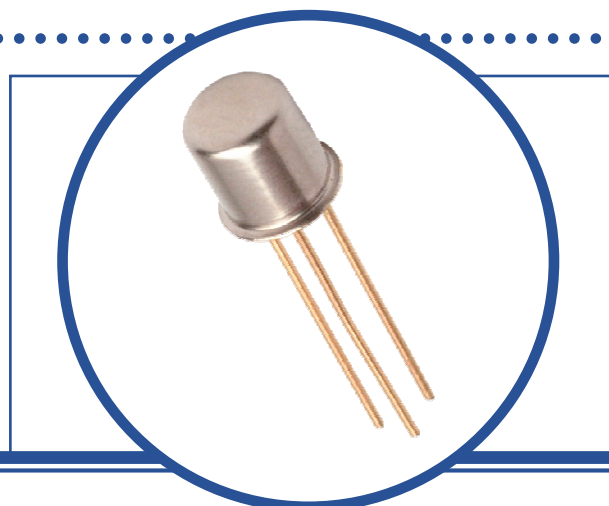


SILICON NPN TRANSISTOR

2N3700

- High Voltage, Medium Power Silicon Planar NPN Transistor
- Hermetic TO18 Metal Package
- High Reliability Screening Options Available
- CECC and Space Quality Level Options



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

V_{CBO}	Collector – Base Voltage	140V
V_{CEO}	Collector – Emitter Voltage	80V
V_{EBO}	Emitter – Base Voltage	7.0V
I_C	Continuous Collector Current	1.0A
P_D	Total Power Dissipation at $T_A = 25^\circ\text{C}$	0.5W
	Derate Above $T_A = 25^\circ\text{C}$	2.9mW/ $^\circ\text{C}$
	$T_C = 25^\circ\text{C}$	1.0W
	Derate Above $T_C = 25^\circ\text{C}$	5.7mW/ $^\circ\text{C}$
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.	Unit
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient			350	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction To Case			175	$^\circ\text{C/W}$

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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Document Number 5266

Issue 2

Page 1 of 3

SILICON NPN TRANSISTOR

2N3700

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

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 30\text{mA}$ $I_B = 0$	80			V
I_{EBO}	Emitter-Base Cut-Off Current	$V_{EB} = 7.0\text{V}$ $I_C = 0$			10	μA
		$V_{EB} = 5.0\text{V}$ $I_C = 0$			10	nA
I_{CES}	Collector-Emitter Cut-Off Current	$V_{CE} = 90\text{V}$			10	
		$T_A = 150^\circ\text{C}$			5	μA
I_{CBO}	Collector-Base Cut-Off Current	$V_{CB} = 140\text{V}$ $I_E = 0$			10	
$h_{FE}^{(1)}$	DC Current Gain	$I_C = 0.10\text{mA}$ $V_{CE} = 10\text{V}$	50			
		$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$	90			
		$I_C = 150\text{mA}$ $V_{CE} = 10\text{V}$	100		300	
		$T_A = -55^\circ\text{C}$	40			
		$I_C = 500\text{mA}$ $V_{CE} = 10\text{V}$	50			
		$I_C = 1.0\text{A}$ $V_{CE} = 10\text{V}$	15			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$			0.2	V
		$I_C = 500\text{mA}$ $I_B = 50\text{mA}$			0.5	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$			1.1	

DYNAMIC CHARACTERISTICS

$ h_{fe} $	Magnitude of Small-Signal Short-Circuit Current Gain	$I_C = 50\text{mA}$ $V_{CE} = 10\text{V}$ $f = 20\text{MHz}$	4	5	20	
h_{fe}	Small-Signal Short-Circuit Current Gain	$I_C = 1.0\text{mA}$ $V_{CE} = 5.0\text{V}$ $f = 1.0\text{KHz}$	80		400	
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			12	pF
C_{ibo}	Input Capacitance	$V_{EB} = 0.5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$			60	pF

Notes

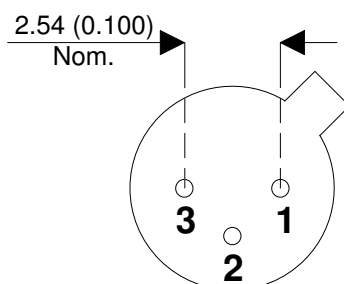
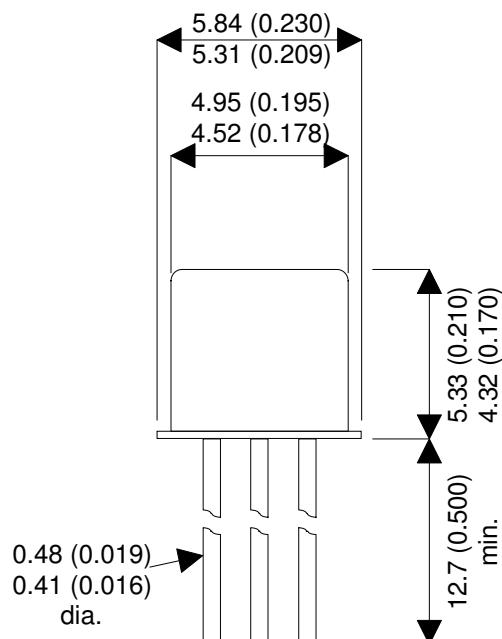
(1) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$

SILICON NPN TRANSISTOR

2N3700

MECHANICAL DATA

Dimensions in mm (inches)



TO18 (TO-206AA) METAL PACKAGE

Underside View

PIN 1 - Emitter

PIN 2 - Base

PIN 3 - Collector