

MAXIMUM RATINGS

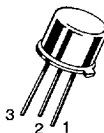
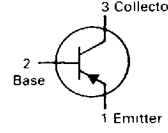
Rating	Symbol	2N3634 2N3635	2N3636 2N3637	Unit
Collector-Emitter Voltage	V_{CE0}	-140	-175	Vdc
Collector-Base Voltage	V_{CBO}	-140	-175	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0		Vdc
Collector Current — Continuous	I_C	-1.0		Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 5.71		Watt mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	5.0 28.6		Watts 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 Ambient	$R_{\theta JA}$	175	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	35	°C/W

**2N3634
thru
2N3637**

**CASE 79-04, STYLE 1
TO-39 (TO-205AD)**

**GENERAL PURPOSE
TRANSISTORS**

PNP SILICON

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

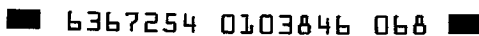
Collector-Emitter Breakdown Voltage(1) ($I_C = -10 \text{ mAdc}, I_B = 0$)	$V_{(BR)CEO}$	-140 -175	—	Vdc
Collector-Base Breakdown Voltage ($I_C = -100 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	-140 -175	—	Vdc
Emitter-Base Breakdown Voltage $I_E = -10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	-5.0	—	Vdc
Collector Cutoff Current ($V_{CB} = -100 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	-100	nAdc
Emitter Cutoff Current ($V_{EB} = -3.0 \text{ Vdc}, I_C = 0$)	I_{EBO}	—	-50	nAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = -0.1 \text{ mAdc}, V_{CE} = -10 \text{ Vdc}$)	h_{FE}	2N3634, 2N3636	40	—	—
		2N3635, 2N3637	80	—	—
($I_C = -1.0 \text{ mAdc}, V_{CE} = -10 \text{ Vdc}$)		2N3634, 2N3636	45	—	—
		2N3635, 2N3637	90	—	—
($I_C = -10 \text{ mAdc}, V_{CE} = -10 \text{ Vdc}$)(1)		2N3634, 2N3636	50	—	—
		2N3635, 2N3637	100	—	—
($I_C = -50 \text{ mAdc}, V_{CE} = -10 \text{ Vdc}$)(1)		2N3634, 2N3636	50	150	—
		2N3635, 2N3637	100	300	—
($I_C = -150 \text{ mAdc}, V_{CE} = -10 \text{ Vdc}$)(1)		2N3634, 2N3636	25	—	—
		2N3635, 2N3637	50	—	—
Collector-Emitter Saturation Voltage(1) ($I_C = -10 \text{ mAdc}, I_B = -1.0 \text{ mAdc}$) ($I_C = -50 \text{ mAdc}, I_B = -5.0 \text{ mAdc}$)	$V_{CE(sat)}$		—	-0.3 -0.5	Vdc
Base-Emitter Saturation Voltage(1) ($I_C = -10 \text{ mAdc}, I_B = -1.0 \text{ mAdc}$) ($I_C = -50 \text{ mAdc}, I_B = -5.0 \text{ mAdc}$)	$V_{BE(sat)}$		—	-0.8 -0.9	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($V_{CE} = -30 \text{ Vdc}, I_C = -30 \text{ mAdc}, f = 100 \text{ MHz}$)	f_T	2N3634, 2N3636 2N3635, 2N3637	150 200	— —	MHz
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ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Output Capacitance ($V_{CB} = -20\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	—	10	pF
Input Capacitance ($V_{EB} = -1.0\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	—	75	pF
Input Impedance ($I_C = -10\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{ie}	100 200	600 1200	ohms
Voltage Feedback Ratio ($I_C = -10\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{re}	—	3.0	$\times 10^{-4}$
Small-Signal Current Gain ($I_C = -10\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{fe}	40 80	160 320	—
Output Admittance ($I_C = -10\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{oe}	—	200	μmhos
Noise Figure ($I_C = -0.5\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $R_S = 1.0\text{ k ohms}$, $f = 1.0\text{ kHz}$)	NF	—	3.0	dB

SWITCHING CHARACTERISTICS

Turn-On Time	($V_{CC} = -100\text{ Vdc}$, $V_{BE} = 4.0\text{ Vdc}$, $I_C = -50\text{ mAdc}$, $I_{B1} = I_{B2} = -5.0\text{ mAdc}$)	t_{on}	—	400	ns
Turn-Off Time		t_{off}	—	600	ns

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

FIGURE 1 — JUNCTION CAPACITANCE VARIATIONS

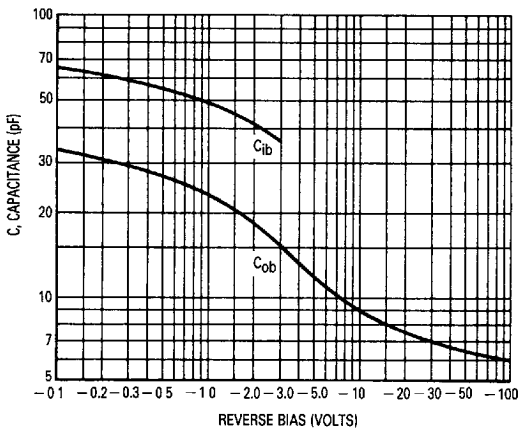
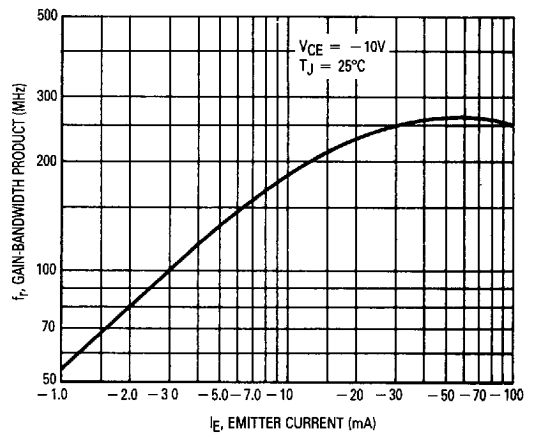


FIGURE 2 — GAIN-BANDWIDTH PRODUCT



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2N3634 thru 2N3637

FIGURE 3 — CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE
2N3634

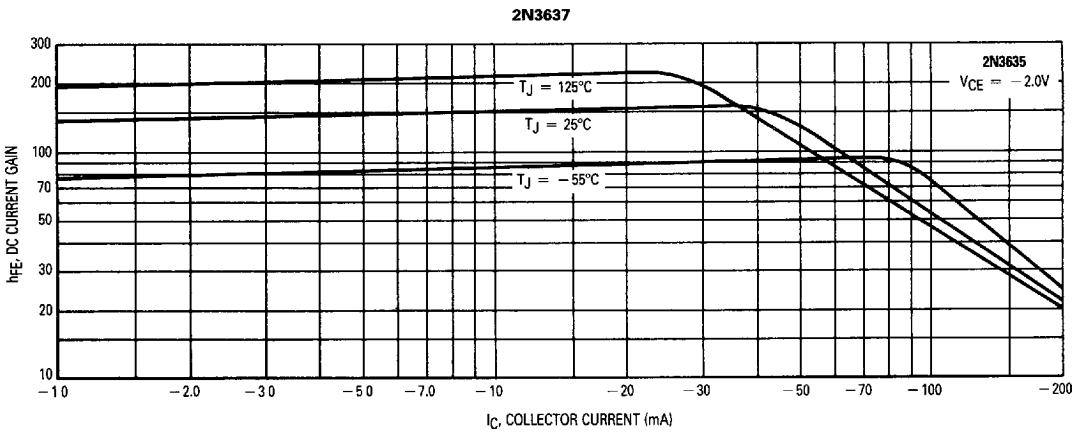
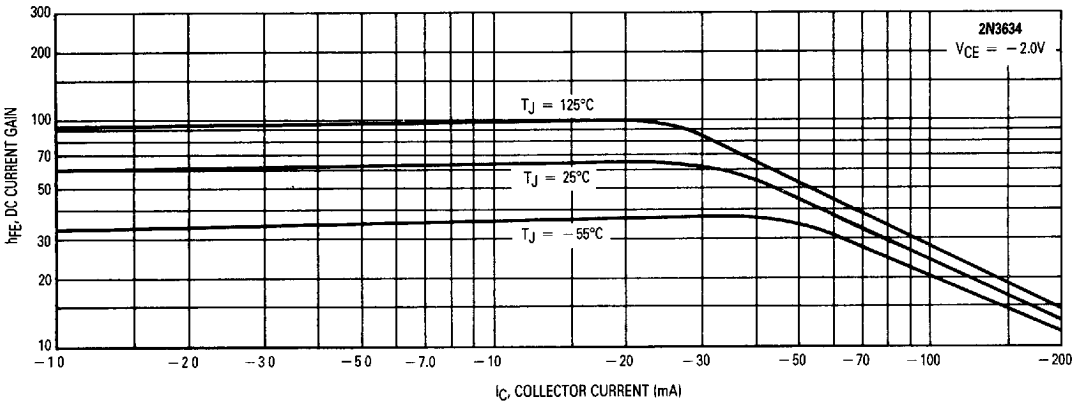


FIGURE 4 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE

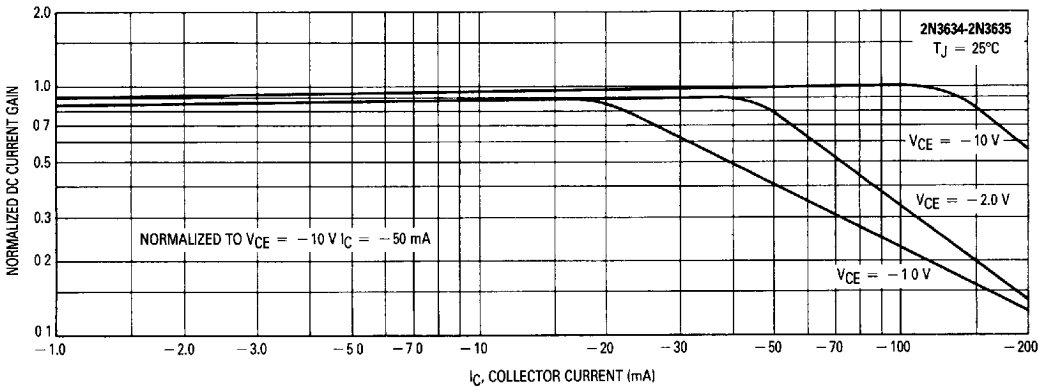
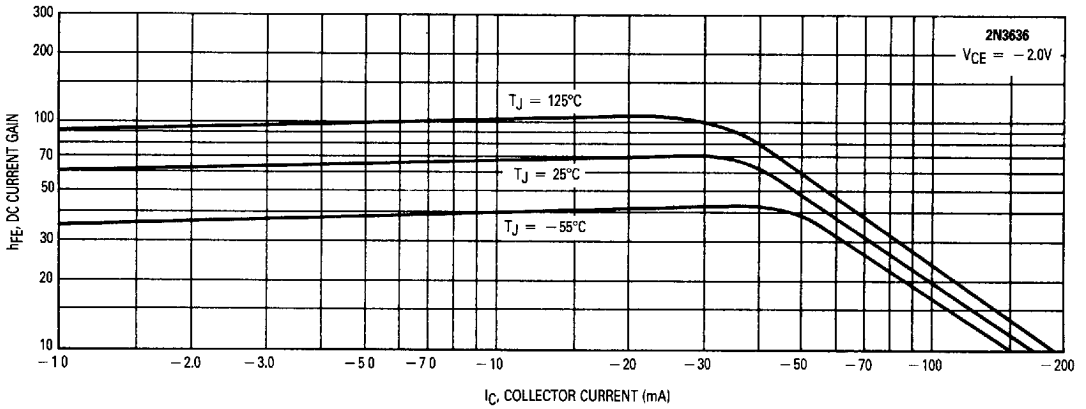


FIGURE 5 — CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE
2N3636



2N3637

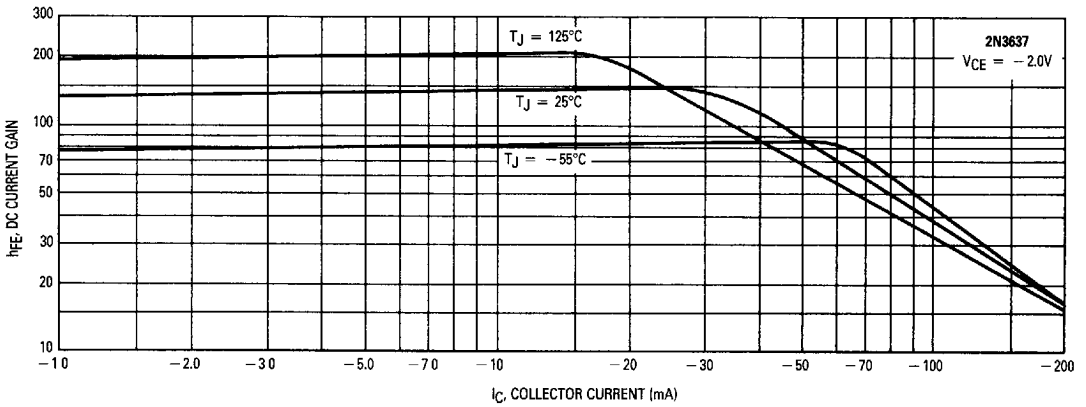
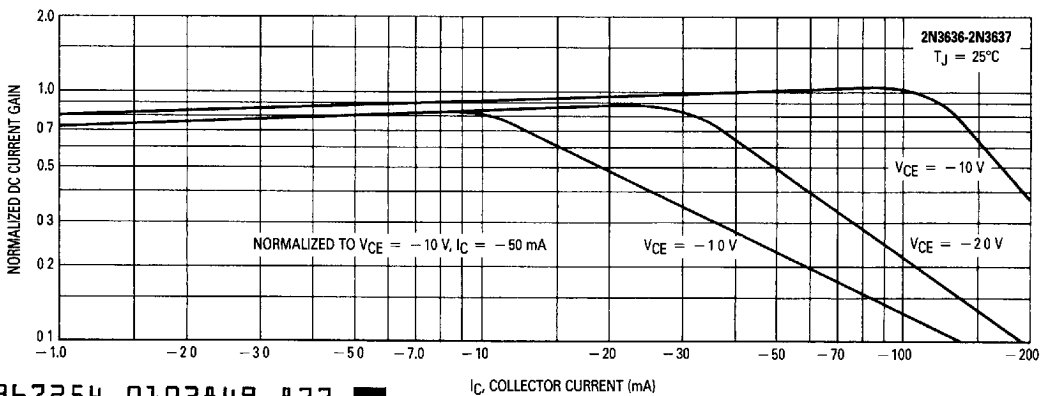


FIGURE 6 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE



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2N3634 thru 2N3637

FIGURE 7 — INPUT IMPEDANCE

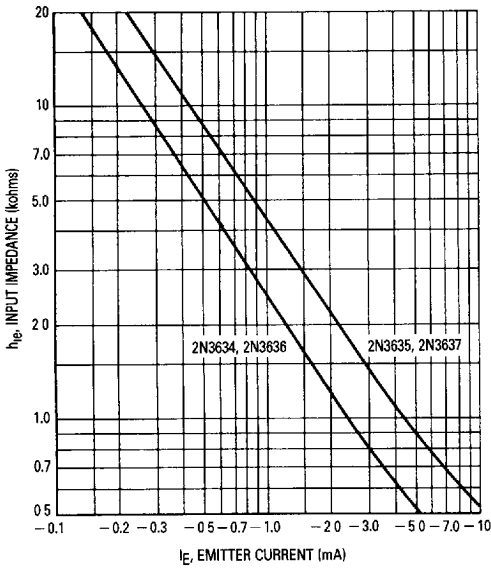


FIGURE 8 — OUTPUT IMPEDANCE

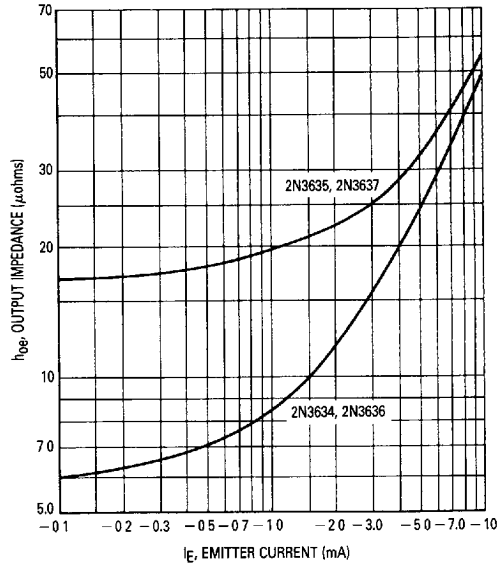


FIGURE 9 — CURRENT GAIN

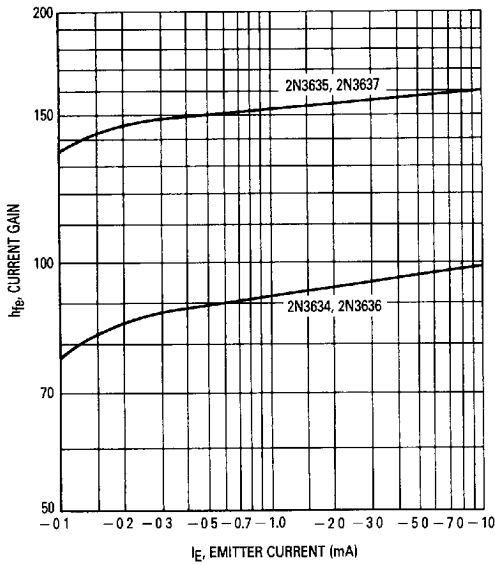
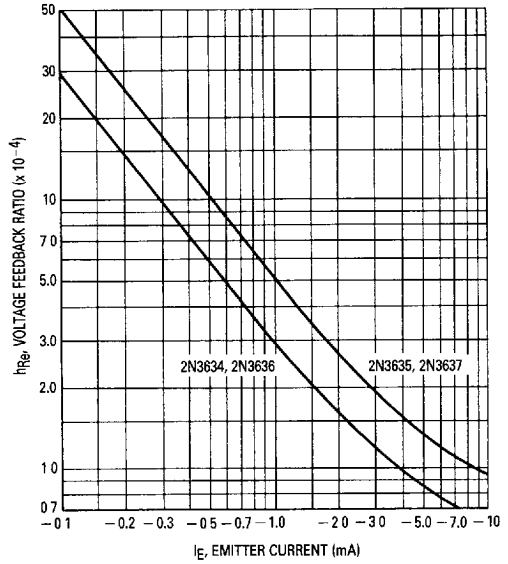


FIGURE 10 — VOLTAGE FEEDBACK RATIO



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FIGURE 11 — SATURATION VOLTAGES

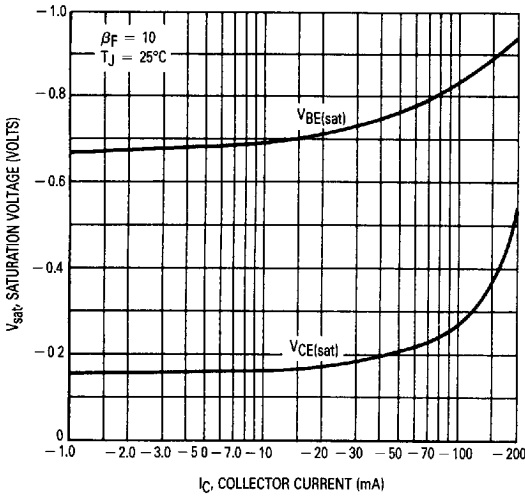


FIGURE 12 — TEMPERATURE COEFFICIENTS

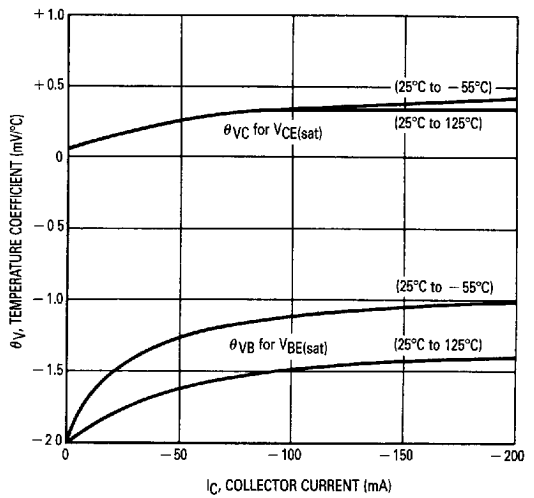
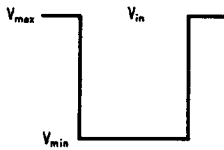


FIGURE 13 — SWITCHING TIME TEST CIRCUIT



P.W. \approx 20 μ s
 DUTY CYCLE \leq 2%
 RISE TIME \leq 20 ns

	V_{max}	V_{min}
TURN-ON	+4.0 V	-5.65 V
TURN-OFF	+4.1 V	-5.9 V

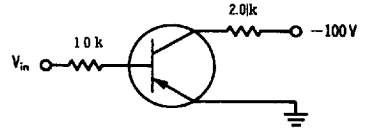


FIGURE 14 — TURN-ON TIME VARIATIONS WITH VOLTAGE

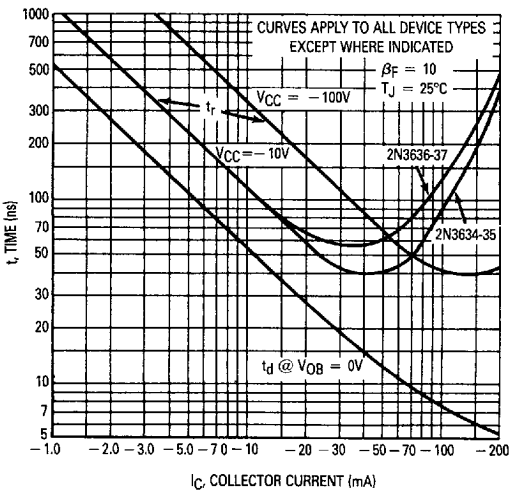
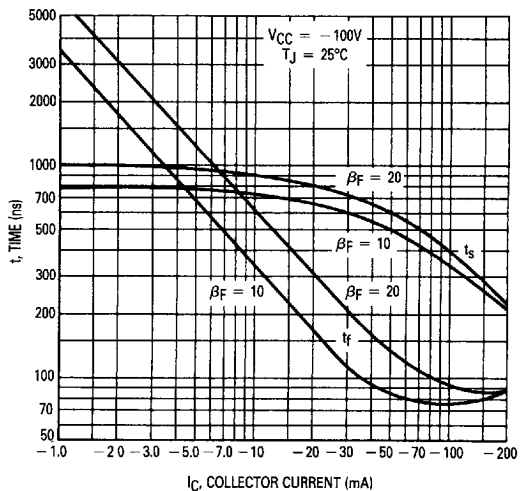


FIGURE 15 — TURN-OFF TIME VARIATIONS WITH CIRCUIT GAIN



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