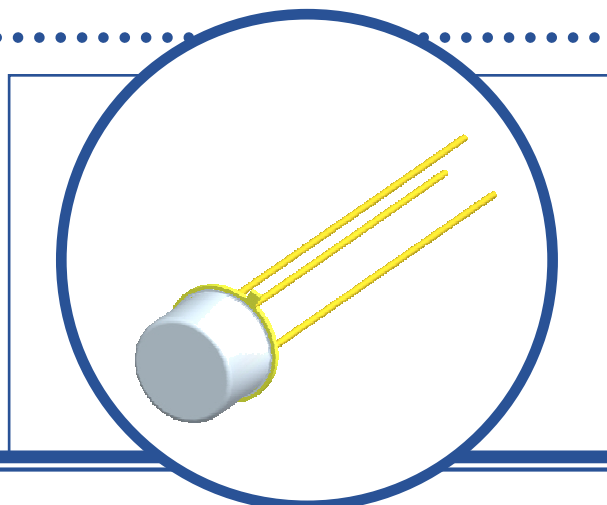


# SILICON POWER NPN TRANSISTOR

## BUL54A-T05

- Advanced Distributed Base design
- High Voltage
- Fast Switching
- High Energy Rating
- Screening Options Available



### Features:

- Multi-base for efficient energy distribution across the chip resulting in significantly improved switching and energy ratings across full temperature range.
- Ion implant and high accuracy masking for tight control of characteristics from batch to batch.
- Triple Guard Rings for improved control of high voltages.

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

V <sub>CB0</sub>	Collector – Base Voltage (I <sub>e</sub> = 0)	1000V
V <sub>CEO</sub>	Collector – Emitter Voltage (I <sub>b</sub> = 0)	500V
V <sub>EBO</sub>	Emitter – Base Voltage (I <sub>c</sub> = 0)	10V
I <sub>C</sub>	Continuous Collector Current	4A
P <sub>TOT</sub>	Total Power Dissipation at T <sub>C</sub> = 25°C	20W
T <sub>J</sub>	Operating Junction Temperature Range	-55 to +150°C
T <sub>stg</sub>	Storage Temperature Range	-55 to +150°C

### THERMAL PROPERTIES

Symbols	Parameters	Max	Units
R <sub>θJC</sub>	Thermal Resistance, Junction To Case	6.25	°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.

# SILICON POWER NPN TRANSISTOR BUL54A-T05

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

Symbols	Parameters	Test Conditions	Min	Typ	Max	Units
$I_{CBO}$	Collector-Base Cut-Off Current	$V_{CB} = 1000V$			10	$\mu\text{A}$
		$T_C = 125^\circ\text{C}$			100	
$I_{CEO}$	Collector-Emitter Cut- off current	$I_B = 0$ $V_{CE} = 500V$			100	
$I_{EBO}$	Emitter-Base Cut-Off Current	$V_{EB} = 9V$			10	
		$I_C = 0$ $T_C = 125^\circ\text{C}$			100	
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$	500			$\text{V}$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\mu\text{A}$	1000			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\mu\text{A}$	10			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 100\text{mA}$ $I_B = 20\text{mA}$		0.05	0.1	
		$I_C = 0.5\text{A}$ $I_B = 0.1\text{A}$		0.15	0.2	
		$I_C = 1.0\text{A}$ $I_B = 0.2\text{A}$		0.3	0.5	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 0.5\text{A}$ $I_B = 0.1\text{A}$		0.8	1.0	
		$I_C = 1.0\text{A}$ $I_B = 0.2\text{A}$		0.9	1.1	
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 0.1\text{A}$ $V_{CE} = 5V$	20	50		
		$I_C = 0.5\text{A}$ $V_{CE} = 5V$	12	15		
		$I_C = 1.0\text{A}$ $V_{CE} = 1.0V$	5	8		
		$T_C = 125^\circ\text{C}$		5		

## DYNAMIC CHARACTERISTICS

$f_T$	Transition Frequency	$I_C = 0.2\text{A}$ $V_{CE} = 4V$		20		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 20V$ $f = 1.0\text{MHz}$		20		pF

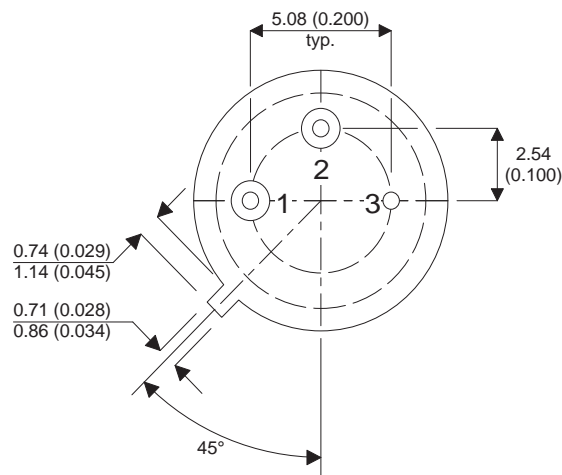
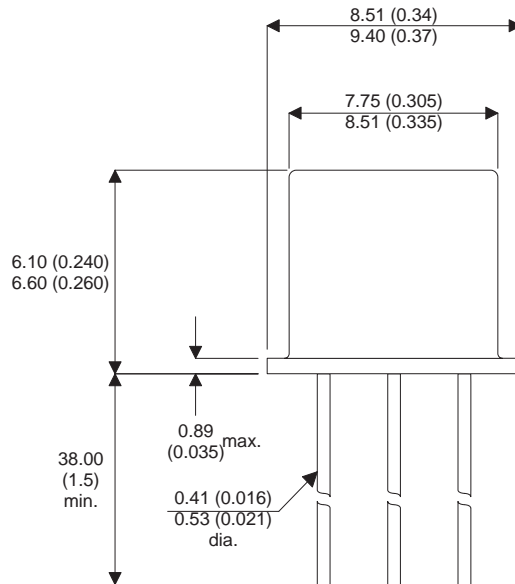
### Notes

(1) Pulse Width  $\leq 300\mu\text{s}$ ,  $\delta \leq 2\%$

# SILICON POWER NPN TRANSISTOR BUL54A-TO5

## MECHANICAL DATA

Dimensions in mm (inches)



### TO-5 (TO-205AA)

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector