

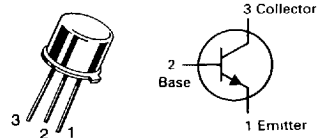
Boca Semiconductor Corp.

BSC

<http://www.bocasemi.com>

2N3053, A

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



GENERAL PURPOSE
TRANSISTORS
NPN SILICON

Refer to 2N3019 for graphs.

MAXIMUM RATINGS

Rating	Symbol	2N3053	2N3053A	Unit
Collector-Emitter Voltage(1)	V_{CEO}	40	60	Vdc
Collector-Base Voltage	V_{CBO}	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	700		mA dc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	5.0 28.6		Watts mW/ $^\circ\text{C}$
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 Case	$R_{\theta JC}$	35	$^\circ\text{C/W}$

(1) Applicable 0 to 100 mA (Pulsed):
Pulse Width $\leq 300 \mu\text{sec.}$, Duty Cycle $\leq 2.0\%$.
0 to 700 mA; Pulse Width $\leq 10 \mu\text{sec.}$, Duty Cycle $\leq 2.0\%$.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 100 \mu\text{A dc}$, $I_B = 0$)	$V_{(BR)CEO}$	40 60	— —	Vdc
Collector-Emitter Breakdown Voltage(2) ($I_C = 100 \text{ mA dc}$, $R_{BE} = 10 \text{ ohms}$)	$V_{(BR)CER}$	50 70	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{A dc}$, $I_E = 0$)	$V_{(BR)CBO}$	60 80	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{A dc}$, $I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 30 \text{ Vdc}$, $V_{EB(off)} = 1.5 \text{ Vdc}$) ($V_{CE} = 60 \text{ Vdc}$, $V_{EB(off)} = 1.5 \text{ Vdc}$)	I_{CEX}	—	0.25	$\mu\text{A dc}$
Emitter Cutoff Current ($V_{EB} = 4.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	0.25	$\mu\text{A dc}$
Base Cutoff Current ($V_{CE} = 60 \text{ Vdc}$, $V_{EB(off)} = 1.5 \text{ Vdc}$)	I_{BL}	—	0.25	$\mu\text{A dc}$

ON CHARACTERISTICS(2)

DC Current Gain ($I_C = 150 \text{ mA dc}$, $V_{CE} = 2.5 \text{ Vdc}$) ($I_C = 150 \text{ mA dc}$, $V_{CE} = 10 \text{ Vdc}$)	h_{FE}	25 50	— 250	—
Collector-Emitter Saturation Voltage ($I_C = 150 \text{ mA dc}$, $I_B = 15 \text{ mA dc}$)	$V_{CE(sat)}$	— —	1.4 0.3	Vdc
Base-Emitter Saturation Voltage ($I_C = 150 \text{ mA dc}$, $I_B = 15 \text{ mA dc}$)	$V_{BE(sat)}$	— 0.6	1.7 1.0	Vdc
Base-Emitter On Voltage ($I_C = 150 \text{ mA dc}$, $V_{CE} = 2.5 \text{ Vdc}$)	$V_{BE(on)}$	— —	1.7 1.0	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 50 \text{ mA dc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	100	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{obo}	—	15	pF
Input Capacitance ($V_{EB} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{ibo}	—	80	pF