

**MAXIMUM RATINGS**

Rating	Symbol	2N4234	2N4235	2N4236	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	40	60	80	Vdc
Collector-Base Voltage	V <sub>CBO</sub>	40	60	80	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	7.0			Vdc
Base Current	I <sub>B</sub>	0.2			Vdc
Collector Current — Continuous	I <sub>C</sub>	1.0 3.0*			Adc
Total Device Dissipation (at T <sub>A</sub> = 25°C Derate above 25°C)	P <sub>D</sub>	1.0 5.7			Watt mW/°C
Total Device Dissipation (at T <sub>C</sub> = 25°C Derate above 25°C)	P <sub>D</sub>	6.0 34			Watts mW/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	- 65 to + 200			°C

**2N4234  
2N4235  
2N4236**

**CASE 079-02, STYLE 1  
TO-39 (TO-205AD)**

**POWER TRANSISTOR**

**PNP SILICON**

**4**

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	29	°C/W

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted.)**

Characteristic	Symbol	Min	Max	Unit	
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Sustaining Voltage(1) (I <sub>C</sub> = 100 mAdc, I <sub>B</sub> = 0)	2N4234 2N4235 2N4236	V <sub>CEO(sus)</sub>	40 60 80	— — —	Vdc
Collector Cutoff Current (V <sub>CE</sub> = 30 Vdc, I <sub>B</sub> = 0) (V <sub>CE</sub> = 40 Vdc, I <sub>B</sub> = 0) (V <sub>CE</sub> = 60 Vdc, I <sub>B</sub> = 0)	2N4234 2N4235 2N4236	I <sub>CEO</sub>	— — —	1.0 1.0 1.0	mAdc
Collector Cutoff Current (V <sub>CE</sub> = 40 Vdc, V <sub>BE</sub> = 1.5 Vdc) (V <sub>CE</sub> = 60 Vdc, V <sub>BE</sub> = 1.5 Vdc) (V <sub>CE</sub> = 80 Vdc, V <sub>BE</sub> = 1.5 Vdc) (V <sub>CE</sub> = 30 Vdc, V <sub>BE</sub> = 1.5 Vdc, T <sub>C</sub> = 150°C) (V <sub>CE</sub> = 40 Vdc, V <sub>BE</sub> = 1.5 Vdc, T <sub>C</sub> = 150°C) (V <sub>CE</sub> = 60 Vdc, V <sub>BE</sub> = 1.5 Vdc, T <sub>C</sub> = 150°C)	2N4234 2N4235 2N4236 2N4234 2N4235 2N4236	I <sub>CEX</sub>	— — — — — —	0.1 0.1 0.1 1.0 1.0 1.0	mAdc
Collector Cutoff Current (V <sub>CB</sub> = 40 Vdc, I <sub>E</sub> = 0) (V <sub>CB</sub> = 60 Vdc, I <sub>E</sub> = 0) (V <sub>CB</sub> = 80 Vdc, I <sub>E</sub> = 0)	2N4234 2N4235 2N4236	I <sub>CBO</sub>	— — —	0.1 0.1 0.1	mAdc
Emitter Cutoff Current (V <sub>BE</sub> = 7 Vdc, I <sub>C</sub> = 0)		I <sub>EBO</sub>	—	0.5	mAdc
<b>ON CHARACTERISTICS</b>					
DC Current Gain(1) (I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 250 mAdc, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 500 mAdc, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 1.0 Vdc)		h <sub>FE</sub>	40 30 20 10	— 150 — —	—
Collector-Emitter Saturation Voltage(1) (I <sub>C</sub> = 1.0 Adc, I <sub>B</sub> = 125 mAdc)		V <sub>CE(sat)</sub>	—	0.6	Vdc
Base-Emitter Saturation Voltage(1) (I <sub>C</sub> = 1.0 Adc, I <sub>B</sub> = 100 mAdc)		V <sub>BE(sat)</sub>	—	1.5	Vdc
Base-Emitter On Voltage (I <sub>C</sub> = 250 mAdc, V <sub>CE</sub> = 1.0 Vdc)		V <sub>BE</sub>	—	1.0	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>					
Current-Gain — Bandwidth Product (I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 10 Vdc, f = 1.0 MHz)		f <sub>T</sub>	3.0	—	MHz

