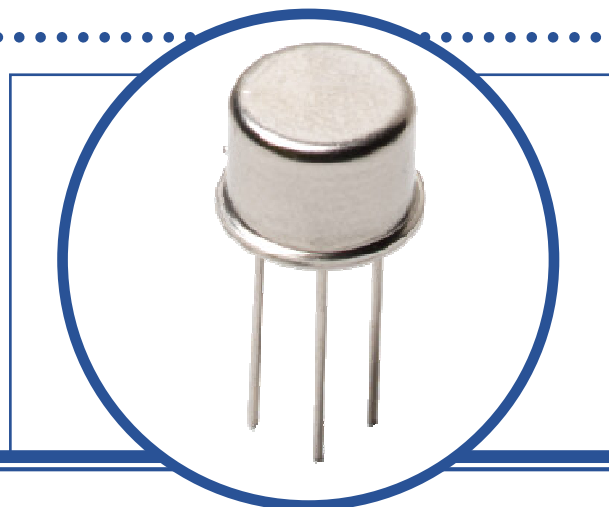


SILICON PLANAR EPITAXIAL NPN TRANSISTOR

2N4238

- $V_{CBO}=80V(\text{Min})$, $V_{CEO}=60V(\text{Min})$
- Hermetic TO-39 Metal package.
- Ideally suited for General Purpose and Amplifier Applications
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

V_{CBO}	Collector – Base Voltage	80V
V_{CEO}	Collector – Emitter Voltage	60V
V_{EBO}	Emitter – Base Voltage	6V
I_C	Continuous Collector Current	1.0A
I_B	Base Current	0.5A
P_D	Total Power Dissipation at $T_A = 25^\circ\text{C}$	1.0W
	Derate Above 25°C	5.7mW/ $^\circ\text{C}$
P_D	Total Power Dissipation at $T_C = 25^\circ\text{C}$	6W
	Derate Above 25°C	34mW/ $^\circ\text{C}$
T_J	Junction Temperature Range	-65 to $+200^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65 to $+200^\circ\text{C}$

THERMAL PROPERTIES

Symbols	Parameters	Min.	Typ.	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient			175	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction To Case			29	$^\circ\text{C/W}$

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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SILICON PLANAR EPITAXIAL NPN TRANSISTOR 2N4238

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	$I_C = 10\text{mA}$ $I_B = 0$	60			V
I_{CEX}	Collector Cut-Off Current	$V_{CE} = 80\text{V}$ $V_{BE} = -1.5\text{V}$			100	nA
		$V_{CE} = 50\text{V}$ $V_{BE} = -1.5\text{V}$ $T_A = 150^\circ\text{C}$			25	μA
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 80\text{V}$ $I_E = 0$			100	nA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 6\text{V}$ $I_C = 0$			0.5	mA
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 100\text{mA}$ $V_{CE} = 1.0\text{V}$	30			
		$I_C = 250\text{mA}$ $V_{CE} = 1.0\text{V}$	30		150	
		$T_A = -55^\circ\text{C}$	15			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 500\text{mA}$ $I_B = 50\text{mA}$			0.3	V
		$I_C = 1.0\text{A}$ $I_B = 0.1\text{A}$			0.6	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 500\text{mA}$ $I_B = 50\text{mA}$			1.0	
		$I_C = 1.0\text{A}$ $I_B = 0.1\text{A}$			1.5	

DYNAMIC CHARACTERISTICS

$ h_{fe} $	Small signal forward-current transfer ratio	$I_C = 100\text{mA}$ $V_{CE} = 10\text{V}$ $f = 10\text{MHz}$	3.0			
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			100	pF

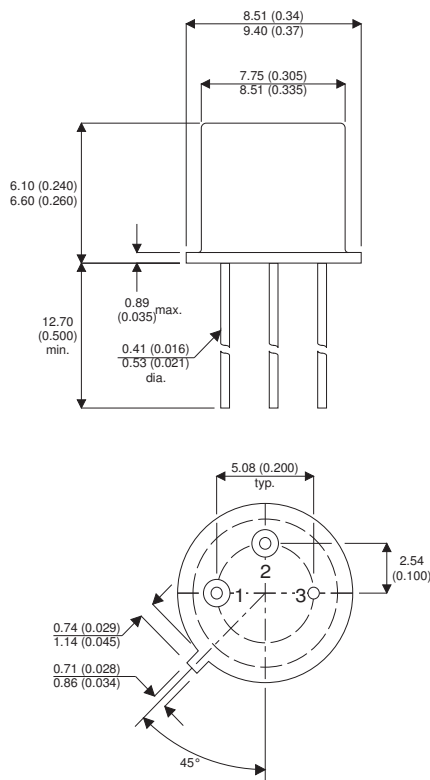
Notes

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

SILICON PLANAR EPITAXIAL NPN TRANSISTOR 2N4238

MECHANICAL DATA

Dimensions in mm (inches)



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

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector