 5.0 \text{ V}$ ) * ( $I_C = 8.0 \text{ A}, V_{CE} = 5.0 \text{ V}$ )	$h_{FE(2)}$ $h_{FE}$	55 35	160	
Collector-Emitter Saturation Voltage ( $I_C = 10 \text{ A}, I_B = 1.0 \text{ A}$ )	$V_{CE(sat)}$		3.0	V
Base-Emitter On Voltage ( $I_C = 8.0 \text{ A}, V_{CE} = 5.0 \text{ V}$ )	$V_{BE(on)}$		1.5	V

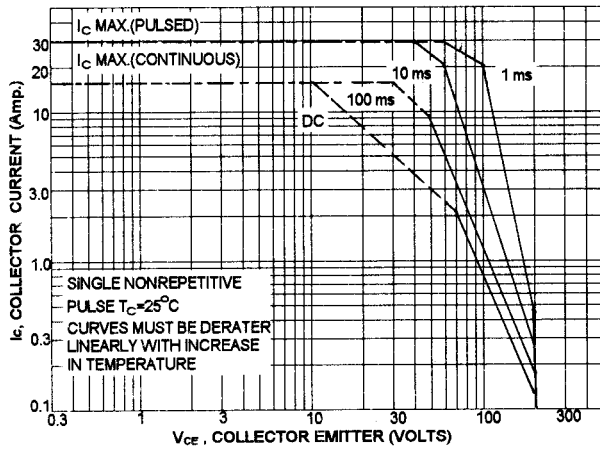
## DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ( $I_C = 1.0 \text{ A}, V_{CE} = 5.0 \text{ V}, f = 1.0 \text{ MHz}$ )	$f_T$	10		MHz
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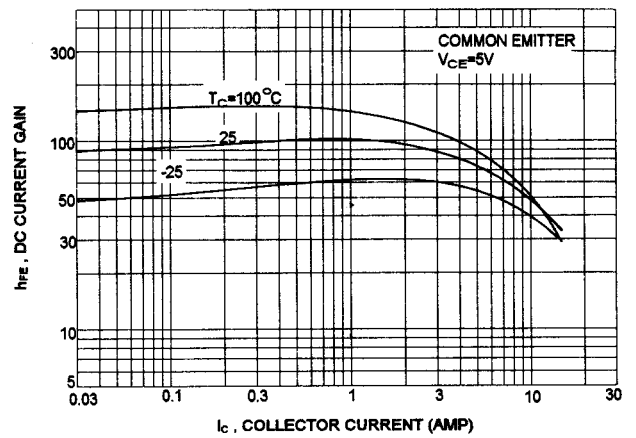
(1) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ \*  $h_{FE(2)}$  Classification :

55	R	110	80	O	160
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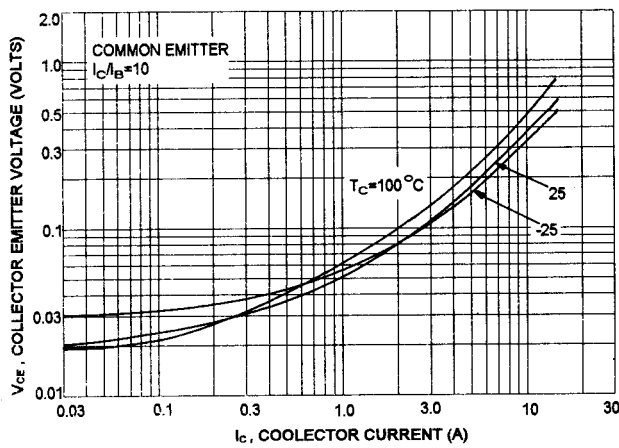
ACTIVE REGION SAFE OPERATING AREA



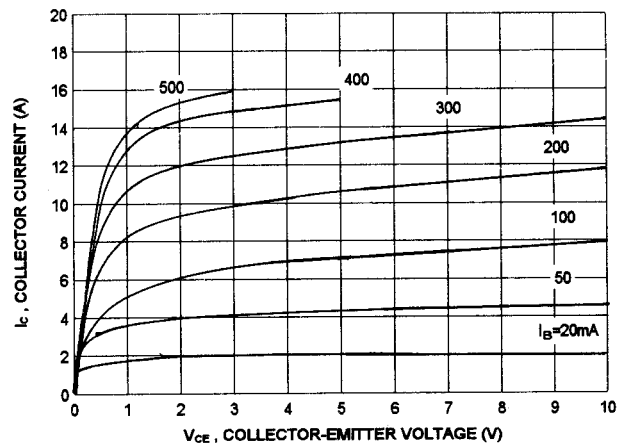
DC CURRENT GAIN



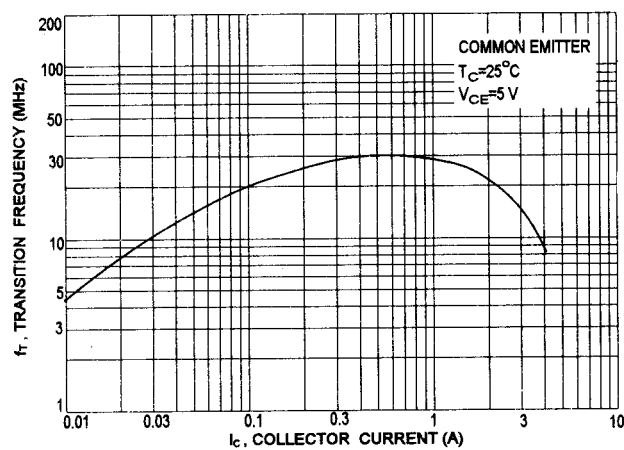
$V_{CE}(\text{sat}) - I_C$



$I_C - V_{CE}$



$f_T - I_C$



$I_C - V_{BE}$

