

**MAXIMUM RATINGS**

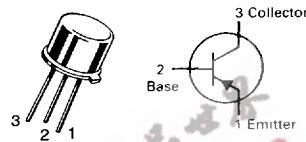
Rating	Symbol	2N3634 2N3635	2N3636 2N3637	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	-140	-175	Vdc
Collector-Base Voltage	V <sub>CBO</sub>	-140	-175	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	-5.0		Vdc
Collector Current — Continuous	I <sub>C</sub>	-1.0		Adc
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	1.0	5.71	Watt mW/°C
Total Device Dissipation @ T <sub>C</sub> = 25°C Derate above 25°C	P <sub>D</sub>	5.0	28.6	Watts mW/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-65 to +200		°C

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	175	°C/W
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	35	°C/W

**2N3634  
thru  
2N3637**

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



**GENERAL PURPOSE  
TRANSISTORS**

**PNP SILICON**

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage(1) (I <sub>C</sub> = -10 mA <sub>dc</sub> , I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	-140 -175	—	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = -100 μA <sub>dc</sub> , I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	-140 -175	—	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = -10 μA <sub>dc</sub> , I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	-5.0	—	Vdc
Collector Cutoff Current (V <sub>CB</sub> = -100 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	—	-100	nAdc
Emitter Cutoff Current (V <sub>EB</sub> = -3.0 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	—	-50	nAdc

**ON CHARACTERISTICS**

DC Current Gain (I <sub>C</sub> = -0.1 mA <sub>dc</sub> , V <sub>CE</sub> = -10 Vdc)	h <sub>FE</sub>	2N3634, 2N3636	40	—	—
		2N3635, 2N3637	80	—	—
(I <sub>C</sub> = -1.0 mA <sub>dc</sub> , V <sub>CE</sub> = -10 Vdc)		2N3634, 2N3636	45	—	—
		2N3635, 2N3637	90	—	—
(I <sub>C</sub> = -10 mA <sub>dc</sub> , V <sub>CE</sub> = -10 Vdc)(1)		2N3634, 2N3636	50	—	—
		2N3635, 2N3637	100	—	—
(I <sub>C</sub> = -50 mA <sub>dc</sub> , V <sub>CE</sub> = -10 Vdc)(1)		2N3634, 2N3636	50	150	—
		2N3635, 2N3637	100	300	—
(I <sub>C</sub> = -150 mA <sub>dc</sub> , V <sub>CE</sub> = -10 Vdc)(1)		2N3634, 2N3636	25	—	—
		2N3635, 2N3637	50	—	—
Collector-Emitter Saturation Voltage(1) (I <sub>C</sub> = -10 mA <sub>dc</sub> , I <sub>B</sub> = -1.0 mA <sub>dc</sub> ) (I <sub>C</sub> = -50 mA <sub>dc</sub> , I <sub>B</sub> = -5.0 mA <sub>dc</sub> )	V <sub>CE(sat)</sub>		—	-0.3 -0.5	Vdc
Base-Emitter Saturation Voltage(1) (I <sub>C</sub> = -10 mA <sub>dc</sub> , I <sub>B</sub> = -1.0 mA <sub>dc</sub> ) (I <sub>C</sub> = -50 mA <sub>dc</sub> , I <sub>B</sub> = -5.0 mA <sub>dc</sub> )	V <sub>BE(sat)</sub>		—	-0.8 -0.9	Vdc

**SMALL-SIGNAL CHARACTERISTICS**

Current-Gain — Bandwidth Product (V <sub>CE</sub> = -30 Vdc, I <sub>C</sub> = -30 mA <sub>dc</sub> , f = 100 MHz)	f <sub>T</sub>	2N3634, 2N3636	150	—	MHz
		2N3635, 2N3637	200	—	

**2N3634 thru 2N3637**

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

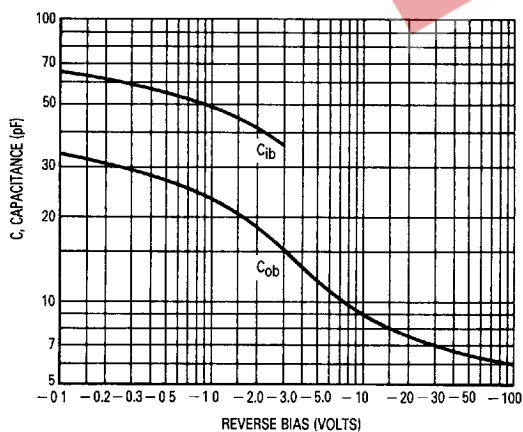
Characteristic	Symbol	Min	Max	Unit
Output Capacitance ( $V_{CB} = -20\text{ Vdc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )	$C_{obo}$	—	10	pF
Input Capacitance ( $V_{EB} = -1.0\text{ Vdc}$ , $I_C = 0$ , $f = 1.0\text{ MHz}$ )	$C_{ibo}$	—	75	pF
Input Impedance ( $I_C = -10\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ , $f = 1.0\text{ kHz}$ )	$h_{ie}$	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	180 320	—
Output Admittance ( $I_C = -10\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ , $f = 1.0\text{ kHz}$ )	$h_{oe}$	—	200	$\mu\text{mhos}$
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**

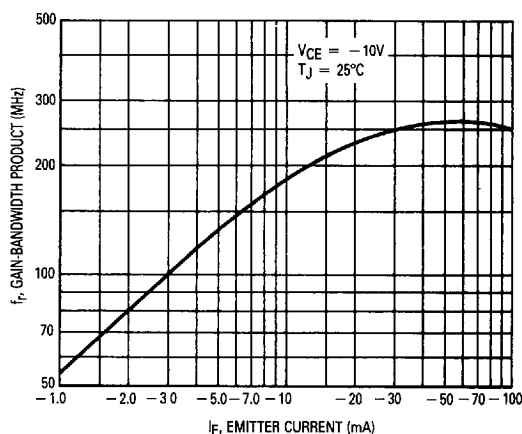
Turn-On Time	( $V_{CC} = -100\text{ Vdc}$ , $V_{BE} = 4.0\text{ Vdc}$ , $I_C = -50\text{ mAdc}$ , $I_{B1} = I_{B2} = -5.0\text{ mAdc}$ )	$t_{on}$	—	400	ns
Turn-Off Time		$t_{off}$	—	600	ns

