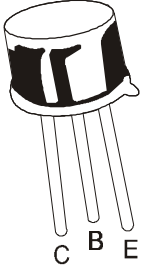


## NPN SILICON PLANAR TRANSISTOR

2N3053 / 2N3053A



TO-39  
Metal Can Package

### General Purpose Transistors

#### ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	2N3053	2N3053A	UNIT
Collector Emitter Voltage	$V_{CEO}$	40	60	V
Collector Base Voltage	$V_{CBO}$	60	80	V
Emitter Base Voltage	$V_{EBO}$	5.0		V
Collector Current Continuous	$I_C$	0.7		A
Power Dissipation at $T_c=25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	5.0	28.6	W mW/°C
Operating and Storage Junction Temperature Range	$T_j, T_{stg}$	- 65 to +200		°C
Lead Temperature 1/16", $\pm$ 1/32" from Case for 10s	$T_L$	+235		°C

#### THERMAL RESISTANCE

Junction to Case	$R_{th(j-c)}$	35	°C/W
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#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless specified otherwise )

DESCRIPTION	SYMBOL	TEST CONDITION	2N3053	2N3053A	UNIT
Collector Emitter Voltage	$V_{CEO}$	$I_C=1\text{mA}, I_B=0$	>40	>60	V
Collector Emitter Voltage	$V_{CER}$	$I_C=1\text{mA}, R_{BE}=10\Omega$	>50	>70	V
Collector Base Voltage	$V_{CBO}$	$I_C=100\mu\text{A}, I_E=0$	>60	>80	V
Emitter Base Voltage	$V_{EBO}$	$I_E=100\mu\text{A}, I_C=0$	>5.0		V
Collector Cut Off Current	$I_{CEX}$	$V_{CE}=30\text{V}, I_E=0, V_{BE}(\text{off})=1.5\text{V}$	<250		nA
		$V_{CE}=60\text{V}, I_E=0, V_{BE}(\text{off})=1.5\text{V}$		<250	nA
Emitter Cut Off Current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$		<250	nA
Base Cut Off Current	$I_{BL}$	$V_{CE}=60\text{V}, I_E=0, V_{BE}(\text{off})=1.5\text{V}$		<250	nA
DC Current Gain	$h_{FE}$	$I_C=150\text{mA}, V_{CE}=2.5\text{V}$	>25		
		$I_C=150\text{mA}, V_{CE}=10\text{V}$	50 - 250		
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	<1.4	<0.3	V
Base Emitter Saturation Voltage	$*V_{BE(sat)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	<1.7	0.6 - 1.0	V
Base Emitter On Voltage	$*V_{BE(on)}$	$I_C=150\text{mA}, V_{CE}=2.5\text{V}$	<1.7	<1.0	V

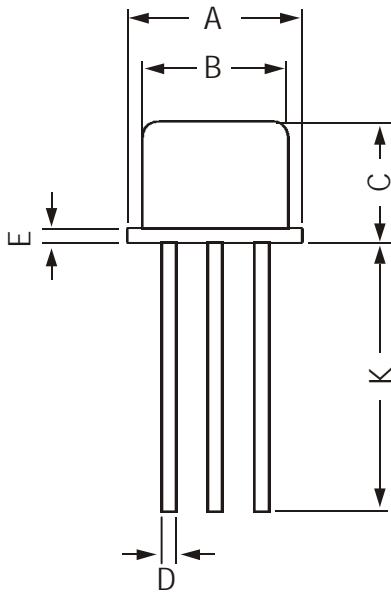
#### SMALL SIGNAL CHARACTERISTICS

Current Gain Bandwidth Product	$f_T$	$I_C=50\text{mA}, V_{CE}=10\text{V}, f=20\text{MHz}$	>100	MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=140\text{KHz}$	<15	pF
Input Capacitance	$C_{ib}$	$V_{EB}=0.5\text{V}, I_C=0, f=140\text{KHz}$	<80	pF

\*Pulse Test: Pulse Width  $\leq$  300ms, Duty Cycle  $\leq$  2%

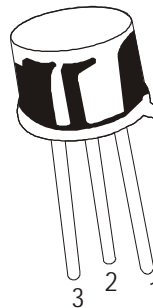
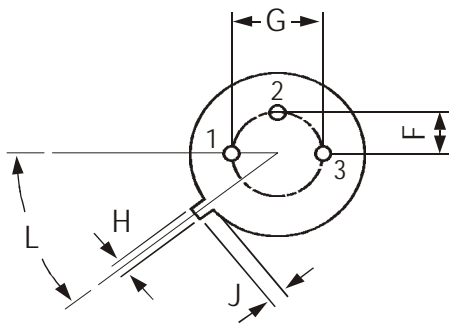
2N3053\_A Rev\_1 040406E

TO-39 Metal Can Package



All dimensions are in mm

DIM	MIN	MAX
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	0.53
E	—	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.70	—
L	42 DEG	48 DEG



PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-39	500 pcs/polybag	540 gm/500 pcs	3" x 7.5" x 7.5"	20K	17" x 15" x 13.5"	32K	40 kgs

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

### **Disclaimer**

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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