

MAXIMUM RATINGS

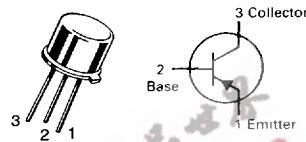
| Rating | Symbol | 2N3634 2N3635 | 2N3636 2N3637 | Unit |
|-----------------------------------------------------------------------|-----------------------------------|------------------|------------------|----------------|
| Collector-Emitter Voltage | V _{CEO} | -140 | -175 | Vdc |
| Collector-Base 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°C Derate above 25°C | P _D | 1.0 | 5.71 | Watt mW/°C |
| Total Device Dissipation @ T _C = 25°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 _{θJA} | 175 | °C/W |
| Thermal Resistance, Junction to Case | R _{θJC} | 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°C unless otherwise noted.)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|-------------------------------------------------------------------------------------------|----------------------|--------------|------|------|
| Collector-Emitter Breakdown Voltage(1) (I _C = -10 mAdc, I _B = 0) | V _{(BR)CEO} | -140 -175 | — | Vdc |
| Collector-Base Breakdown Voltage (I _C = -100 μAdc, I _E = 0) | V _{(BR)CBO} | -140 -175 | — | Vdc |
| Emitter-Base Breakdown Voltage (I _E = -10 μAdc, I _C = 0) | V _{(BR)EBO} | -5.0 | — | Vdc |
| Collector Cutoff Current (V _{CB} = -100 Vdc, I _E = 0) | I _{CBO} | — | -100 | nAdc |
| Emitter Cutoff Current (V _{EB} = -3.0 Vdc, I _C = 0) | I _{EBO} | — | -50 | nAdc |

ON CHARACTERISTICS

| | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------|-----------|--------------|-----|
| DC Current Gain (I _C = -0.1 mAdc, V _{CE} = -10 Vdc) | h _{FE} | 2N3634, 2N3636 2N3635, 2N3637 | 40 80 | — | — |
| (I _C = -1.0 mAdc, V _{CE} = -10 Vdc) | | 2N3634, 2N3636 2N3635, 2N3637 | 45 90 | — | — |
| (I _C = -10 mAdc, V _{CE} = -10 Vdc)(1) | | 2N3634, 2N3636 2N3635, 2N3637 | 50 100 | — | — |
| (I _C = -50 mAdc, V _{CE} = -10 Vdc)(1) | | 2N3634, 2N3636 2N3635, 2N3637 | 50 100 | 150 300 | — |
| (I _C = -150 mAdc, V _{CE} = -10 Vdc)(1) | | 2N3634, 2N3636 2N3635, 2N3637 | 25 50 | — | — |
| Collector-Emitter Saturation Voltage(1) (I _C = -10 mAdc, I _B = -1.0 mAdc) (I _C = -50 mAdc, I _B = -5.0 mAdc) | V _{CE(sat)} | — | — | -0.3 -0.5 | Vdc |
| Base-Emitter Saturation Voltage(1) (I _C = -10 mAdc, I _B = -1.0 mAdc) (I _C = -50 mAdc, I _B = -5.0 mAdc) | V _{BE(sat)} | — | -0.65 | -0.8 -0.9 | Vdc |

SMALL-SIGNAL CHARACTERISTICS

| | | | | | |
|---------------------------------------------------------------------------------------------------------|----------------|----------------------------------|------------|---|-----|
| Current-Gain — Bandwidth Product (V _{CE} = -30 Vdc, I _C = -30 mAdc, f = 100 MHz) | f _T | 2N3634, 2N3636 2N3635, 2N3637 | 150 200 | — | MHz |
|---------------------------------------------------------------------------------------------------------|----------------|----------------------------------|------------|---|-----|

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 | 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

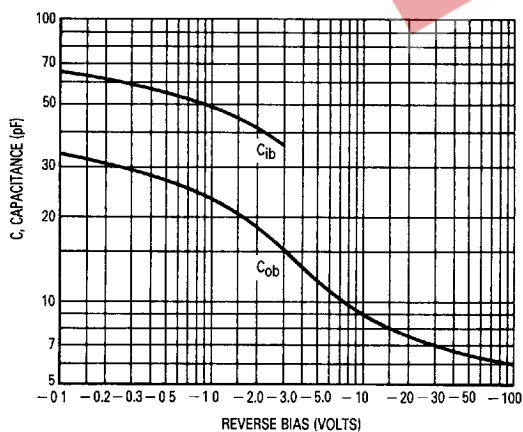
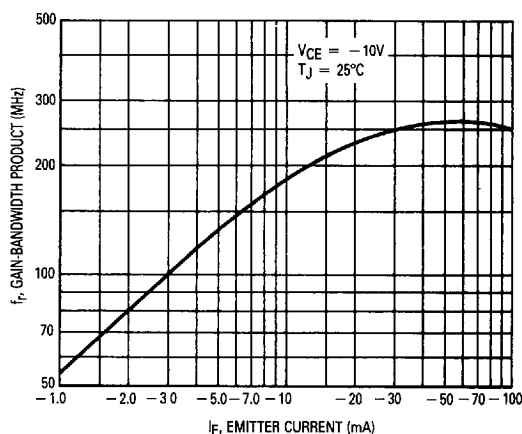


FIGURE 2 — GAIN-BANDWIDTH PRODUCT



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2N3634 thru 2N3637

FIGURE 3 — CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE
2N3634

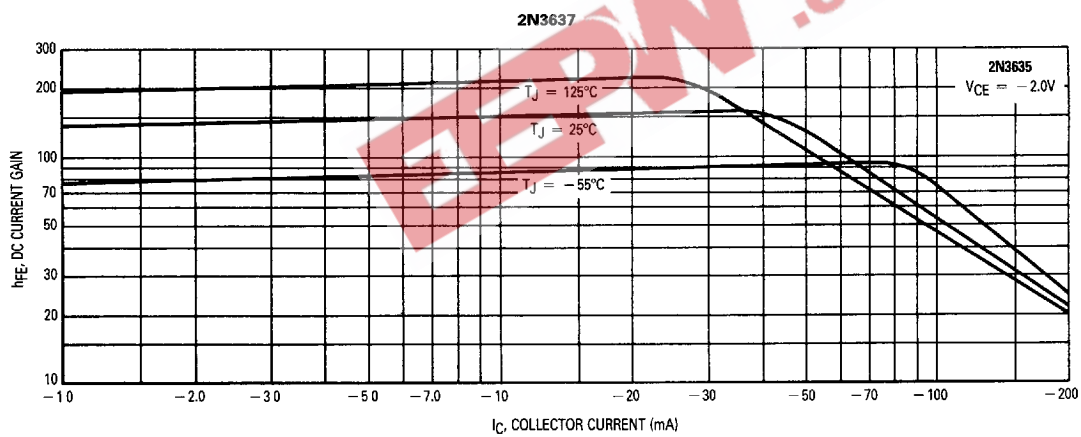
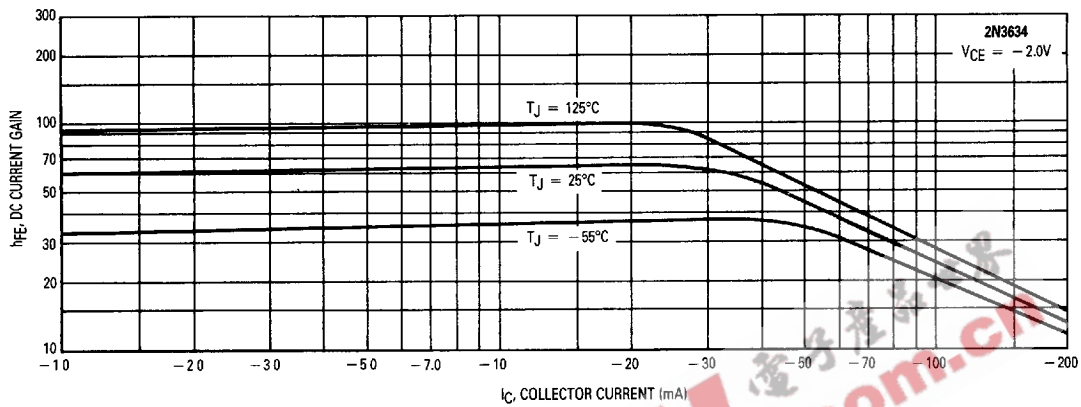
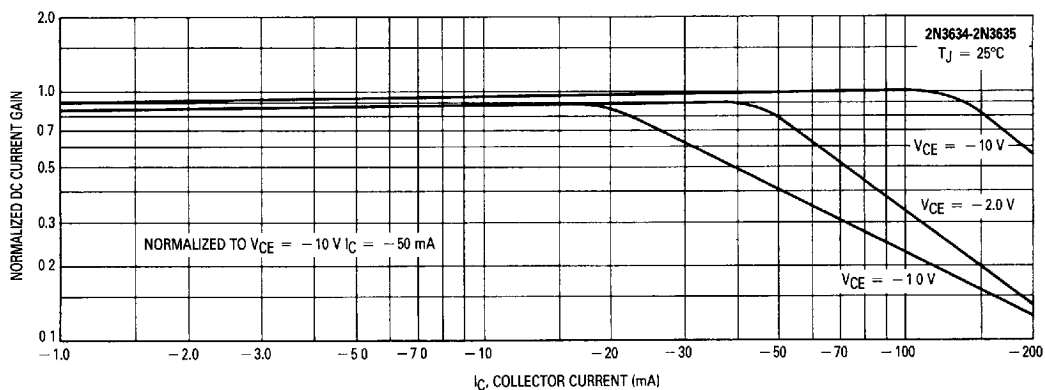