**2N4234, 2N4235, 2N4236**

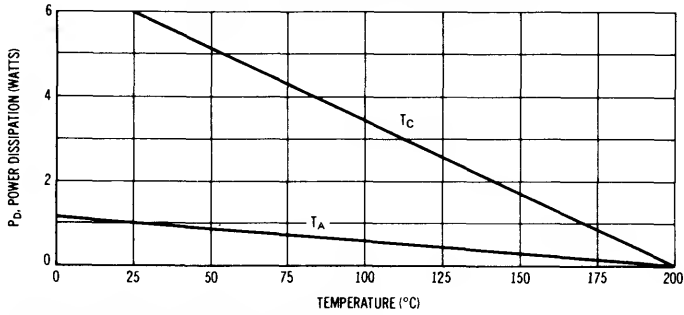
**ELECTRICAL CHARACTERISTICS** (continued) ( $T_A = 25^\circ\text{C}$  unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Output Capacitance ( $V_{CB} = 10\text{ Vdc}$ , $I_E = 0$ , $f = 100\text{ kHz}$ )	$C_{obo}$	—	100	pF
Small-Signal Current Gain ( $I_C = 50\text{ mAdc}$ , $V_{CE} = 10\text{ Vdc}$ , $f = 1.0\text{ kHz}$ )	$h_{fe}$	25	—	—

(1) Pulse Test:  $PW \leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

\*Indicates Data in addition to JEDEC Requirements.

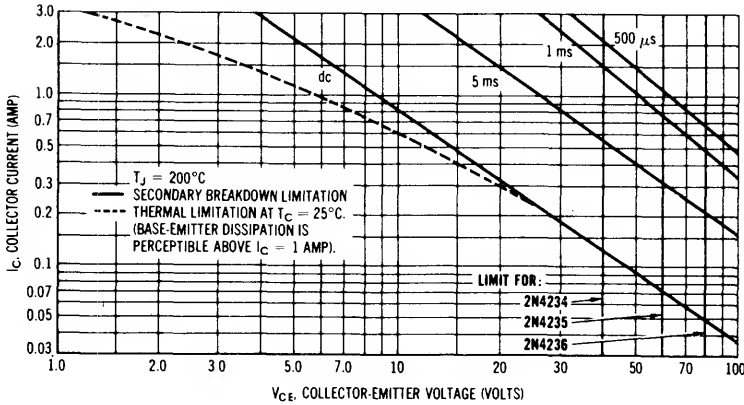
**FIGURE 1 — POWER-TEMPERATURE DERATING CURVE**



Safe Area Curves are indicated by Figure 2.

All limits are applicable and must be observed.

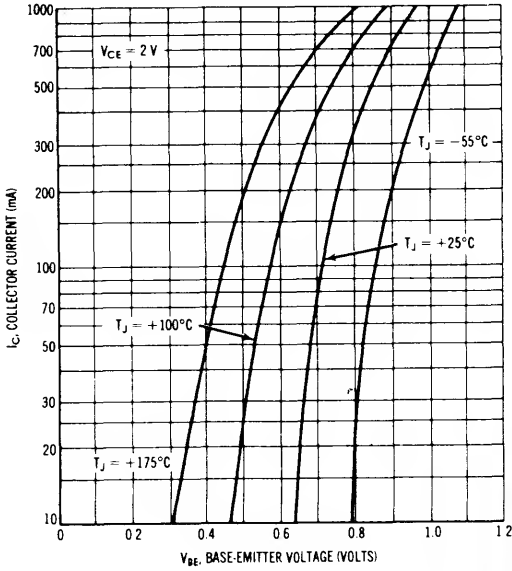
**FIGURE 2 — ACTIVE-REGION SAFE OPERATING AREAS**



The Safe Operating Area Curves indicate  $I_C - V_{CE}$  limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum  $T_J$ , power-temperature derating must be observed for both steady state and pulse power conditions.

LARGE SIGNAL CHARACTERISTICS

FIGURE 3 — TRANSCONDUCTANCE



"OFF" REGION CHARACTERISTICS

FIGURE 5 — TRANSCONDUCTANCE

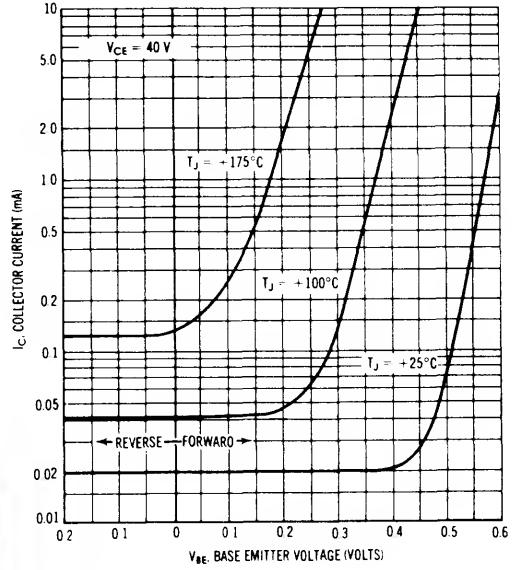


FIGURE 4 — INPUT ADMITTANCE

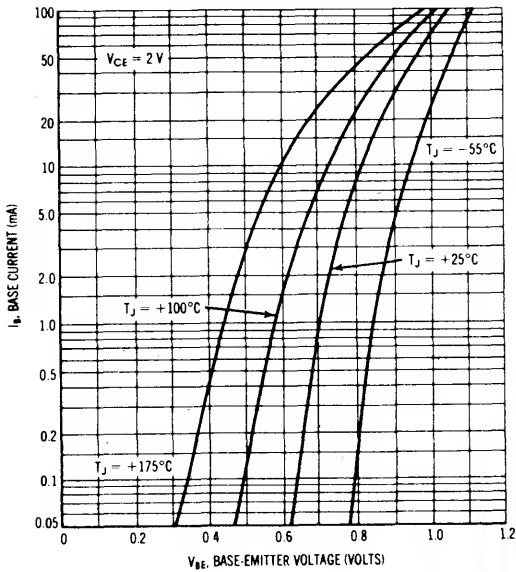


FIGURE 6 — EFFECTS OF BASE-EMITTER RESISTANCE

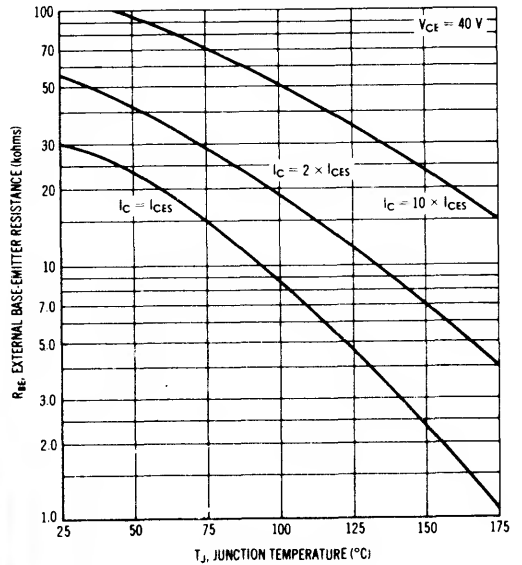
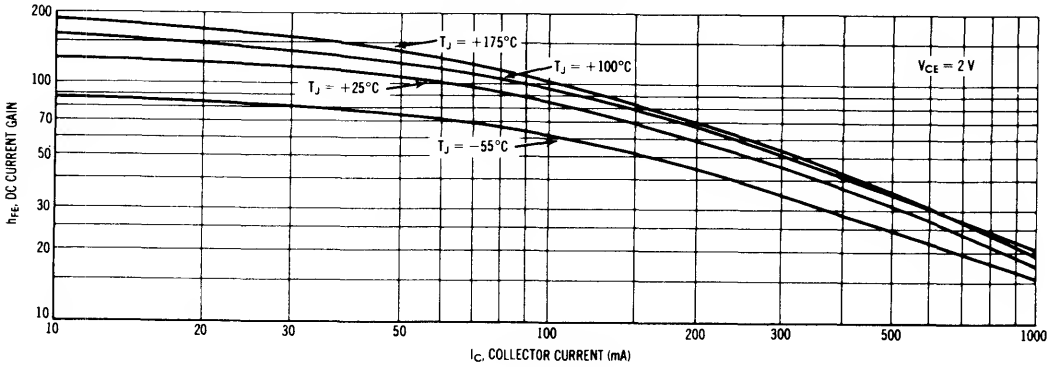


FIGURE 7 — CURRENT GAIN



SATURATION REGION CHARACTERISTICS

FIGURE 8 — COLLECTOR SATURATION REGION

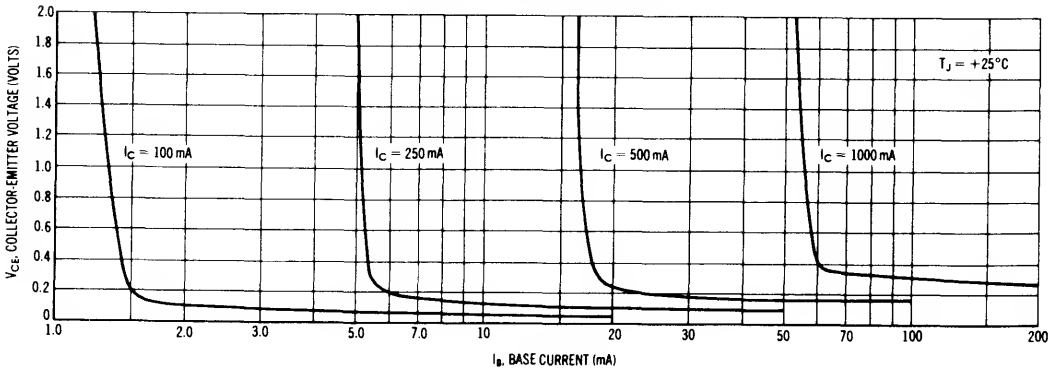


FIGURE 9 — "ON" VOLTAGES

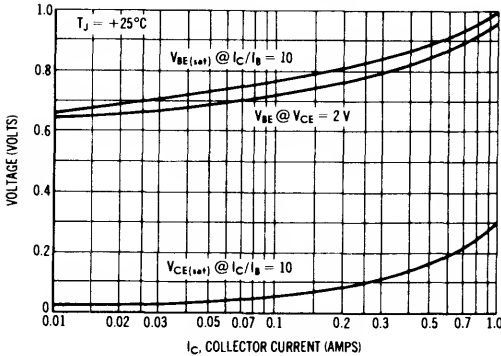
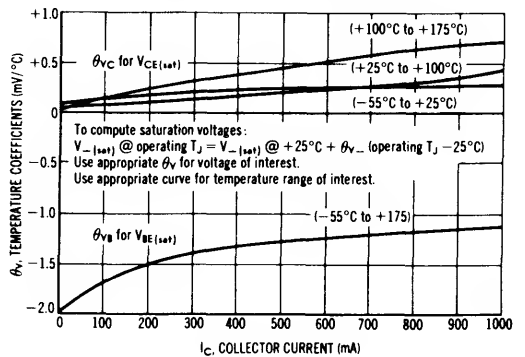


FIGURE 10 — TEMPERATURE COEFFICIENTS



DYNAMIC CHARACTERISTICS

FIGURE 11 — TURN-ON TIME

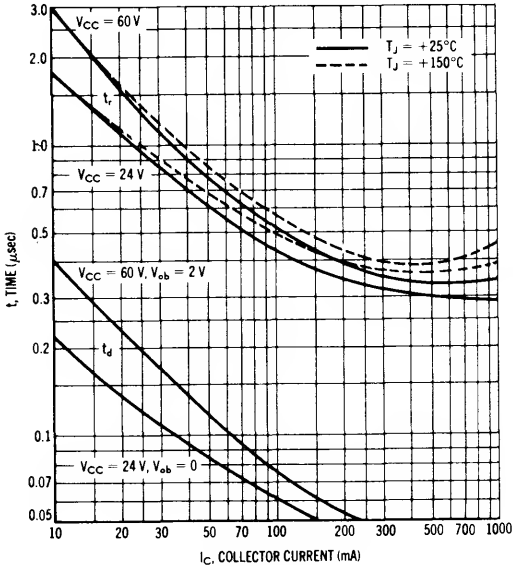


FIGURE 13 — CAPACITANCE

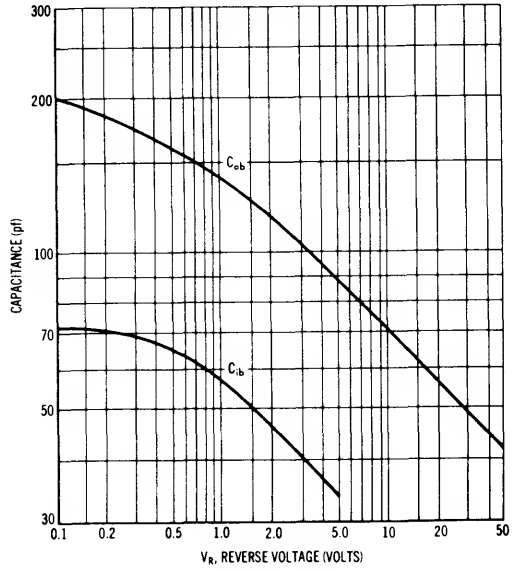


FIGURE 12 — STORAGE TIME

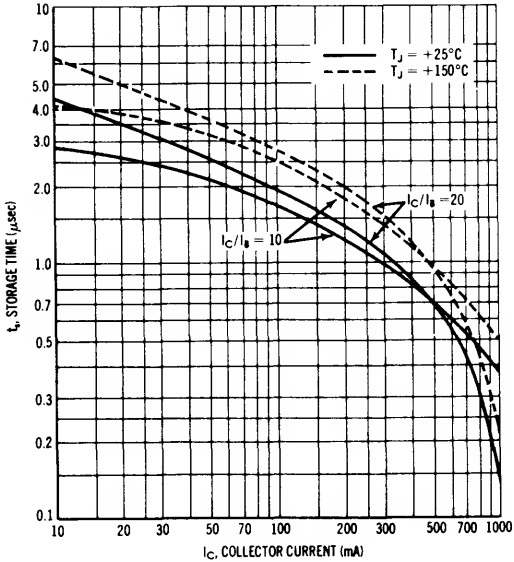


FIGURE 14 — FALL TIME

