

2N3053  
2N3053A

SILICON  
NPN TRANSISTORS



TO-39 CASE



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N3053, 2N3053A types are epitaxial planar NPN silicon transistors designed for general purpose applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$ )

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Continuous Collector Current  
Power Dissipation ( $T_C=25^\circ\text{C}$ )  
Operating and Storage Junction Temperature  
Thermal Resistance

SYMBOL	2N3053	2N3053A	UNITS
$V_{CBO}$	60	80	V
$V_{CEO}$	40	60	V
$V_{EBO}$		5.0	V
$I_C$		0.7	A
$P_D$		5.0	W
$T_J, T_{stg}$	-65 to +200		$^\circ\text{C}$
$\theta_{JC}$	35		$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	2N3053		2N3053A		UNITS
		MIN	MAX	MIN	MAX	
$I_{CEV}$	$V_{CE}=30V, V_{EB}=1.5V$	-	250	-	-	nA
$I_{CEV}$	$V_{CE}=60V, V_{EB}=1.5V$	-	-	-	250	nA
$I_{EBO}$	$V_{EB}=4.0V$	-	250	-	250	nA
$BV_{CBO}$	$I_C=100\mu\text{A}$	60	-	80	-	V
$BV_{CER}$	$I_C=100\text{mA}, R_{BE}=10\Omega$ (Note 1)	50	-	70	-	V
$BV_{CEO}$	$I_C=100\text{mA}$ (Note 1)	40	-	60	-	V
$BV_{EBO}$	$I_E=100\mu\text{A}$	5.0	-	5.0	-	V
$V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	1.4	-	0.3	V
$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	1.7	0.6	1.0	V
$V_{BE(ON)}$	$V_{CE}=2.5V, I_C=150\text{mA}$	-	1.7	-	1.0	V
$h_{FE}$	$V_{CE}=2.5V, I_C=150\text{mA}$	25	-	25	-	
$h_{FE}$	$V_{CE}=10V, I_C=150\text{mA}$	50	250	50	250	
$f_T$	$V_{CE}=10V, I_C=50\text{mA}, f=100\text{MHz}$	100	-	100	-	MHz
$C_{ob}$	$V_{CB}=10V, I_E=0, f=1.0\text{MHz}$	-	15	-	15	pF
$C_{ib}$	$V_{BE}=0.5V, I_C=0, f=1.0\text{MHz}$	-	80	-	80	pF

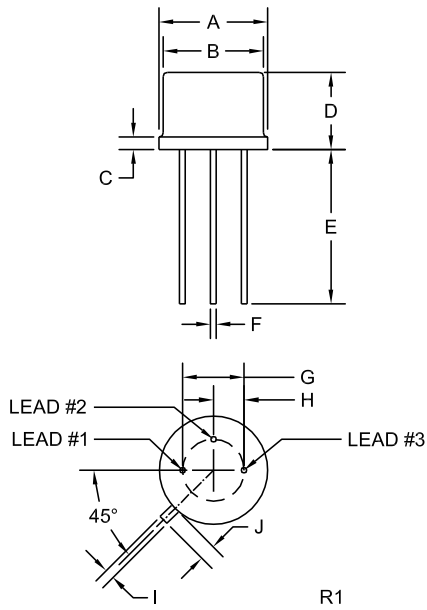
Notes: (1) Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

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TO-39 CASE - MECHANICAL OUTLINE



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.335	0.370	8.51	9.40
B (DIA)	0.315	0.335	8.00	8.51
C	-	0.040	-	1.02
D	0.240	0.260	6.10	6.60
E	0.500	-	12.70	-
F (DIA)	0.016	0.021	0.41	0.53
G (DIA)	0.200		5.08	
H	0.100		2.54	
I	0.028	0.034	0.71	0.86
J	0.029	0.045	0.74	1.14

TO-39 (REV: R1)

LEAD CODE:

- 1) Emitter
- 2) Base
- 3) Collector

MARKING: FULL PART NUMBER

R2 (13-December 2013)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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