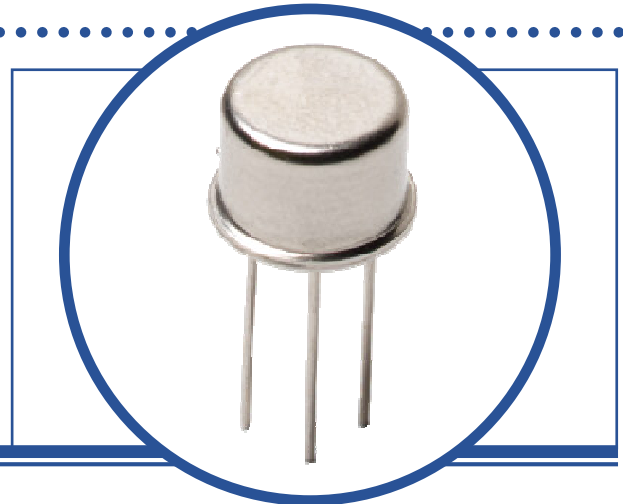


# SILICON EPITAXIAL NPN TRANSISTOR

## 2N5154T2A

- Hermetic Metal TO39 Package
- High Reliability and Space Screening Options Available



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

V <sub>CBO</sub>	Collector – Base Voltage (I <sub>E</sub> = 0)	100V
V <sub>CEO</sub>	Collector – Emitter Voltage (I <sub>B</sub> = 0)	80V
V <sub>EBO</sub>	Emitter – Base Voltage	5.5V
I <sub>C</sub>	Continuous Collector Current	2A
I <sub>CM</sub>	Peak Collector Current <sup>(1)</sup>	10A
P <sub>D</sub>	Total Power Dissipation at T <sub>A</sub> = 25°C	1W
	Derate Above 25°C	5.71mW/°C
P <sub>D</sub>	Total Power Dissipation at T <sub>C</sub> = 50°C	10W
	Derate Above 50°C	66.67mW/°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	Min.	Typ.	Max.	Units
R <sub>θJC</sub>	Thermal Resistance, Junction To Case			15	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction To Ambient			175	°C/W

(1) This value applies for P<sub>w</sub> ≤ 8.3ms, duty cycle ≤ 1%.

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

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
$V_{(BR)CEO}^{(2)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$	80			V
$I_{CES}$	Collector Cut-Off Current	$V_{CE} = 60\text{V}$ $V_{BE} = 0$			1.0	$\mu\text{A}$
		$V_{CE} = 100\text{V}$ $V_{BE} = 0$			1.0	mA
$I_{CEX}$	Collector Cut-Off Current	$V_{CE} = 60\text{V}$ $V_{BE} = -2\text{V}$ $T_C = 150^\circ\text{C}$			25	$\mu\text{A}$
$I_{CEO}$	Collector Cut-Off Current	$V_{CE} = 40\text{V}$ $I_B = 0$			50	
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 4\text{V}$ $I_C = 0$			1.0	
		$V_{EB} = 5.5\text{V}$ $I_C = 0$			1.0	mA
$h_{FE}^{(2)}$	Forward-current transfer ratio	$I_C = 50\text{mA}$ $V_{CE} = 5\text{V}$	50			-
		$I_C = 2.5\text{A}$ $V_{CE} = 5\text{V}$ $T_C = -55^\circ\text{C}$	70		200	
		$I_C = 5\text{A}$ $V_{CE} = 5\text{V}$	40			
$V_{BE}^{(2)}$	Base-Emitter Voltage	$I_C = 2.5\text{A}$ $V_{CE} = 5\text{V}$			1.45	V
$V_{BE(sat)}^{(2)}$	Collector-Emitter Saturation Voltage	$I_C = 2.5\text{A}$ $I_B = 250\text{mA}$			1.45	
		$I_C = 5\text{A}$ $I_B = 500\text{mA}$			2.2	
$V_{CE(sat)}^{(2)}$	Base-Emitter Saturation Voltage	$I_C = 2.5\text{A}$ $I_B = 250\text{mA}$			0.75	
		$I_C = 5\text{A}$ $I_B = 500\text{mA}$			1.5	

## DYNAMIC CHARACTERISTICS

$ h_{fe} $	Magnitude of common-emitter, small-signal short-circuit, forward-current transfer ratio	$I_C = 500\text{mA}$ $V_{CE} = 5\text{V}$ $f = 20\text{MHz}$		1.2		-
$h_{fe}$	Small-Signal Current Gain	$I_C = 100\text{mA}$ $V_{CE} = 5\text{V}$ $f = 1.0\text{KHz}$	50			-
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			250	$\text{pF}$
$t_{on}$	Turn-On Time	$V_{CC} = 30\text{V}$ $I_C = 5\text{A}$			0.5	$\mu\text{S}$
$t_s$	Storage Time	$I_{B1} = 500\text{mA}$ $I_{B2} = -I_{B1}$			1.4	
$t_f$	Fall Time	$R_L = 6\Omega$			0.5	
$t_{off}$	Turn-Off Time				1.5	

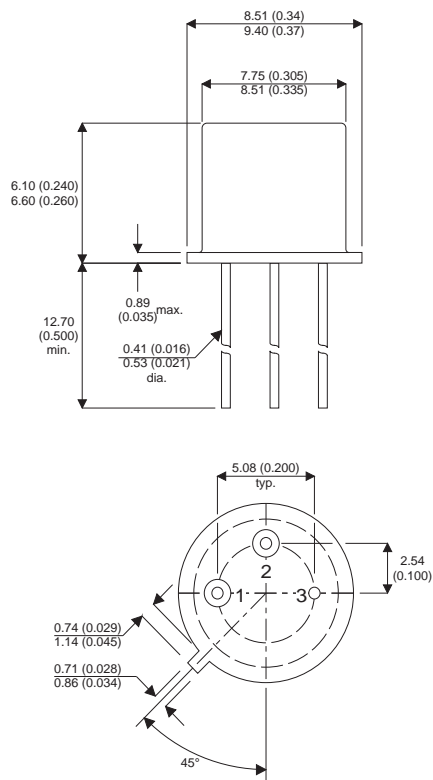
### Notes

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

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## MECHANICAL DATA

Dimensions in mm (inches)



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

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector