

## MEDIUM-POWER NPN SILICON TRANSISTORS

... designed for switching and wide-band amplifier applications

### FEATURES

- \* DC Current Gain Specified to 7 Amperes.
- \* Low Collector-Emitter Saturation Voltage  
 $V_{CE(sat)} = 1.2V$  (Max) @  $I_C = 7.0 A$
- \* Excellent Safe Operating Areas
- \* Package in the Compact TO-66 Case

### MAXIMUM RATINGS

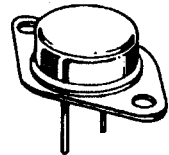
Characteristic	Symbol	2N5427 2N5428	2N5429 2N5430	Unit
Collector-Base Voltage	$V_{CBO}$	80	100	V
Collector-Emitter Voltage	$V_{CEO}$	80	100	V
Emitter-Base Voltage	$V_{EBO}$	6.0		V
Collector Current - Continuous	$I_C$	7.0		A
Base Current-Continuous	$I_B$	1.0		A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	40 228		W mW/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +200		$^\circ C$

### THERMAL CHARACTERISTICS

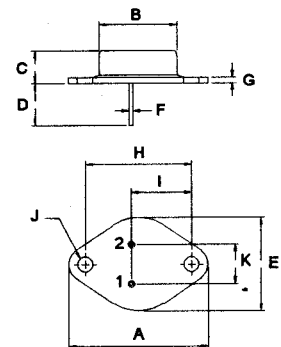
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	4.37	$^\circ C/W$

**NPN  
2N5427  
Thru  
2N5430**

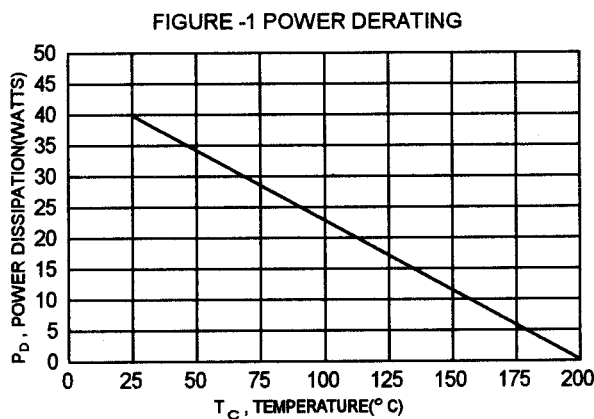
**7 AMPERE  
POWER TRANSISTORS  
NPN SILICON  
80-100 VOLTS  
40 WATTS**



**TO-66**



**PIN 1.BASE  
2.EMITTER  
COLLECTOR(CASE)**



DIM	MILLIMETERS	
	MIN	MAX
A	30.60	32.52
B	13.85	14.16
C	6.54	7.22
D	9.50	10.50
E	17.26	18.46
F	0.76	0.92
G	1.38	1.65
H	24.16	24.78
I	13.84	15.60
J	3.32	3.92
K	4.86	5.34

**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 (1) ( $I_C = 50\text{ mA}$ , $I_B = 0$ )	2N5427, 2N5428 2N5429, 2N5430	$V_{CEO(sus)}$	80 100	V
Collector Cutoff Current ( $V_{CE} = 75\text{ V}$ , $V_{BE(off)} = -1.5\text{ V}$ ) ( $V_{CE} = 90\text{ V}$ , $V_{BE(off)} = -1.5\text{ V}$ ) ( $V_{CE} = 75\text{ V}$ , $V_{BE(off)} = -1.5\text{ V}$ , $T_c = 150^\circ\text{C}$ ) ( $V_{CE} = 90\text{ V}$ , $V_{BE(off)} = -1.5\text{ V}$ , $T_c = 150^\circ\text{C}$ )	2N5427, 2N5428 2N5429, 2N5430 2N5427, 2N5428 2N5429, 2N5430	$I_{CEX}$	0.1 0.1 1.0 1.0	mA
Collector Cutoff Current ( $V_{CB} = \text{Rated } V_{CBO}$ , $I_E = 0$ )		$I_{CBO}$	0.1	mA
Emitter Cutoff Current ( $V_{EB} = 6.0\text{ V}$ , $I_C = 0$ )	All Types	$I_{EBO}$	0.1	mA