(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

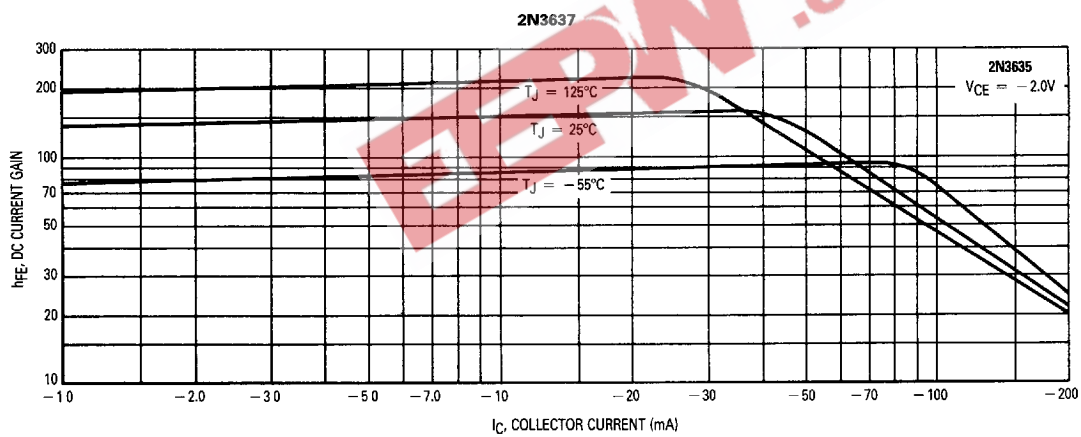
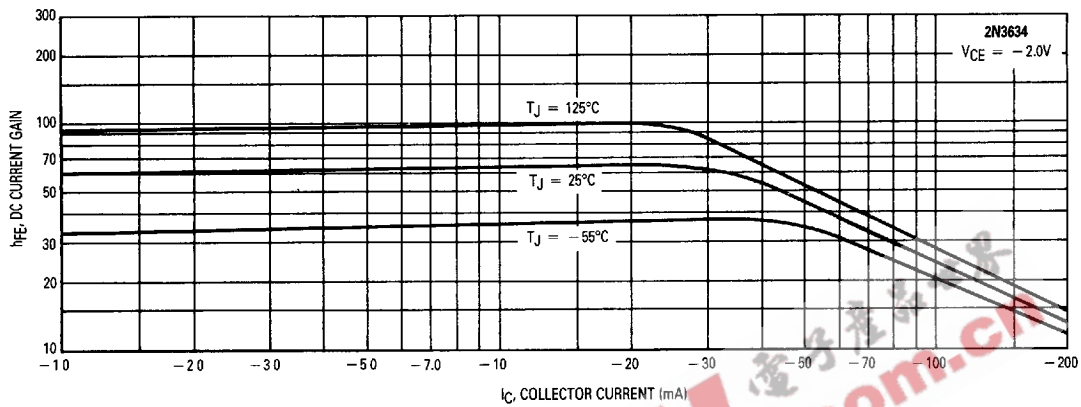
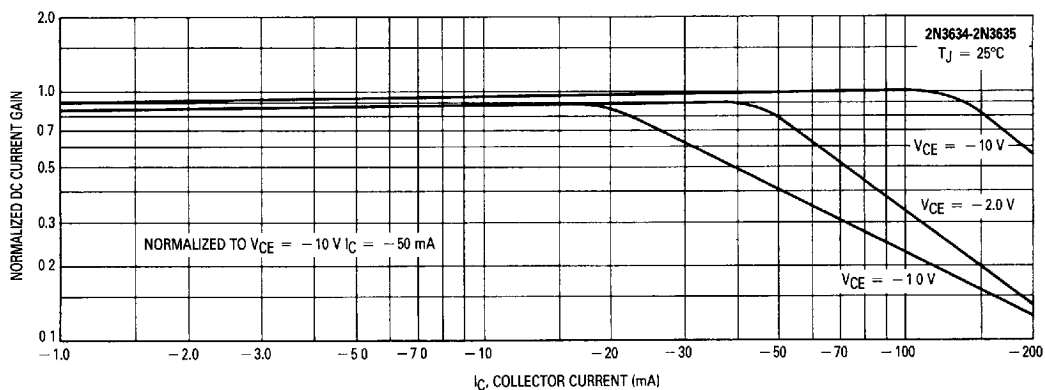


FIGURE 4 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE



2N3634 thru 2N3637

FIGURE 5 — CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE  
2N3636

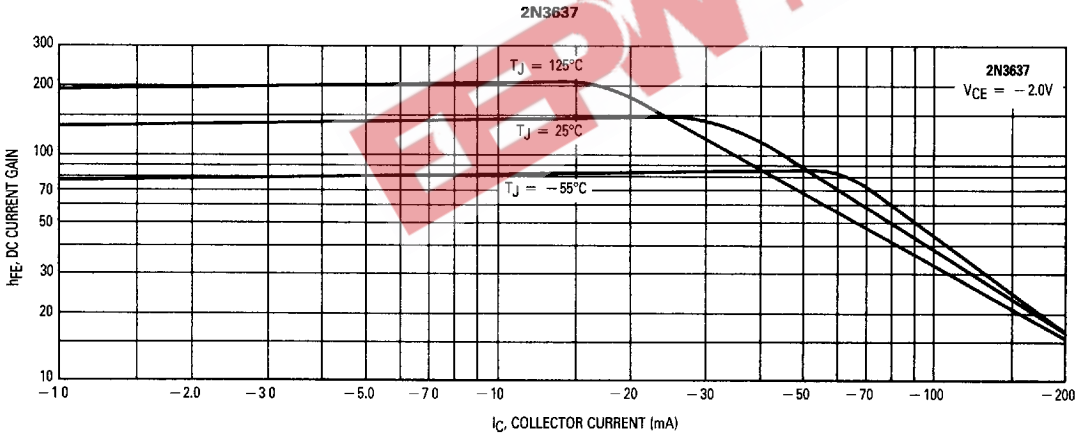
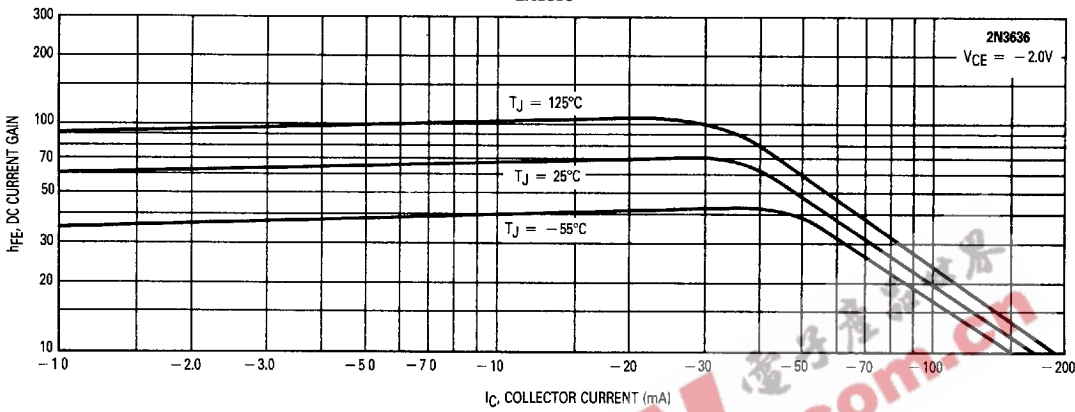
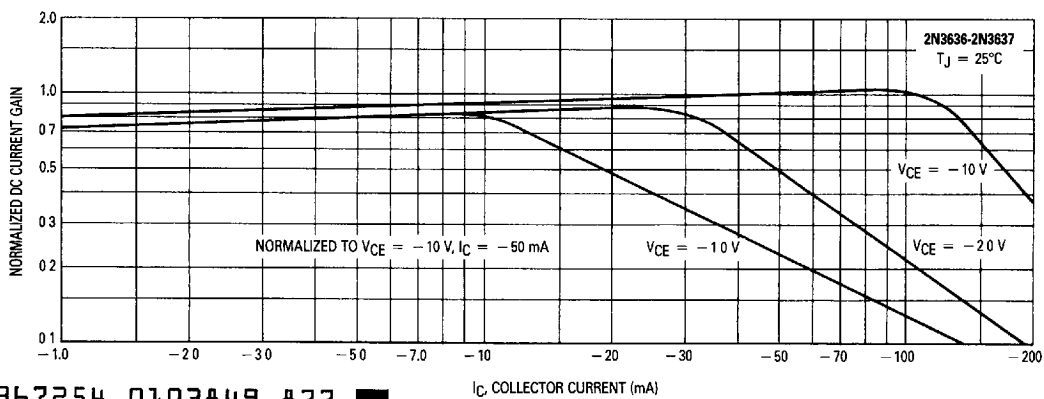


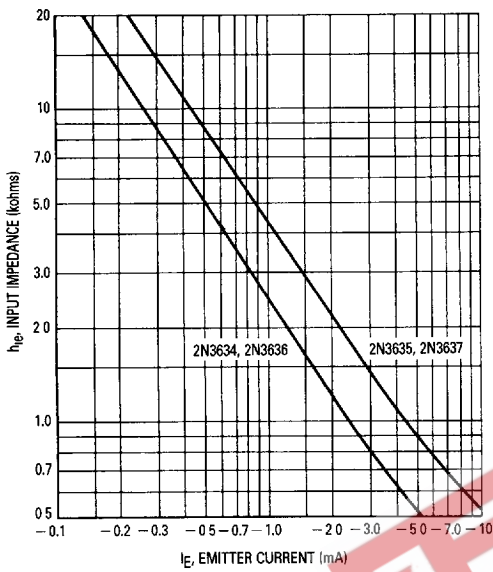
FIGURE 6 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE



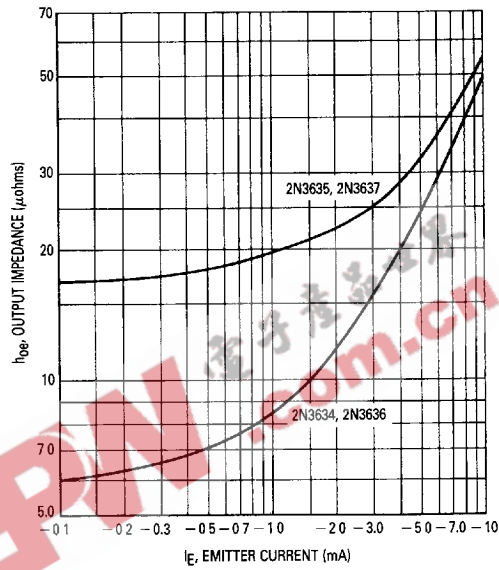
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**2N3634 thru 2N3637**

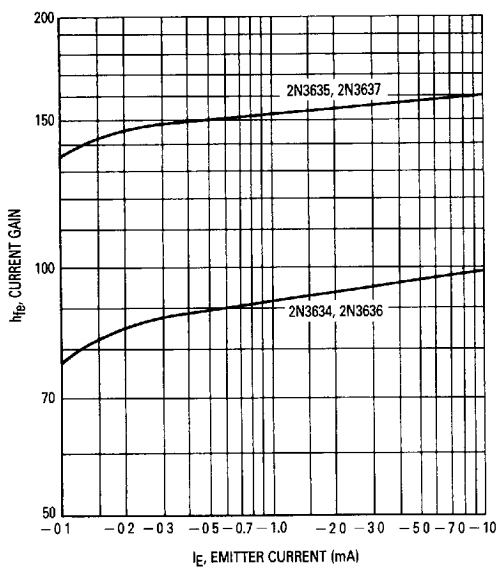
**FIGURE 7 — INPUT IMPEDANCE**



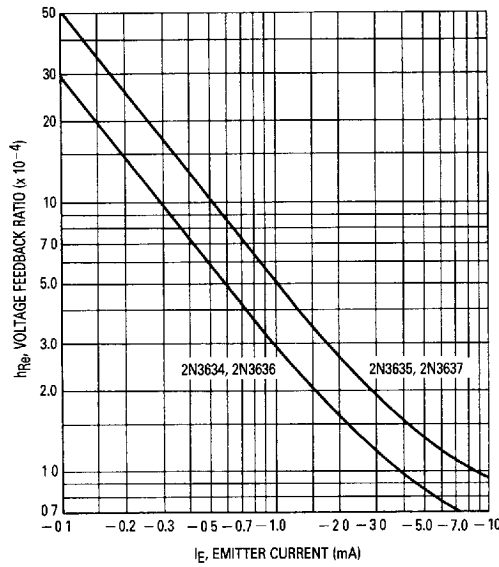
**FIGURE 8 — OUTPUT IMPEDANCE**



**FIGURE 9 — CURRENT GAIN**



**FIGURE 10 — VOLTAGE FEEDBACK RATIO**



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FIGURE 11 — SATURATION VOLTAGES

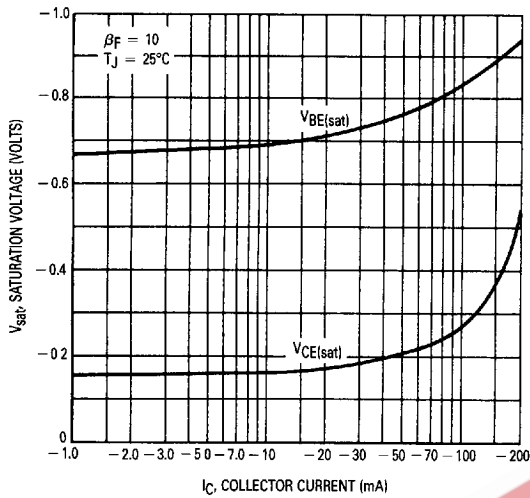


FIGURE 12 — TEMPERATURE COEFFICIENTS

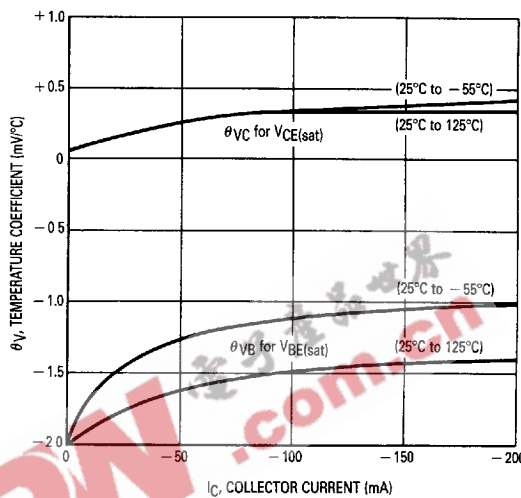
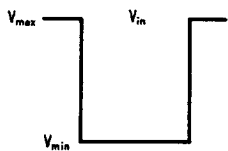


FIGURE 13 — SWITCHING TIME TEST CIRCUIT



P.W.  $\approx 20 \mu s$   
 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

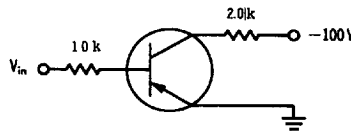


FIGURE 14 — TURN-ON TIME VARIATIONS WITH VOLTAGE

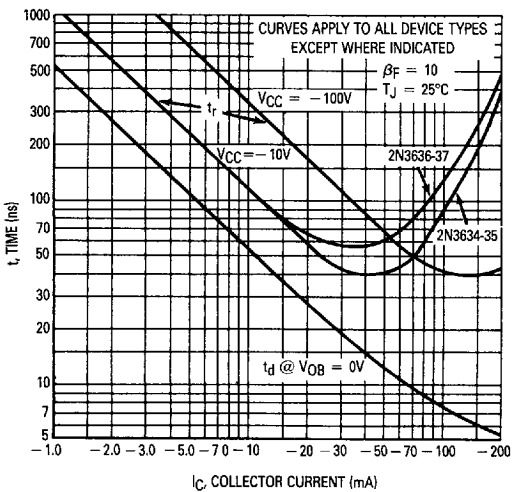
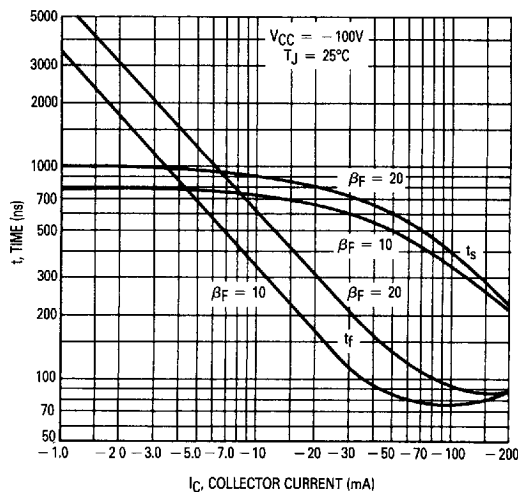


FIGURE 15 — TURN-OFF TIME VARIATIONS WITH CIRCUIT GAIN



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