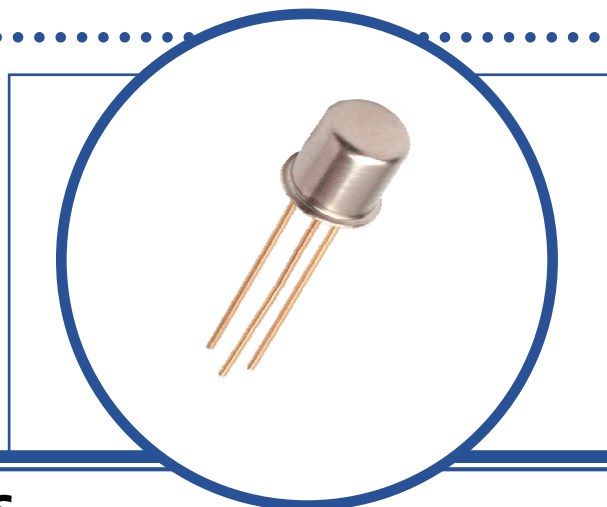


# SILICON SWITCHING NPN TRANSISTOR

## 2N2222A

- High Speed Saturated Switching
- TO-18 Hermetic Package.
- Screening Options Available



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

V <sub>CBO</sub>	Collector – Base Voltage	75V
V <sub>CEO</sub>	Collector – Emitter Voltage	50V
V <sub>EBO</sub>	Emitter – Base Voltage	6V
I <sub>C</sub>	Continuous Collector Current	0.8A
P <sub>D</sub>	Total Power Dissipation at T <sub>A</sub> = 25°C	500mW
	Derate Above 25°C	2.86mW/°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	325	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction To Case	150	°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 SWITCHING NPN TRANSISTOR 2N2222A

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

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{mA}$ $I_B = 0$	50			V
$I_{CES}$	Collector-Emitter Cut-Off Current	$V_{CE} = 50\text{V}$			50	nA
$I_{CBO}$	Collector-Base Cut-Off Current	$I_E = 0$ $V_{CB} = 75\text{V}$			10	$\mu\text{A}$
		$I_E = 0$ $V_{CB} = 60\text{V}$			10	nA
		$T_A = 150^\circ\text{C}$			10	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$I_C = 0$ $V_{EB} = 4\text{V}$			10	nA
		$V_{EB} = 6\text{V}$			10	$\mu\text{A}$

## ON CHARACTERISTICS

$V_{CE(Sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$			0.3	V
		$I_C = 500\text{mA}$ $I_B = 50\text{mA}$			1.0	
$V_{BE(Sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$	0.6		1.2	V
		$I_C = 500\text{mA}$ $I_B = 50\text{mA}$			2.0	
$h_{FE}$	DC Current Gain	$I_C = 0.1\text{mA}$ $V_{CE} = 10\text{V}$	50			-
		$I_C = 1.0\text{mA}$ $V_{CE} = 10\text{V}$	75		325	
		$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$	100			
		$T_A = -55^\circ\text{C}$	35			
		$I_C = 150\text{mA}$ $V_{CE} = 10\text{V}^{(1)}$	100		300	
		$I_C = 500\text{mA}$ $V_{CE} = 10\text{V}^{(1)}$	30			

## SMALL SIGNAL CHARACTERISTICS

$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			8	pF
$C_{ibo}$	Input Capacitance	$V_{EB} = 0.5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$			25	
$ h_{fe} $	Magnitude of small-signal, short-circuit forward current transfer ratio	$I_C = 20\text{mA}$ $V_{CE} = 20\text{V}$ $f = 100\text{MHz}$	2.5			-
$h_{fe}$	Small Signal Current Gain	$I_C = 1.0\text{mA}$ $V_{CE} = 10\text{V}$ $f = 1.0\text{kHz}$	50			-

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

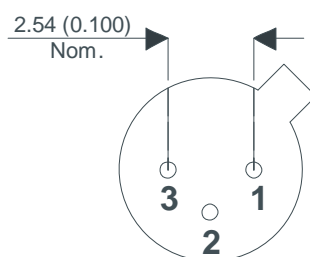
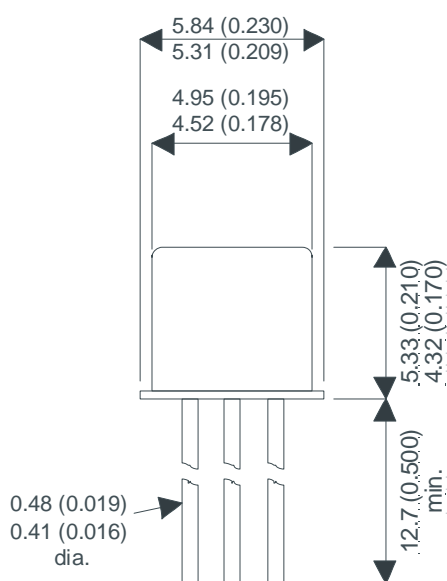
# SILICON SWITCHING NPN TRANSISTOR 2N2222A

## SWITCHING CHARACTERISTICS

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
$t_{on}$	Saturated Turn-on Time	$V_{CC} = 30V$ $I_{B1} = 15mA$			35	ns
$t_{off}$	Saturated Turn-off Time	$I_C = 150mA$			300	

## MECHANICAL DATA

Dimensions in mm (inches)



## TO-18 (TO-206AA) METAL PACKAGE Underside View

Pin 1 – Emitter

Pin 2 – Base

Pin 3 - Collector