**ON CHARACTERISTICS (1)**

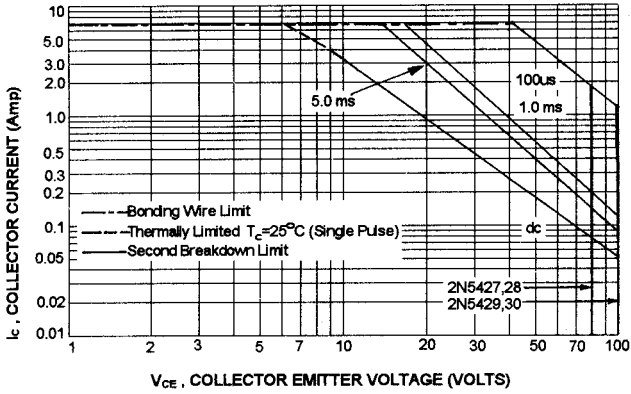
DC Current Gain ( $I_C = 0.5\text{ A}$ , $V_{CE} = 2.0\text{ V}$ ) ( $I_C = 2.0\text{ A}$ , $V_{CE} = 2.0\text{ V}$ ) ( $I_C = 5.0\text{ A}$ , $V_{CE} = 2.0\text{ V}$ )	2N5427, 2N5429 2N5428, 2N5430 2N5427, 2N5429 2N5428, 2N5430 2N5427, 2N5429 2N5428, 2N5430	hFE	30 60 30 60 20 40	120 240
Collector-Emitter Saturation Voltage ( $I_C = 2.0\text{ A}$ , $I_B = 0.2\text{ A}$ ) ( $I_C = 7.0\text{ A}$ , $I_B = 0.7\text{ A}$ )		$V_{CE(sat)}$	0.7 1.2	V
Base-Emitter Saturation Voltage ( $I_C = 2.0\text{ A}$ , $I_B = 0.2\text{ A}$ ) ( $I_C = 7.0\text{ A}$ , $I_B = 0.7\text{ A}$ )		$V_{BE(sat)}$	1.2 2.0	V

**DYNAMIC CHARACTERISTICS**

Current-Gain Bandwidth Product (2) ( $I_C = 500\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 10\text{ MHz}$ )	$f_T$	20		MHz
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(1) Pulse Test: Pulse width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ (2)  $f_T = |h_{fe}| \cdot f_{test}$

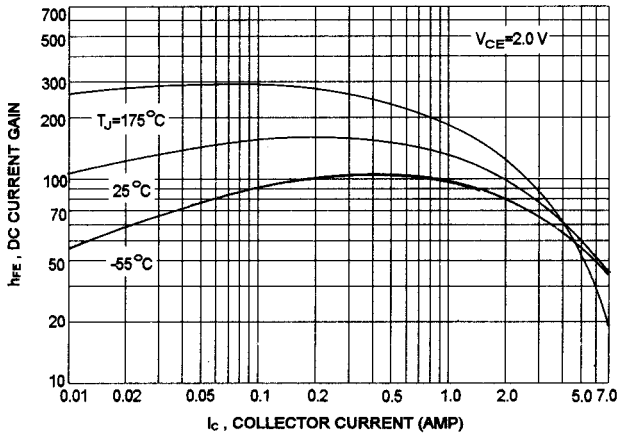
ACTIVE-REGION SAFE OPERATING AREA (SOA)



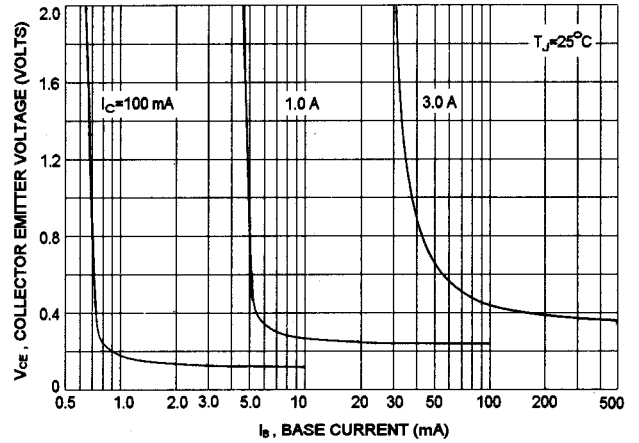
There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_C$ - $V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on  $T_{J(PK)}=200^\circ\text{C}$ ;  $T_C$  is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided  $T_{J(PK)} \leq 200^\circ\text{C}$ . At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown

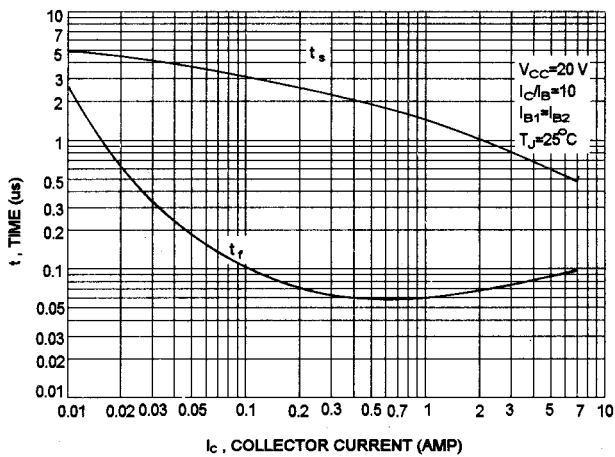
DC CURRENT GAIN



COLLECTOR SATURATION REGION



TURN-OFF TIME



"ON" VOLTAGES