FIGURE 4 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE



2N3634 thru 2N3637

FIGURE 5 — CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE
2N3636

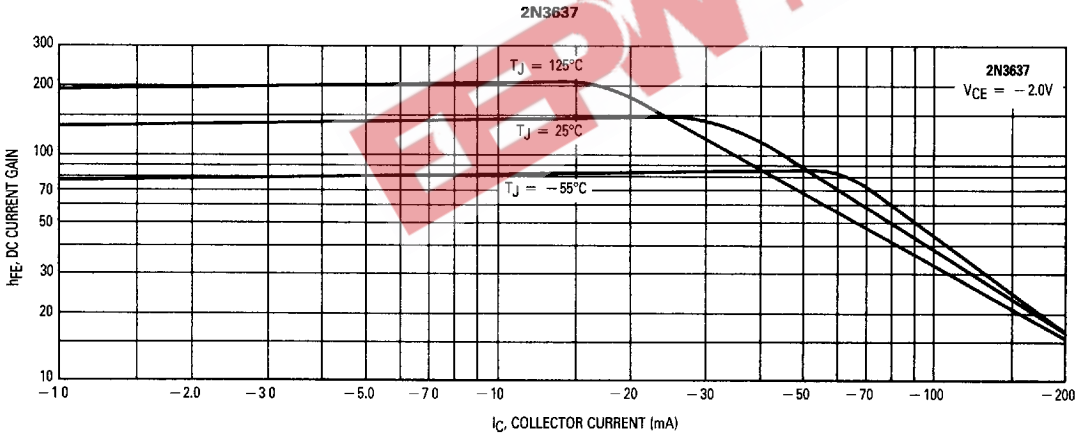
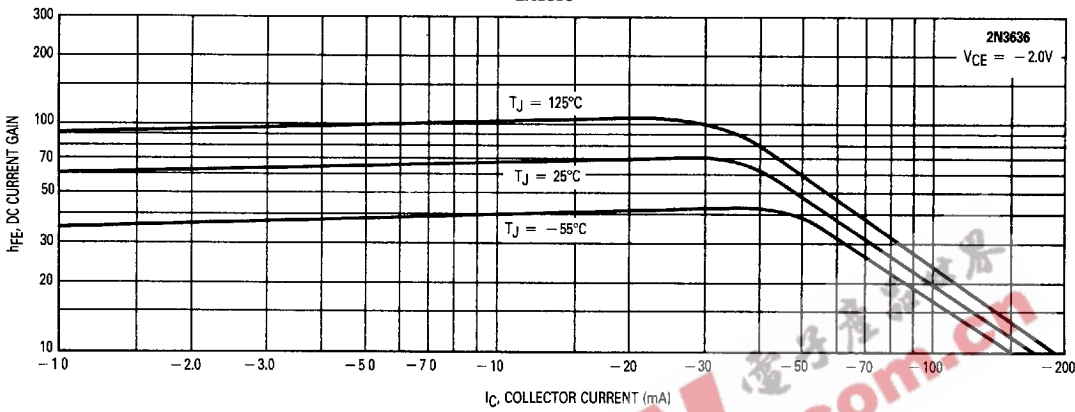
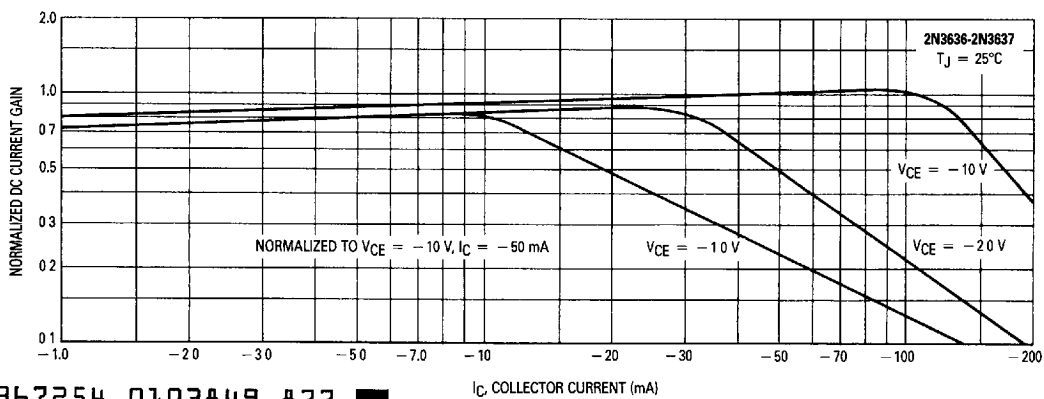


