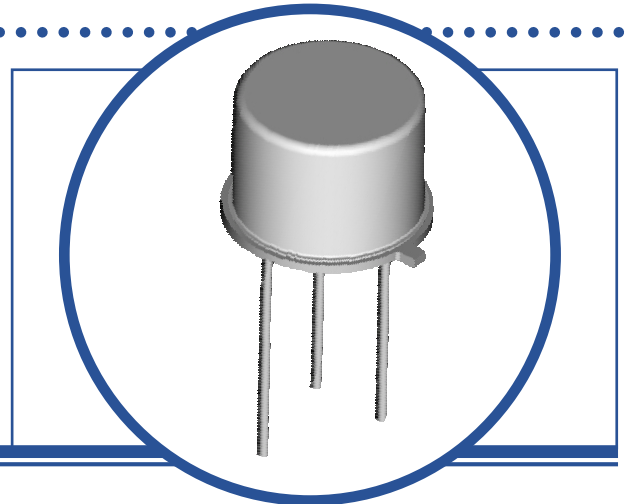


# MEDIUM POWER SILICON NPN TRANSISTOR

## 2N3053

- Low Leakage Current,  
High Transition Frequency (FT) = 100MHz Typ.
- Hermetic TO-39 Metal Package.
- Ideally Suited For Medium Current Switching And  
Amplifier Applications.
- Screening Options Available



### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25°C unless otherwise stated)

V <sub>CBO</sub>	Collector – Base Voltage		60V
V <sub>CEO</sub>	Collector – Emitter Voltage		40V
V <sub>CER</sub>	Collector – Emitter Voltage	R <sub>BE</sub> = 10Ω	50V
V <sub>CEX</sub>	Collector – Emitter Voltage	V <sub>BE</sub> = -1.5V	60V
V <sub>EBO</sub>	Emitter – Base Voltage		5V
I <sub>C</sub>	Continuous Collector Current		0.7A
P <sub>D</sub>	Total Power Dissipation at	T <sub>A</sub> = 25°C	1.0W
		Derate Above 25°C	5.71mW/°C
P <sub>D</sub>	Total Power Dissipation at	T <sub>C</sub> = 25°C	5W
		Derate Above 25°C	28.6mW/°C
T <sub>J</sub>	Junction Temperature Range		-65 to +200°C
T <sub>stg</sub>	Storage Temperature Range		-65 to +200°C

### THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
R <sub>θJA</sub>	Thermal Resistance, Junction To Ambient	175	°C/W
R <sub>θJC</sub>	Thermal Resistance, Junction To Case	35	°C/W

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

# MEDIUM POWER SILICON NPN TRANSISTOR 2N3053

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 100\mu\text{A}$ $I_B = 0$	40			V
$V_{(BR)CER}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $R_{BE} = 10\Omega$	50			
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\mu\text{A}$ $I_E = 0$	60			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\mu\text{A}$ $I_C = 0$	5			
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 30\text{V}$ $I_E = 0$			0.25	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 4\text{V}$ $I_C = 0$			0.25	
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 150\text{mA}$ $V_{CE} = 10\text{V}$	50		250	
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$			1.4	V
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$			1.7	

## DYNAMIC CHARACTERISTICS

$f_T$	Transition Frequency	$I_C = 50\text{mA}$ $V_{CE} = 10\text{V}$ $f = 20\text{MHz}$		100		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			15	pF
$C_{ibo}$	Input Capacitance	$V_{EB} = 0.5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$			80	pF

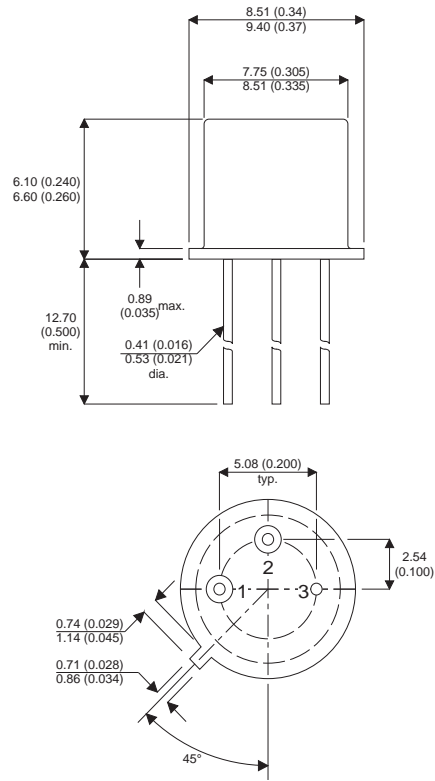
### Notes

(1) Pulse Width  $\leq 380\mu\text{s}$ ,  $\delta \leq 2\%$

# MEDIUM POWER SILICON NPN TRANSISTOR 2N3053

## MECHANICAL DATA

Dimensions in mm (inches)



### TO-39 (TO-205AD) METAL PACKAGE Underside View

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector