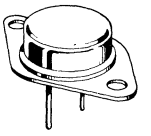
2N5324 (GERMANIUM)
2N5325

PNP GERMANIUM POWER TRANSISTORS

. . . designed primarily for switching, inverter, and industrial power supply applications.

- Low Collector Cutoff Current –
  I_{CEX} = 7.0 mAdc (Max) @ V_{CEX} = 250 Vdc (2N5324)
  7.0 mAdc (Max) @ V_{CEX} = 325 Vdc (2N5325)
- Low Collector-Emitter Saturation Voltage –
  $V_{CE(sat)}$ = 0.5 Vdc (Max) @ I_C = 10 Adc
- Low Base-Emitter Saturation Voltage –
  $V_{BE(sat)}$ = 0.75 Vdc (Max) @ I_C = 10 Adc
- Guaranteed Excellent Safe Operating Area ($V_{CER(sus)}$)
  Specified at 3.0 Amps and 10 Amps
- 100% Stabilization Bake at 125°C for 100 Hours

10 AMPERE
POWER TRANSISTORS
PNP GERMANIUM
EPITAXIAL BASE
250-325 VOLTS
56 WATTS



*MAXIMUM RATINGS

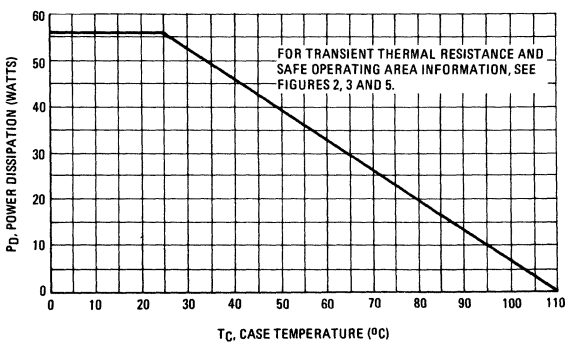
Rating	Symbol	2N5324	2N5325	Unit
Collector-Emitter Voltage	V_{CEO}	150	200	Vdc
Collector-Base Voltage	V_{CB}	250	325	Vdc
Emitter-Base Voltage	V_{EB}	4.0		Vdc
Collector Current – Continuous	I_C	10		Adc
Base Current – Continuous	I_B	3.0		Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	56 0.67		Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +110		°C

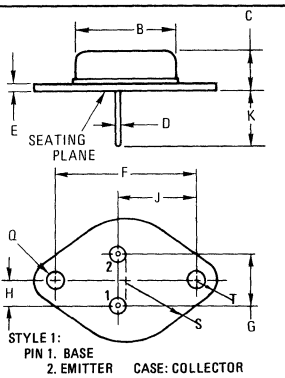
*Indicates JEDEC Registered Data.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.5	°C/W

FIGURE 1 – POWER-TEMPERATURE DERATING CURVE





DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
B	–	22.23	–	0.875
C	6.35	11.43	0.250	0.450
D	0.97	1.09	0.038	0.043
E	–	3.43	–	0.135
F	29.90	30.40	1.177	1.197
G	10.67	11.18	0.420	0.440
H	5.21	5.72	0.205	0.225
J	16.64	17.15	0.655	0.675
K	7.92	–	0.312	–
Q	3.84	4.09	0.151	0.161
S	–	13.34	–	0.525
T	–	4.78	–	0.188

All JEDEC dimensions and notes apply
CASE 1-03
(TO-3)

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
†Collector-Emitter Breakdown Voltage (I_C = 0.1 Adc, I_B = 0)	2N5324	BV_{CEO}	150	–	Vdc
	2N5325		200	–	
Collector-Emitter Sustaining Voltage (I_C = 3.0 Adc, R_{BE} = 10 Ohms) (Figure 4, Test Condition 1)	2N5324	$V_{CER(sus)}$	165	–	Vdc
	2N5325		200	–	
(I_C = 10 Adc, R_{BE} = 10 Ohms) (Figure 4, Test Condition 2)	2N5324		100	–	
	2N5325		115	–	
*Collector Cutoff Current (See Note 1) (V_{CE} = 250 Vdc, V_{BE} (off) = 0.2 Vdc)	2N5324	I_{CEV}	–	7.0	mAdc
(V_{CE} = 250 Vdc, V_{BE} (off) = 0.2 Vdc, T_C = 85°C)			–	35	
(V_{CE} = 325 Vdc, V_{BE} (off) = 0.2 Vdc)	2N5325		–	7.0	
(V_{CE} = 325 Vdc, V_{BE} (off) = 0.2 Vdc, T_C = 85°C)			–	35	
*Emitter Cutoff Current (V_{BE} = 4.0 Vdc, I_C = 0)		I_{EBO}	–	100	mAdc
ON CHARACTERISTICS					
*DC Current Gain (I_C = 5.0 Adc, V_{CE} = 2.0 Vdc)		h_{FE}	20	60	–
*Collector-Emitter Saturation Voltage (I_C = 10 Adc, I_B = 1.0 Adc)		$V_{CE(sat)}$	–	0.5	Vdc
*Base-Emitter Saturation Voltage (I_C = 10 Adc, I_B = 1.0 Adc)		$V_{BE(sat)}$	–	0.75	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain–Bandwidth Product (I_C = 0.5 Adc, V_{CE} = 5.0 Vdc, f = 0.5 MHz)		f_T	2.0	–	MHz
SWITCHING CHARACTERISTICS					
*Rise Time	(I_C = 5.0 Adc, I_{B1} = I_{B2} = 0.5 Adc) (See Figure 6)	t_r	–	15	μs
*Storage Time		t_s	–	10	μs
*Fall Time		t_f	–	7.0	μs

Note 1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

*Indicates JEDEC Registered Data.

†JEDEC Registration Defined as $V_{(BR)CEO}$

FIGURE 2 – TRANSIENT THERMAL RESPONSE

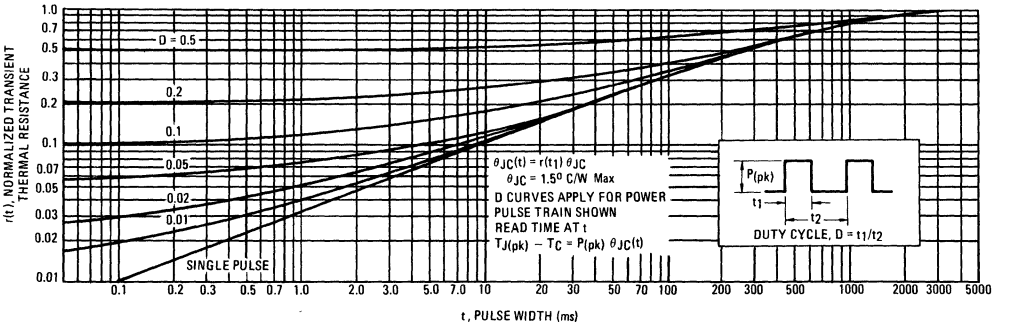


FIGURE 3 – COLLECTOR-EMITTER SUSTAINING VOLTAGE

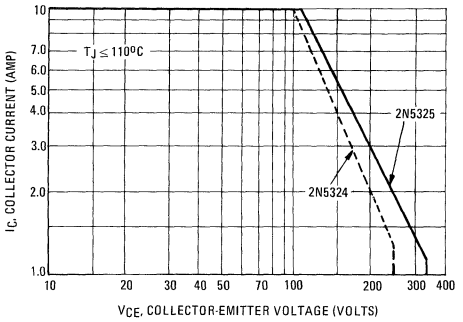


FIGURE 4 – COLLECTOR-EMITTER SUSTAINING VOLTAGE TEST CIRCUIT

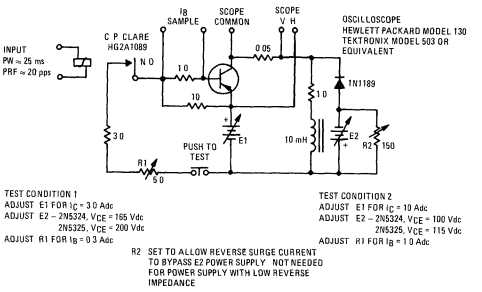


FIGURE 5 – ACTIVE REGION SAFE OPERATING AREA

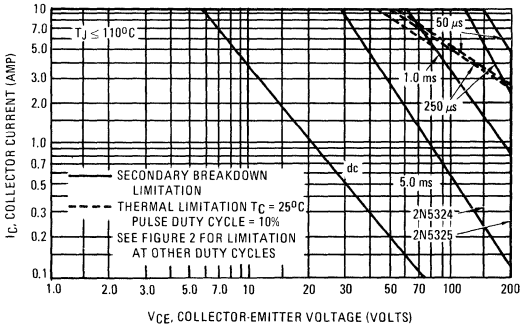


FIGURE 6 – SWITCHING TIME TEST CIRCUIT

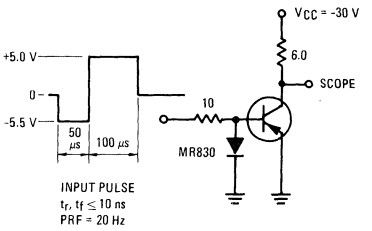


