

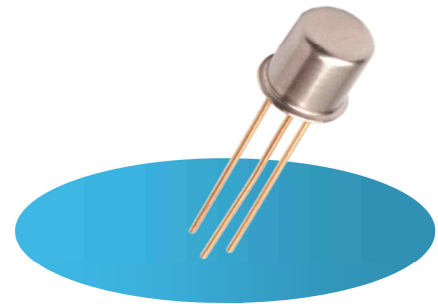
Power and Hybrid

SILICON SWITCHING NPN TRANSISTOR



2N2222A

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



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise stated)

V _{CBO}	Collector – Base Voltage	75V
V _{CEO}	Collector – Emitter Voltage	40V
V _{EBO}	Emitter – Base Voltage	6V
I _C	Continuous Collector Current	0.8A
P _D	Total Power Dissipation at T _A = 25°C Derate Above 25°C	500mW 2.86mW/°C
T _J	Junction Temperature Range	-65 to +200°C
T _{stg}	Storage Temperature Range	-65 to +200°C

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
R _{θJA}	Thermal Resistance, Junction To Ambient	350	°C/W
R _{θJC}	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.



Semelab Limited

Coventry Road, Lutterworth, Leicestershire, LE17 4JB

Document Number: 3554

Telephone: +44 (0) 1455 556565
Fax: +44 (0) 1455 552612

Email: sales@semelab-tt.com

Website: <http://www.semelab-tt.com>

Issue: 3
Page: 1 of 3

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 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

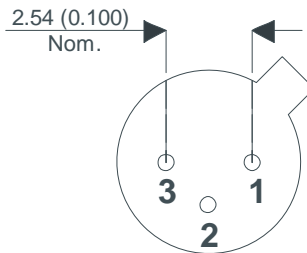
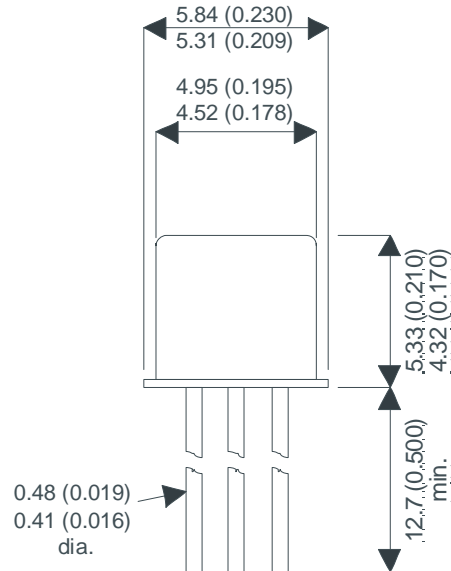
(1) Pulse Width $\leq 380\mu\text{s}$, $\delta \leq 2\%$

SILICON SWITCHING NPN TRANSISTOR

2N2222A

MECHANICAL DATA

Dimensions in mm (inches)



TO-18 (TO-206AA) METAL PACKAGE

Underside View

Pin 1 – Emitter

Pin 2 – Base

Pin 3 - Collector