

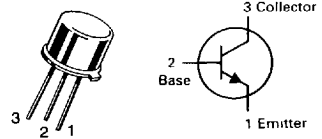
Boca Semiconductor Corp.

BSC

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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		mAdc
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
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_B = 0$)	2N3053 2N3053A	$V_{(BR)CEO}$	40 60	— —	Vdc
Collector-Emitter Breakdown Voltage(2) ($I_C = 100 \text{mAdc}$, $R_{BE} = 10 \text{ohms}$)	2N3053 2N3053A	$V_{(BR)CER}$	50 70	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$)	2N3053 2N3053A	$V_{(BR)CBO}$	60 80	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}$, $I_C = 0$)		$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 30 \text{Vdc}$, $V_{EB(\text{off})} = 1.5 \text{Vdc}$) ($V_{CE} = 60 \text{Vdc}$, $V_{EB(\text{off})} = 1.5 \text{Vdc}$)	2N3053 2N3053A	I_{CEX}	—	0.25	μAdc
Emitter Cutoff Current ($V_{EB} = 4.0 \text{Vdc}$, $I_C = 0$)	2N3053	I_{EBO}	—	0.25	μAdc
Base Cutoff Current ($V_{CE} = 60 \text{Vdc}$, $V_{EB(\text{off})} = 1.5 \text{Vdc}$)	2N3053 2N3053A	I_{BL}	—	0.25	μAdc

ON CHARACTERISTICS(2)

DC Current Gain ($I_C = 150 \text{mAdc}$, $V_{CE} = 2.5 \text{Vdc}$) ($I_C = 150 \text{mAdc}$, $V_{CE} = 10 \text{Vdc}$)		h_{FE}	25 50	— 250	—
Collector-Emitter Saturation Voltage ($I_C = 150 \text{mAdc}$, $I_B = 15 \text{mAdc}$)	2N3053 2N3053A	$V_{CE(\text{sat})}$	— —	1.4 0.3	Vdc
Base-Emitter Saturation Voltage ($I_C = 150 \text{mAdc}$, $I_B = 15 \text{mAdc}$)	2N3053 2N3053A	$V_{BE(\text{sat})}$	— 0.6	1.7 1.0	Vdc
Base-Emitter On Voltage ($I_C = 150 \text{mAdc}$, $V_{CE} = 2.5 \text{Vdc}$)	2N3053 2N3053A	$V_{BE(\text{on})}$	— —	1.7 1.0	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 50 \text{mAdc}$, $V_{CE} = 10 \text{Vdc}$, $f = 100 \text{MHz}$)		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