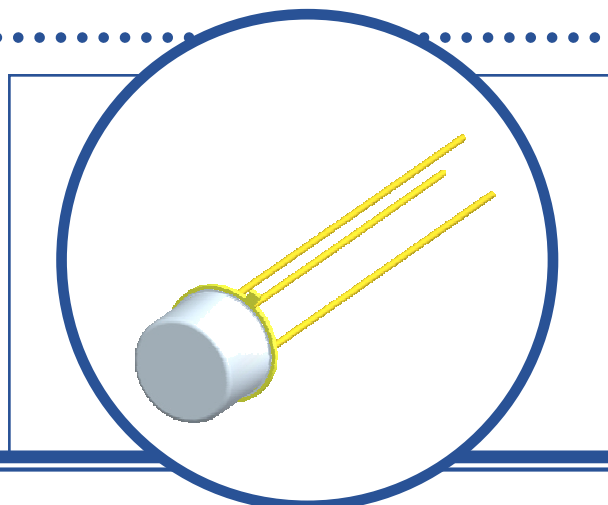


# SILICON POWER NPN TRANSISTOR

## 2N5663

- Fast Switching Transistor
- Hermetic TO-5 Metal Package
- Applications include High Speed Switching Circuits and Power Amplifiers
- Screening Options Available



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

V <sub>CBO</sub>	Collector – Base Voltage	400V
V <sub>CER</sub>	Collector – Emitter Voltage	400V
V <sub>CEO</sub>	Collector – Emitter Voltage	300V
V <sub>EBO</sub>	Emitter – Base Voltage	6V
I <sub>B</sub>	Base Current	0.5A
I <sub>C</sub>	Continuous Collector Current	2A
P <sub>D</sub>	Total Power Dissipation at T <sub>C</sub> = 25°C	17.5W
	Derate above 25°C	100mW/°C
P <sub>D</sub>	Total Power Dissipation at T <sub>A</sub> = 25°C	1.0W
	Derate above 25°C	5.7mW/°C
T <sub>J</sub>	Operating 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>θJC</sub>	Thermal Resistance, Junction To Case	10.0	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction To Ambient	175.0	°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.



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\*\* This datasheet supersedes document 5384

## 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	$V_{CB} = 300\text{V}$			0.1	$\mu\text{A}$
		$V_{CB} = 400\text{V}$			1.0	$\text{mA}$
$I_{CES}$	Collector-Emitter Cut- off current	$I_B = 0$ $V_{CE} = 300\text{V}$ $T_A = 150^\circ\text{C}$			0.2	$\mu\text{A}$
					9	
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$	300			V
$V_{(BR)CER}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $R_{BE} = 100\Omega$	400			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}$	6			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0\text{A}$ $I_B = 0.1\text{A}$			0.4	
		$I_C = 2\text{A}$ $I_B = 0.4\text{A}$			0.8	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 1.0\text{A}$ $I_B = 0.1\text{A}$			1.2	
		$I_C = 2\text{A}$ $I_B = 0.4\text{A}$			1.5	
$h_{FE}^{(1)}$	DC Current Gain	$I_C = 50\text{mA}$ $V_{CE} = 2\text{V}$	25			
		$I_C = 0.5\text{A}$ $V_{CE} = 5\text{V}$	25		75	
		$T_A = -55^\circ\text{C}$	10			
		$I_C = 1.0\text{A}$ $V_{CE} = 5\text{V}$	15			
		$I_C = 2\text{A}$ $V_{CE} = 5\text{V}$	5			

## DYNAMIC CHARACTERISTICS

$ h_{fe} $	Small signal forward-current transfer ratio	$I_C = 0.1\text{A}$ $V_{CE} = 5\text{V}$ $f = 10\text{MHz}$	1.4		7	
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			45	$\text{pF}$
$t_{on}$	Turn-On Time	$I_C = 0.5\text{A}$ $V_{CC} = 100\text{V}$ $I_{B1} = -I_{B2} = 25\text{mA}$			0.48	$\mu\text{s}$
$t_{off}$	Turn-Off Time				1.5	

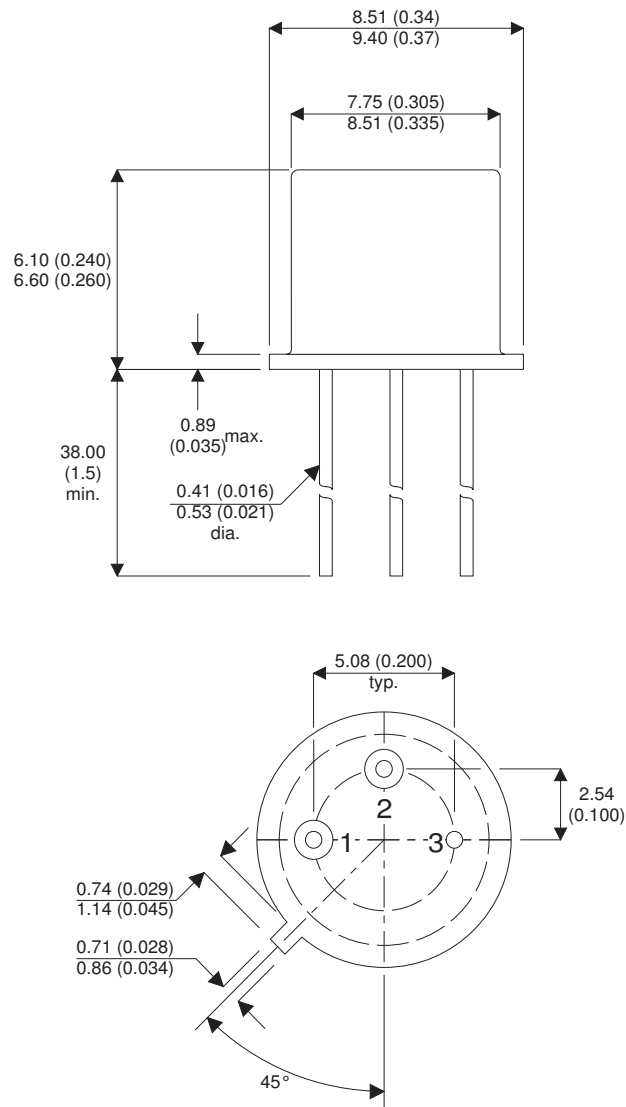
### Notes

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

# SILICON POWER NPN TRANSISTOR 2N5663

## MECHANICAL DATA

Dimensions in mm (inches)



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

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector