

Boca Semiconductor Corp.

BSC

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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 @ $T_A = 25^\circ\text{C}$ 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

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) ($I_C = -10$ mAdc, $I_B = 0$)	$V_{(BR)CEO}$	-140 -175	—	Vdc
Collector-Base Breakdown Voltage ($I_C = -100$ μ Adc, $I_E = 0$)	$V_{(BR)CBO}$	-140 -175	—	Vdc
Emitter-Base Breakdown Voltage $I_E = -10$ μ Adc, $I_C = 0$)	$V_{(BR)EBO}$	-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}	40 80	—	—
($I_C = -1.0$ mAdc, $V_{CE} = -10$ Vdc)		45 90	—	
($I_C = -10$ mAdc, $V_{CE} = -10$ Vdc)(1)		50 100	—	
($I_C = -50$ mAdc, $V_{CE} = -10$ Vdc)(1)		50 100	150 300	
($I_C = -150$ mAdc, $V_{CE} = -10$ Vdc)(1)		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

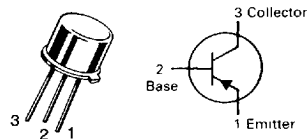
Current-Gain — Bandwidth Product ($V_{CE} = -30$ Vdc, $I_C = -30$ mAdc, $f = 100$ MHz)	f_T	150 200	—	MHz
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2N3634

thru

2N3637

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



GENERAL PURPOSE TRANSISTORS

PNP SILICON

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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

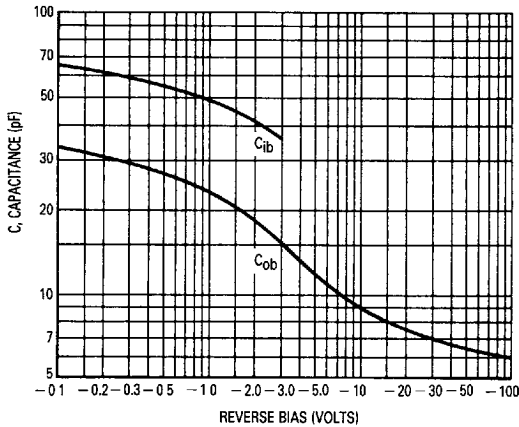
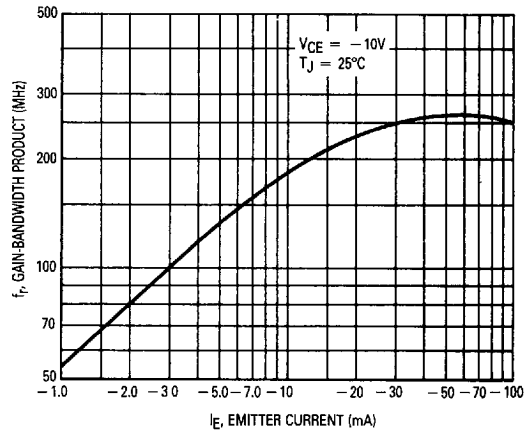
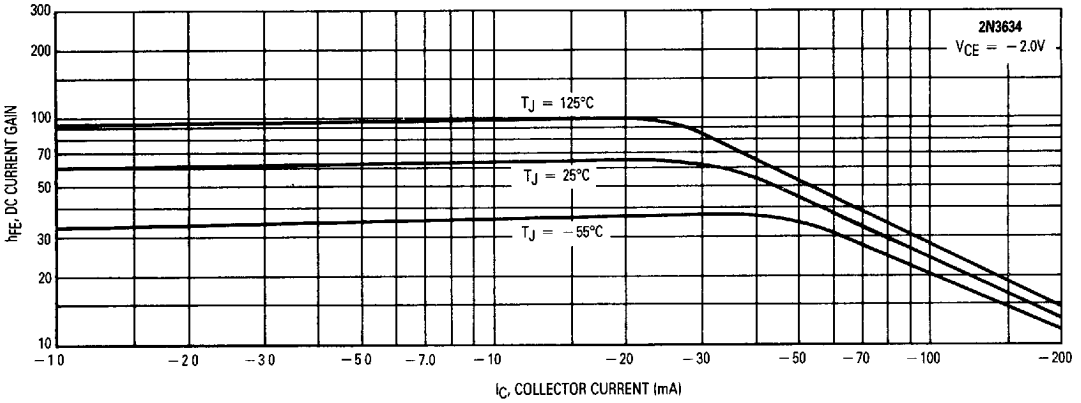


FIGURE 2 — GAIN-BANDWIDTH PRODUCT

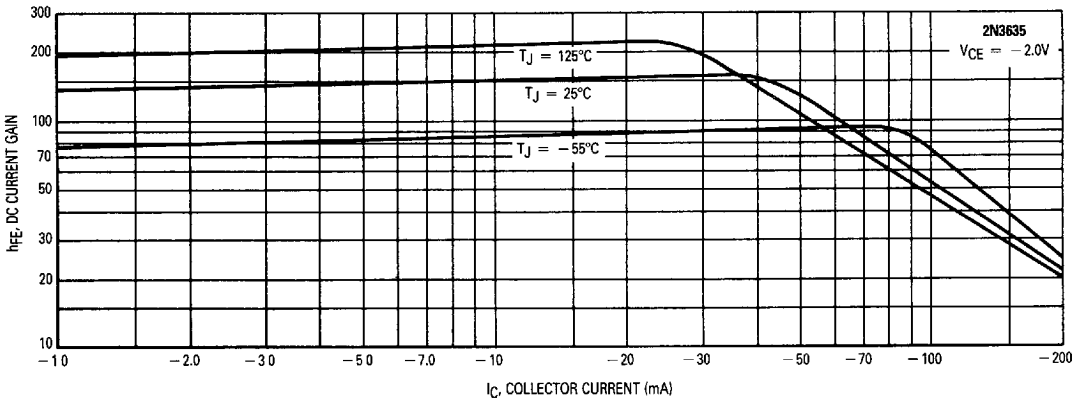


2N3634 thru 2N3637

FIGURE 3 — CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE
2N3634



2N3637



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FIGURE 4 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE

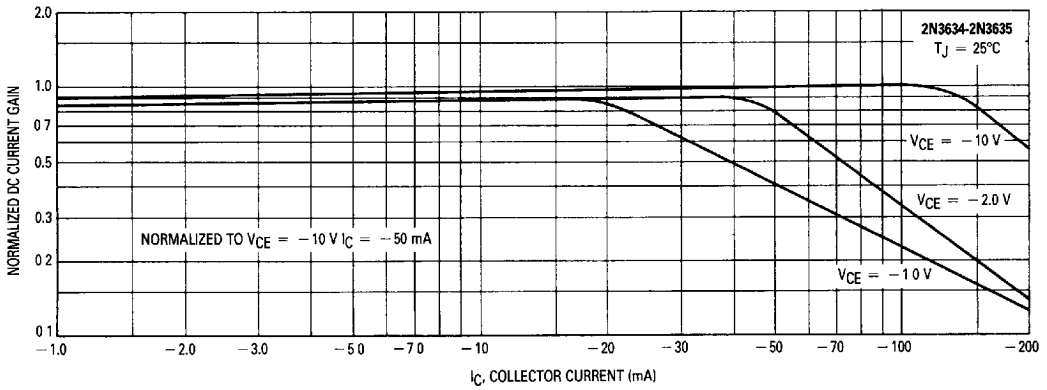
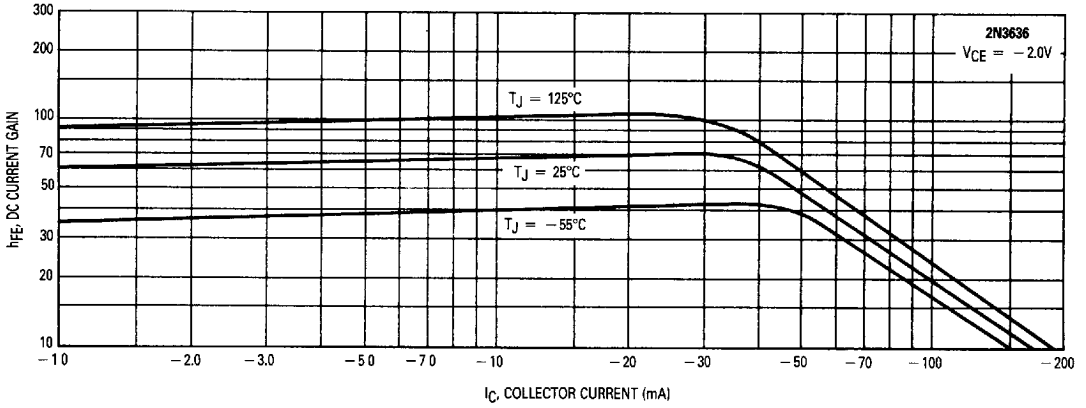
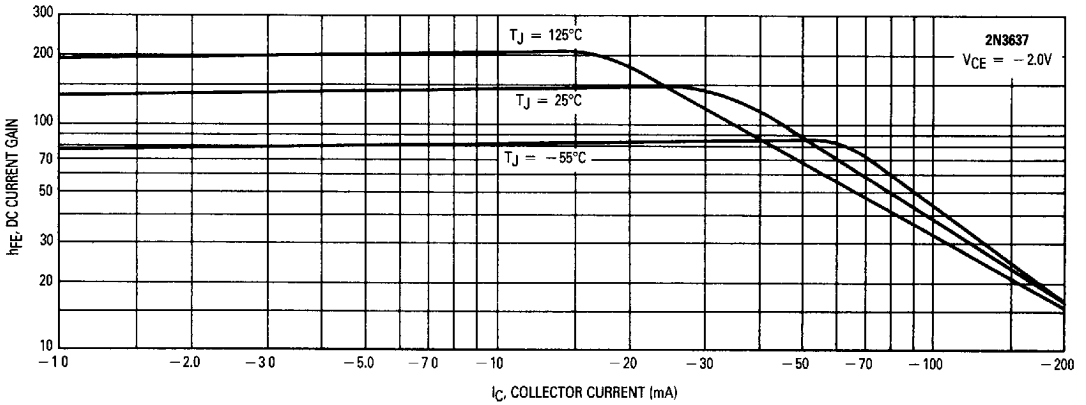


FIGURE 5 — CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE
2N3636

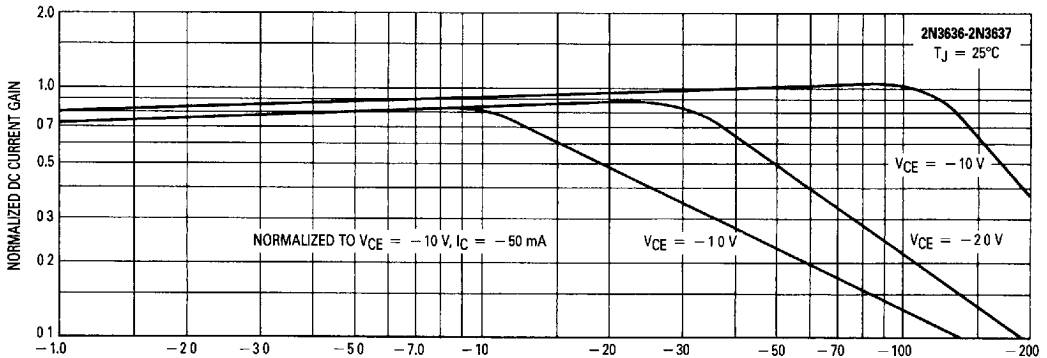


2N3637



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FIGURE 6 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR EMITTER VOLTAGE



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FIGURE 7 — INPUT IMPEDANCE

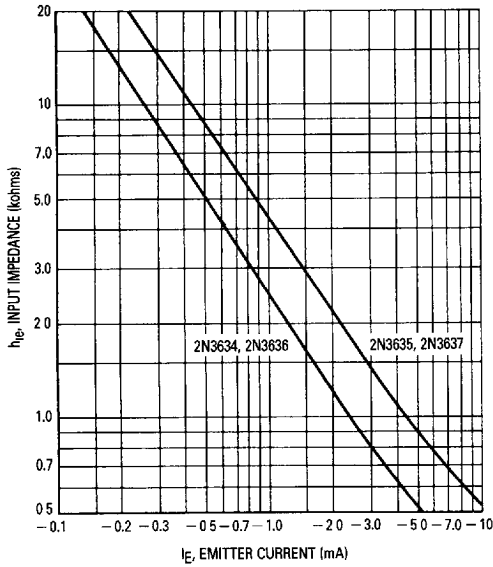
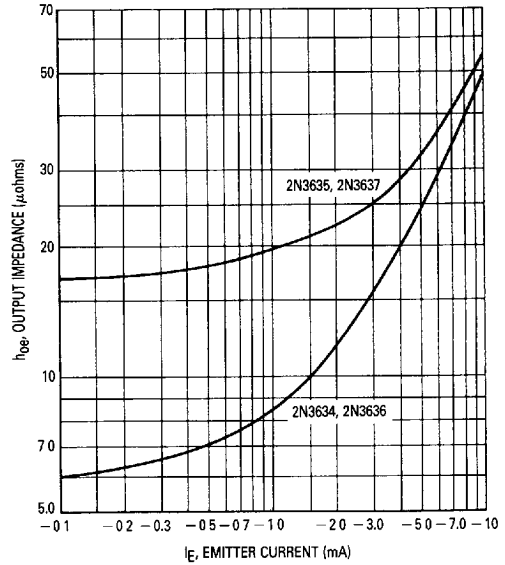


