MOSPEC

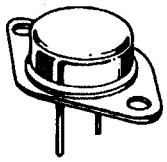
MEDIUM-POWER NPN SILICON TRANSISITORS

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

NPN
2N5427
Thru
2N5430

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

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



TO-66

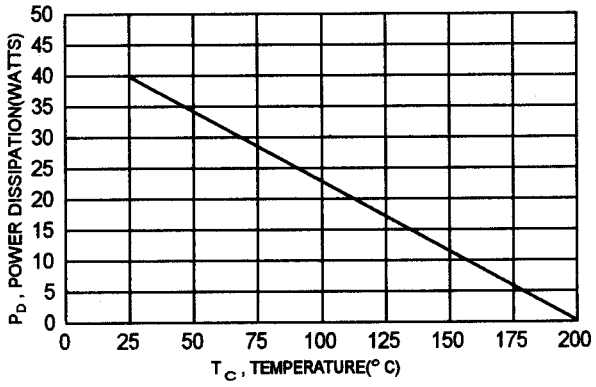
MAXIMUM RATINGS

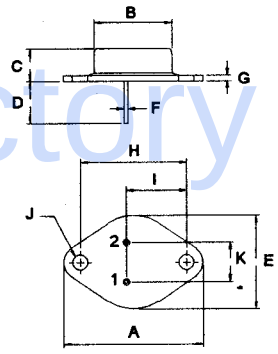
Characteristic	Symbol	2N5427 2N5428	2N5429 2N5430	Unit
Collector-Base Voltage	V_{CBO}	80	100	V
Collector-Emitter Voltage	V_{CEO}	80	100	V
Emitter-Base Voltage	V_{EBO}	6.0		,V
Collector Current - Continuous	I_C	7.0		A
Base Current-Continuous	I_B	1.0		A
Total Power Dissipation @T_C=25°C Derate above 25°C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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	Rθjc	4.37	°C/W

FIGURE -1 POWER DERATING





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

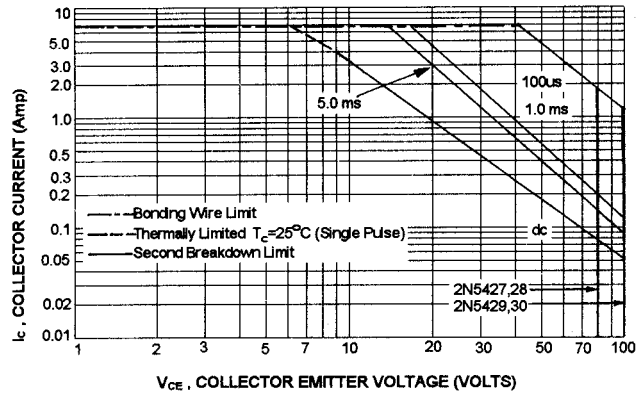
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (1) (I_C= 50 mA, I_B= 0)	2N5427, 2N5428 2N5429, 2N5430	$V_{CEO\ (sus)}$	80 100		V
Collector Cutoff Current (V_{CE}= 75 V, $V_{BE(off)}$ = -1.5V) (V_{CE}= 90 V, $V_{BE(off)}$ = -1.5V) (V_{CE}= 75 V, $V_{BE(off)}$= -1.5V,T_C= 150°C) (V_{CE}= 90 V, $V_{BE(off)}$= -1.5V,T_C= 150°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}= Rated V_{CBO} , I_E= 0)		I_{CBO}		0.1	mA
Emitter Cutoff Current (V_{EB}= 6.0V, I_C=0)	All Types	I_{EBO}		0.1	mA
ON CHARACTERISTICS (1)					
DC Current Gain (I_C= 0.5 A, V_{CE}= 2.0V) (I_C= 2.0 A, V_{CE}= 2.0V) (I_C= 5.0 A, V_{CE}= 2.0V)	 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 A, I_B= 0.2A) (I_C= 7.0 A, I_B= 0.7A)		$V_{CE(sat)}$		 0.7 1.2	V
Base-Emitter Saturation Voltage (I_C= 2.0 A, I_B= 0.2A) (I_C= 7.0 A, I_B= 0.7A)		$V_{BE(sat)}$		 1.2 2.0	V
DYNAMIC CHARACTERISTICS					
Current-Gain Bandwidth Product (2) (I_C= 500mA,V_{CE}= 10 V, f = 10MHz)		f_T	20		MHz

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

(2) $f_T = |h_{fe}| \cdot f_{test}$

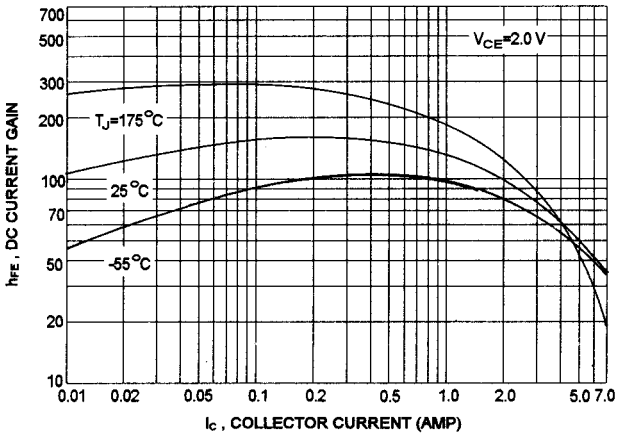
ACTIVE-REGION SAFE OPERATING AREA (SOA)



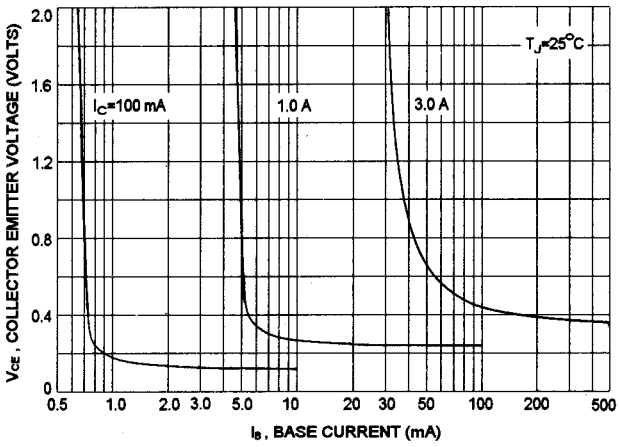
There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

The data of SOA curve is base on $T_{J(PK)}$=200 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}$≤200°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

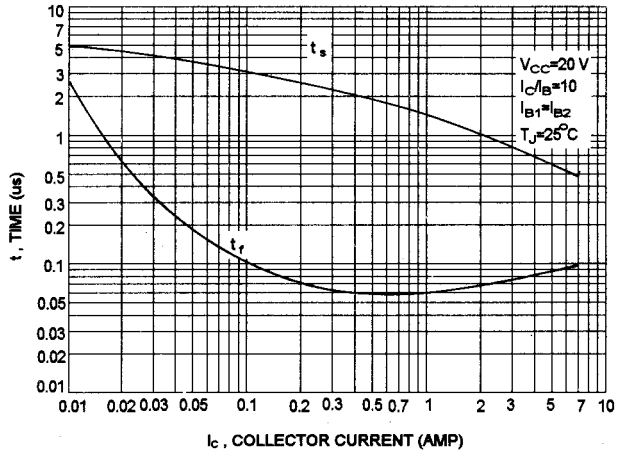
DC CURRENT GAIN



COLLECTOR SATURATION REGION



TURN-OFF TIME



"ON" VOLTAGES