

Boca Semiconductor Corp.

MAXIMUM RATINGS

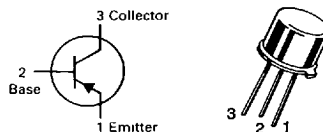
Rating	Symbol	2N4032	2N4033	Unit
Collector-Emitter Voltage	V_{CE0}	-60	-80	Vdc
Collector-Base Voltage	V_{CBO}	-60	-80	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	-5.0	Vdc
Collector Current — Continuous	I_C	2N4032	2N4033	Adc
		-1.0		
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	0.8		W
		4.56		
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	4.0		W
		22.8		
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	140	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	25	$^\circ\text{C}/\text{W}$

2N4032 2N4033

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



**GENERAL PURPOSE
TRANSISTORS**

PNP SILICON

Refer to 2N4405 for graphs.

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) ($I_C = -10 \text{ mA}$)	2N4032 2N4033	$V_{(BR)CEO}$	-60 -80	—	V
Collector-Base Breakdown Voltage ($I_C = -10 \mu\text{A}$)	2N4032 2N4033	$V_{(BR)CBO}$	-60 -80	—	V
Emitter-Base Breakdown Voltage ($I_E = -10 \mu\text{A}$)		$V_{(BR)EBO}$	-5.0	—	V
Collector Cutoff Current ($V_{CB} = -50 \text{ V}$) ($V_{CB} = -60 \text{ V}$) ($V_{CB} = -50 \text{ V}, T_A = 150^\circ\text{C}$) ($V_{CB} = -60 \text{ V}, T_A = 150^\circ\text{C}$)	2N4032	I_{CBO}	—	-50	nA
	2N4033		—	-50	μA
	2N4032		—	-50	μA
	2N4033		—	-50	μA
Emitter Cutoff Current ($V_{EB} = -5.0 \text{ V}$)		I_{EBO}	—	-10	μA

ON CHARACTERISTICS

DC Current Gain ($I_C = -100 \text{ mA}, V_{CE} = -5.0 \text{ V}, @ -55^\circ\text{C}$)(1)	2N4032,33	h_{FE}	40	—	—
($I_C = -100 \mu\text{A}, V_{CE} = -5.0 \text{ V}$)	2N4032,33		75	—	—
($I_C = -100 \text{ mA}, V_{CE} = -5.0 \text{ V}$)(1)	2N4032,33		100	300	—
($I_C = -500 \text{ mA}, V_{CE} = -5.0 \text{ V}$)(1)	2N4032,33		70	—	—
(1) ($I_C = -1.0 \text{ A}, V_{CE} = -5.0 \text{ V}$)F(1)	2N4032		40	—	—
	2N4033		25	—	—

2N4032 2N4033**ELECTRICAL CHARACTERISTICS** (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Collector-Emitter Saturation Voltage(1) ($I_C = -150\text{ mA}$, $I_B = -15\text{ mA}$) ($I_C = -500\text{ mA}$, $I_B = -50\text{ mA}$) ($I_C = -1.0\text{ A}$, $I_B = -100\text{ mA}$)	$V_{CE(sat)}$	—	-0.15 -0.50 -1.0	V
Base-Emitter Saturation Voltage(1) ($I_C = -150\text{ mA}$, $I_B = -15\text{ mA}$)	$V_{BE(sat)}$	—	-0.9	V
Base-Emitter On Voltage ($I_C = -1.0\text{ A}$, $V_{CE} = -1.0\text{ V}$) ($I_C = -500\text{ mA}$, $V_{CE} = -0.5\text{ V}$)(1)	$V_{BE(on)}$	—	-1.2 -1.1	V

SMALL-SIGNAL CHARACTERISTICS

Output Capacitance ($V_{CE} = -10\text{ V}$, $f = 1.0\text{ MHz}$)	C_{obo}	—	20	pF
Input Capacitance ($V_{EB} = -0.5\text{ V}$, $f = 1.0\text{ MHz}$)	C_{ibo}	—	110	pF
Small Signal Current Gain ($I_C = -50\text{ mA}$, $V_{CE} = -10\text{ V}$, $f = 100\text{ MHz}$)	h_{fe}	1.5	5.0	—

SWITCHING CHARACTERISTICS

Storage Time ($I_C = -500\text{ mA}$, $I_{B1} = I_{B2} = -50\text{ mA}$)	t_s	—	350	ns
Turn-On Time ($I_C = -500\text{ mA}$, $I_{B1} = -50\text{ mA}$)	t_{on}	—	100	ns
Fall Time ($I_C = -500\text{ mA}$, $I_{B1} = I_{B2} = -50\text{ mA}$)	t_f	—	50	ns

(1) Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.<http://www.bocasemi.com>