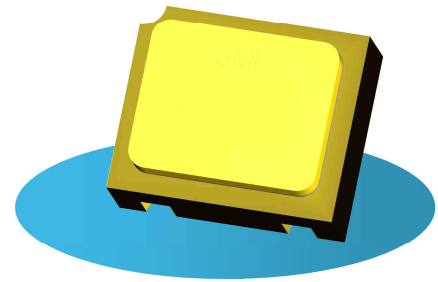


### 2N2222ACSM

- High Speed Saturated Switching
- Hermetic Ceramic Surface Mount 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	40V
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 Derate Above 25°C	500mW 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	350	°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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Issue: 5  
Page: 1 of 3

# SILICON SWITCHING NPN TRANSISTOR

## 2N2222ACSM



### 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 Breakdown Voltage	$I_C = 10\text{mA}$	40			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}$	75			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}$	6			
$I_{CEX}$	Collector-Emitter Cut-Off Current	$V_{EB} = 3\text{V}$ $V_{CE} = 60\text{V}$			10	nA
$I_{CBO}$	Collector-Base Cut-Off Current	$I_E = 0$ $V_{CB} = 60\text{V}$ $T_A = 150^\circ\text{C}$			10	
$I_{EBO}$	Emitter Cut-Off Current	$I_C = 0$ $V_{EB} = 3\text{V}$			10	nA
$V_{CE(Sat)}^{(1)}$	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	
		$I_C = 500\text{mA}$ $I_B = 50\text{mA}$			2.0	
$h_{FE}^{(1)}$	DC Current Gain	$I_C = 0.1\text{mA}$ $V_{CE} = 10\text{V}$	35			
		$I_C = 1.0\text{mA}$ $V_{CE} = 10\text{V}$	50			
		$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$ $T_A = -55^\circ\text{C}$	35			
		$I_C = 150\text{mA}$ $V_{CE} = 10\text{V}$	100		300	
		$I_C = 150\text{mA}$ $V_{CE} = 1.0\text{V}$	50			
		$I_C = 500\text{mA}$ $V_{CE} = 10\text{V}$	40			

### DYNAMIC CHARACTERISTICS

$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			8	pF
$C_{ibo}$	Input Capacitance	$V_{EB} = 0.5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$			30	
$f_t$	Transition Frequency	$I_C = 20\text{mA}$ $V_{CE} = 20\text{V}$ $f = 100\text{MHz}$	300			MHz
$h_{fe}$	Small Signal Current Gain	$I_C = 1.0\text{mA}$ $V_{CE} = 10\text{V}$ $f = 1.0\text{kHz}$	50		300	-
		$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$ $f = 1.0\text{kHz}$	75		375	
$t_d$	Delay Time	$V_{CC} = 30\text{V}$ $V_{BE} = 0.5\text{V}$			10	ns
$t_r$	Rise Time	$I_C = 150\text{mA}$ $I_{B1} = 15\text{mA}$			25	
$t_s$	Storage Time	$V_{CC} = 30\text{V}$ $V_{BE} = 0.5\text{V}$			225	
$t_f$	Fall Time	$I_C = 150\text{mA}$ $I_{B1} = I_{B2} = 15\text{mA}$			60	

**Note**

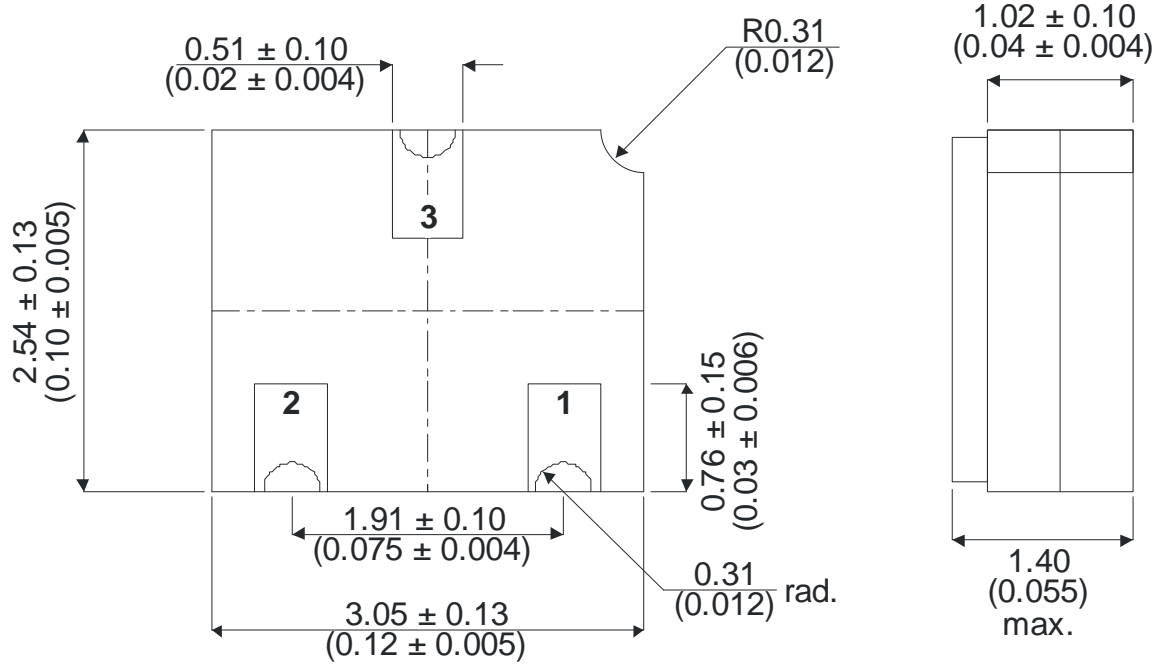
(1) Pulse Width  $\leq 380\mu\text{s}$ ,  $\delta \leq 2\%$

# SILICON SWITCHING NPN TRANSISTOR

## 2N2222ACSM

### MECHANICAL DATA

Dimensions in mm (inches)



LCC1

Underside View

Pad 1 - Base

Pad 2 - Emitter

Pad 3 - Collector