FIGURE 7 – SWITCHING TIMES

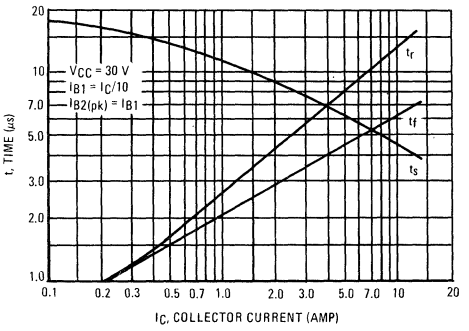


FIGURE 8 - CURRENT GAIN BANDWITH PRODUCT

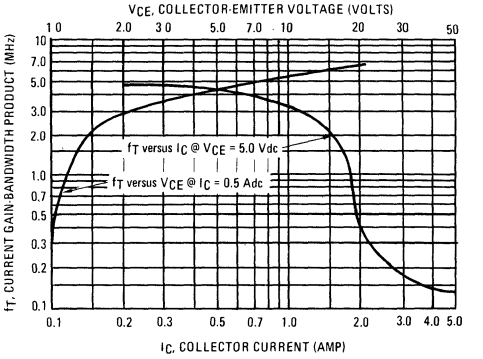


FIGURE 9 – DC CURRENT GAIN

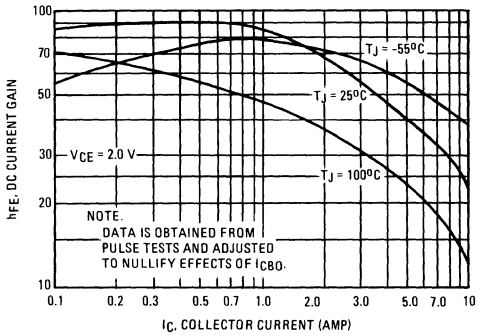


FIGURE 10 – COLLECTOR SATURATION REGION

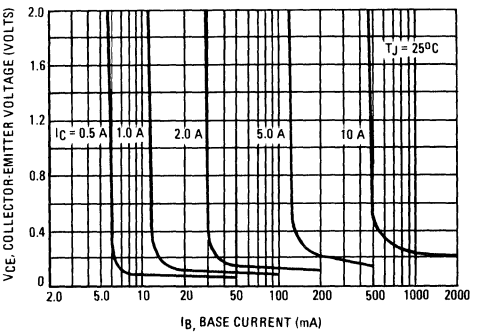


FIGURE 11 – EFFECTS OF EMITTER-BASE RESISTANCE

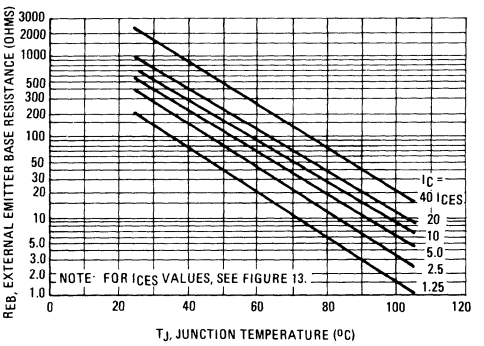


FIGURE 12 – "ON" VOLTAGES

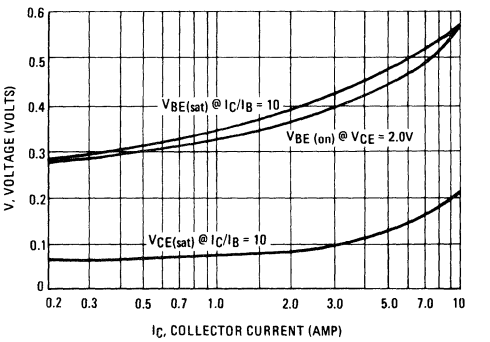


FIGURE 13 – COLLECTOR CUTOFF REGION

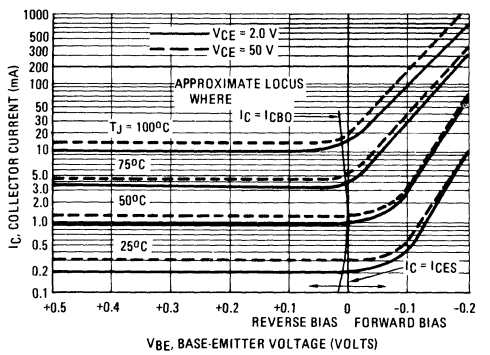


FIGURE 14 – TEMPERATURE COEFFICIENTS