FIGURE 6 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE



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2N3634 thru 2N3637

FIGURE 7 — INPUT IMPEDANCE

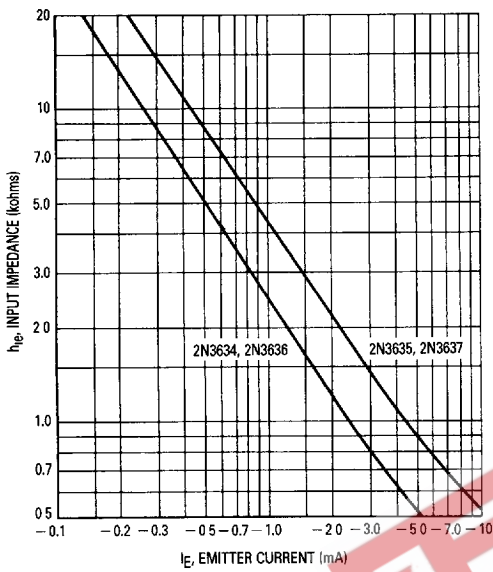


FIGURE 8 — OUTPUT IMPEDANCE

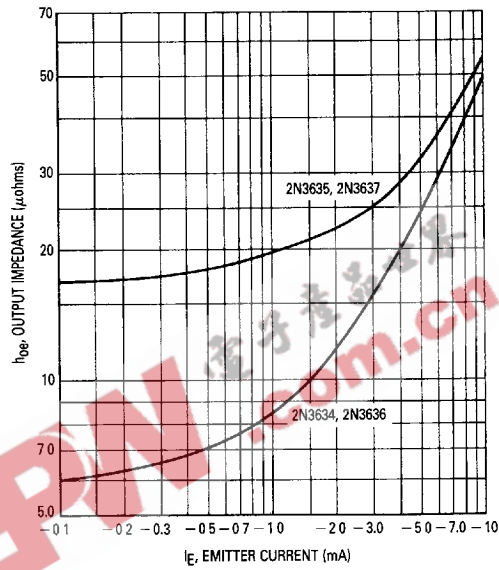


FIGURE 9 — CURRENT GAIN

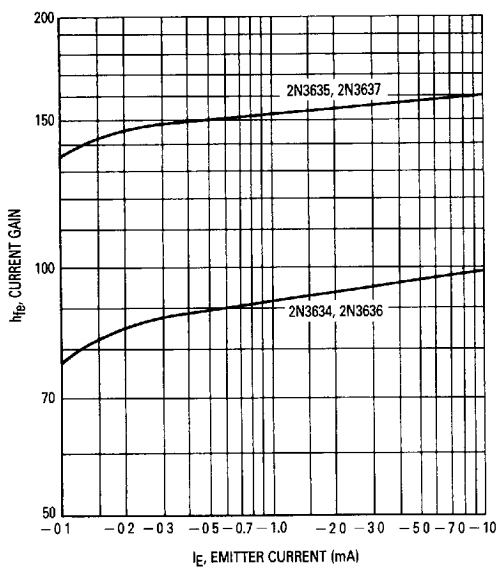
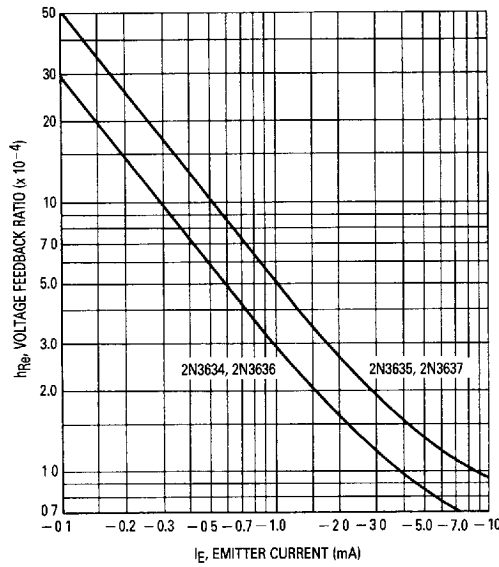


FIGURE 10 — VOLTAGE FEEDBACK RATIO



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FIGURE 11 — SATURATION VOLTAGES

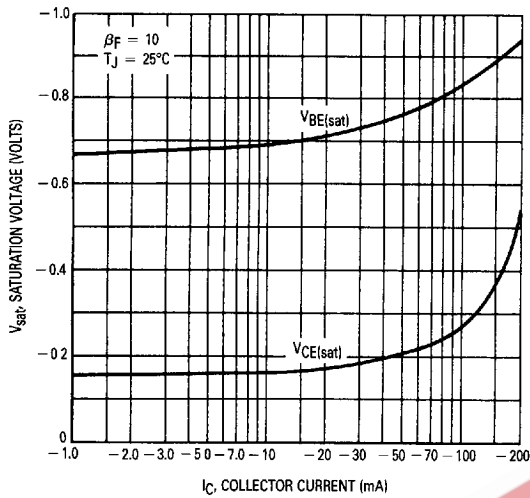


FIGURE 12 — TEMPERATURE COEFFICIENTS

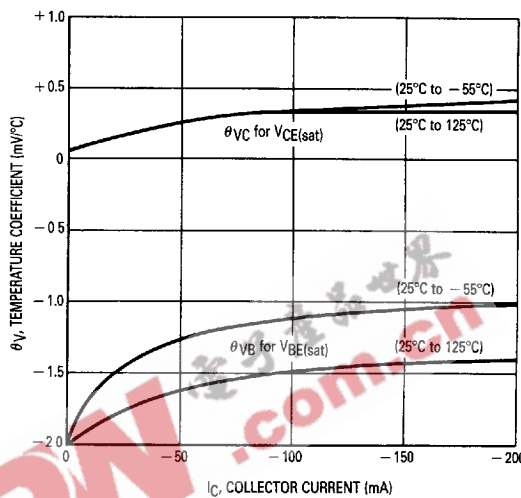
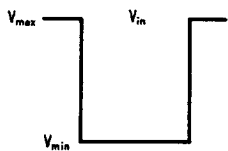


FIGURE 13 — SWITCHING TIME TEST CIRCUIT



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 |

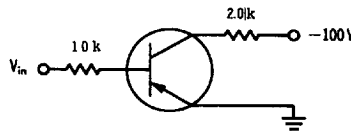


FIGURE 14 — TURN-ON TIME VARIATIONS WITH VOLTAGE

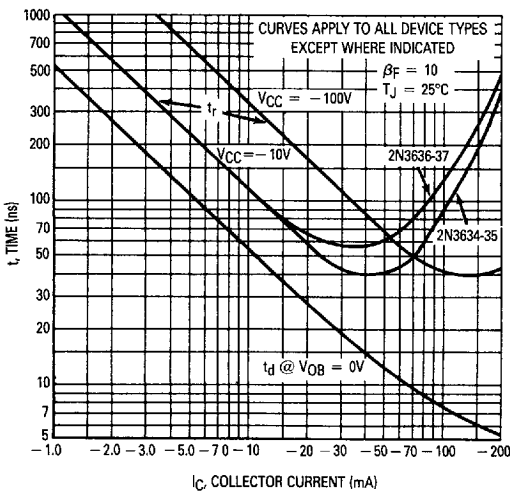
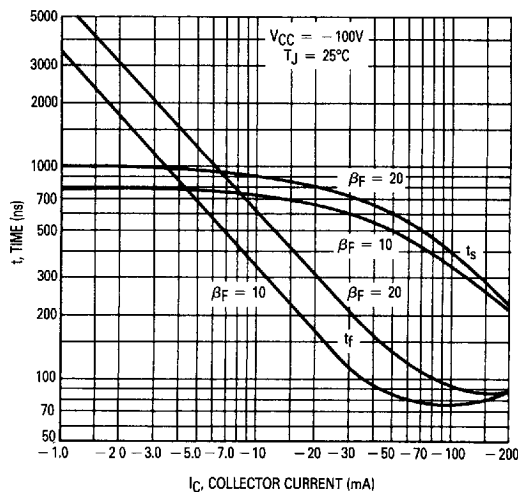


FIGURE 15 — TURN-OFF TIME VARIATIONS WITH CIRCUIT GAIN



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