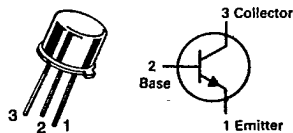


# Boca Semiconductor Corp.

**2N5320**  
**2N5321**

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



**SWITCHING TRANSISTORS**

**NPN SILICON**

T-35-17

## MAXIMUM RATINGS

Rating	Symbol	2N5320	2N5321	Unit
Collector-Emitter Voltage	$V_{CEO}$	75	50	Vdc
Collector-Base Voltage	$V_{CBO}$	100	75	Vdc
Emitter-Base Voltage	$V_{EBO}$	7.0	5.0	Vdc
Base Current	$I_B$	1.0		Adc
Collector Current — Continuous	$I_C$	2.0		Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	10	0.057	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 Case	$R_{\theta JC}$	17.5	°C/W

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage ( $I_C = 100 \text{ mA}$ , $I_B = 0$ )	$V_{(BR)CEO}$	75 50	— —	Vdc
Collector Cutoff Current ( $V_{CE} = 100 \text{ Vdc}$ , $V_{BE} = 1.5 \text{ Vdc}$ ) ( $V_{CE} = 70 \text{ Vdc}$ , $V_{BE} = 1.5 \text{ Vdc}$ , $T_C = 150^\circ\text{C}$ ) ( $V_{CE} = 75 \text{ Vdc}$ , $V_{BE} = 1.5 \text{ Vdc}$ ) ( $V_{CE} = 45 \text{ Vdc}$ , $V_{BE} = 1.5 \text{ Vdc}$ , $T_C = 150^\circ\text{C}$ )	$I_{CEX}$	— — — —	0.1 5.0 0.1 5.0	mA
Emitter Cutoff Current ( $V_{BE} = 7.0 \text{ Vdc}$ , $I_C = 0$ ) ( $V_{BE} = 5.0 \text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	—	0.1 0.1	mA
<b>ON CHARACTERISTICS(1)</b>				
DC Current Gain ( $I_C = 500 \text{ mA}$ , $V_{CE} = 4.0 \text{ Vdc}$ )  ( $I_C = 1.0 \text{ A}$ , $V_{CE} = 2.0 \text{ Vdc}$ )	$h_{FE}$	30 40 10	130 250 —	—
Collector-Emitter Saturation Voltage ( $I_C = 500 \text{ mA}$ , $I_B = 50 \text{ mA}$ )	$V_{CE(sat)}$	— —	0.5 0.8	Vdc
Base-Emitter On Voltage ( $I_C = 500 \text{ mA}$ , $V_{CE} = 4.0 \text{ Vdc}$ )	$V_{BE(on)}$	—	1.1 1.4	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
Small-Signal Current Gain ( $I_C = 50 \text{ mA}$ , $V_{CE} = 4.0 \text{ Vdc}$ , $f = 10 \text{ MHz}$ )	$h_{fe}$	5	—	—
<b>SWITCHING CHARACTERISTICS</b>				
Turn-On Time ( $V_{CC} = 30 \text{ Vdc}$ , $I_C = 500 \text{ mA}$ , $I_{B1} = 50 \text{ mA}$ )	$t_{on}$	—	80	ns
Turn-Off Time ( $V_{CC} = 30 \text{ Vdc}$ , $I_C = 500 \text{ mA}$ , $I_{B1} = I_{B2} = 50 \text{ mA}$ )	$t_{off}$	—	800	ns

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

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FIGURE 1 — TYPICAL INPUT CHARACTERISTICS

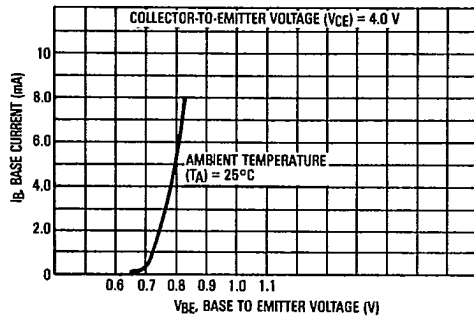


FIGURE 2 — TYPICAL TRANSFER CHARACTERISTICS

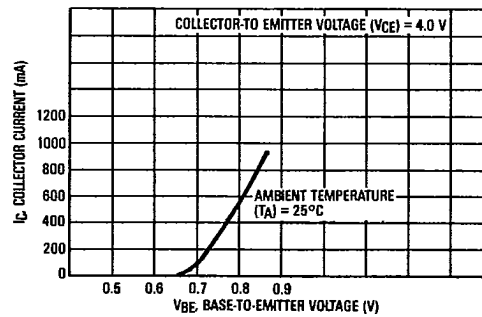


FIGURE 3 — CURRENT GAIN CHARACTERISTICS versus COLLECTOR-EMITTER VOLTAGE

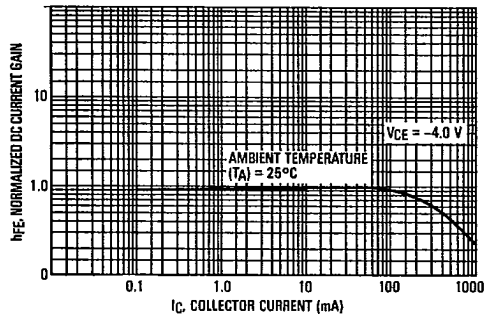


FIGURE 4 — MAXIMUM SAFE OPERATING AREAS (SOA)