FIGURE 8 — OUTPUT IMPEDANCE



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FIGURE 9 — CURRENT GAIN

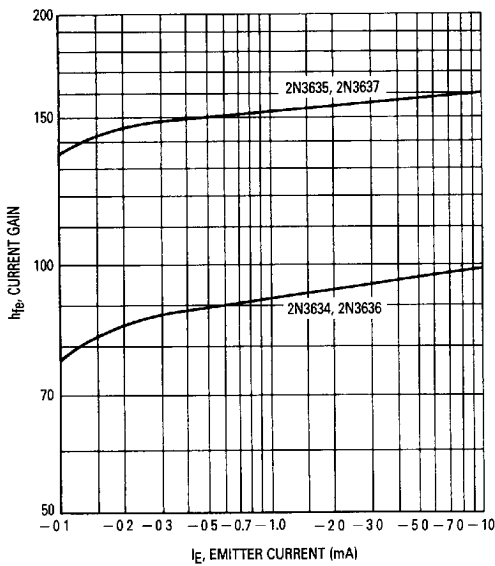


FIGURE 10 — VOLTAGE FEEDBACK RATIO

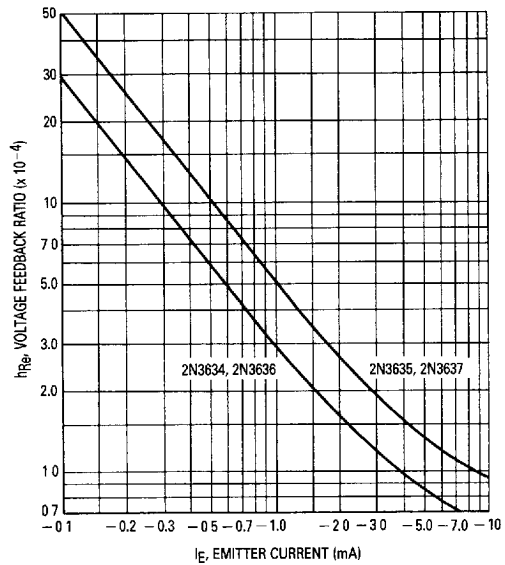


FIGURE 11 — SATURATION VOLTAGES

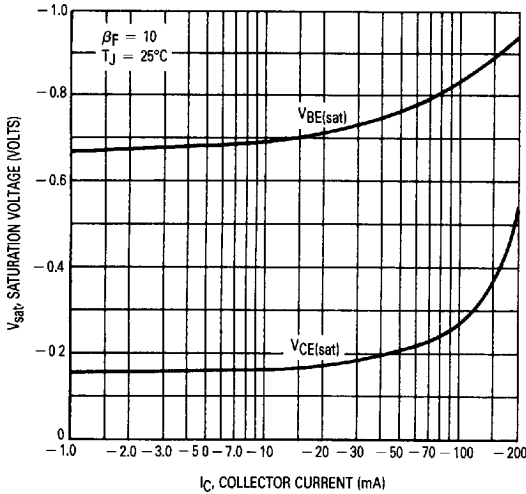


FIGURE 12 — TEMPERATURE COEFFICIENTS

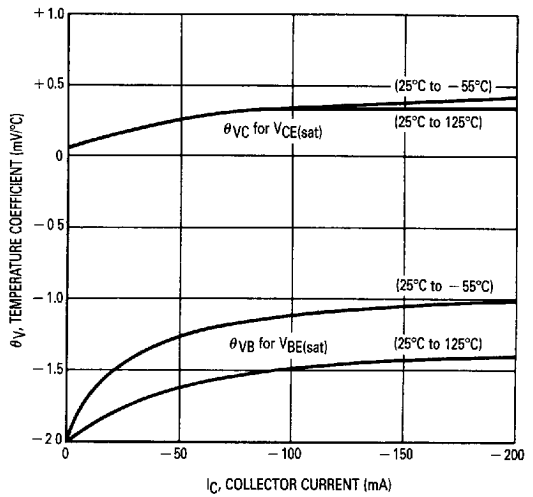
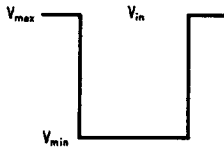
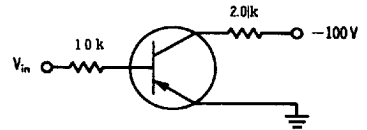


FIGURE 13 — SWITCHING TIME TEST CIRCUIT



P.W. $\approx 20 \mu\text{s}$
DUTY CYCLE $\leq 2\%$
RISE TIME $\leq 20 \text{ ns}$

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



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FIGURE 14 — TURN-ON TIME VARIATIONS WITH VOLTAGE

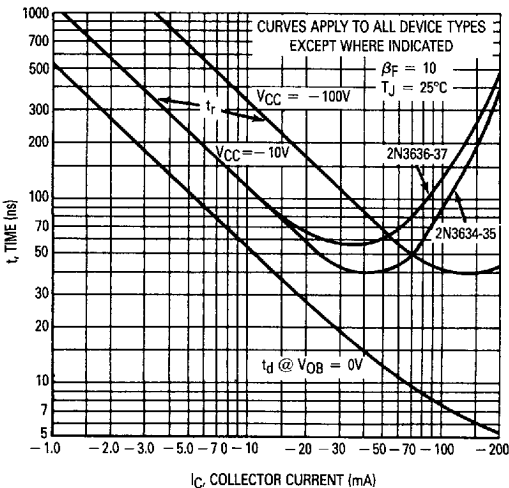


FIGURE 15 — TURN-OFF TIME VARIATIONS WITH CIRCUIT GAIN

