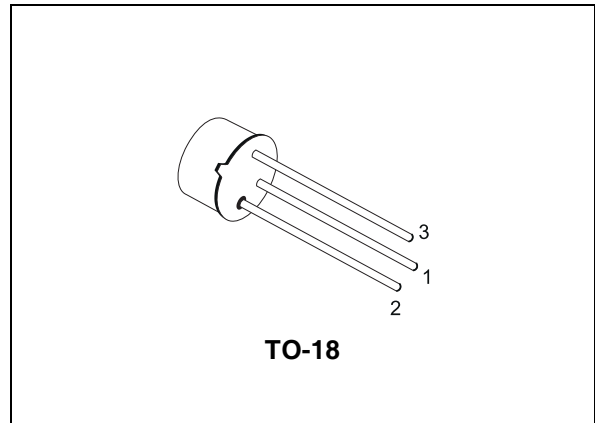
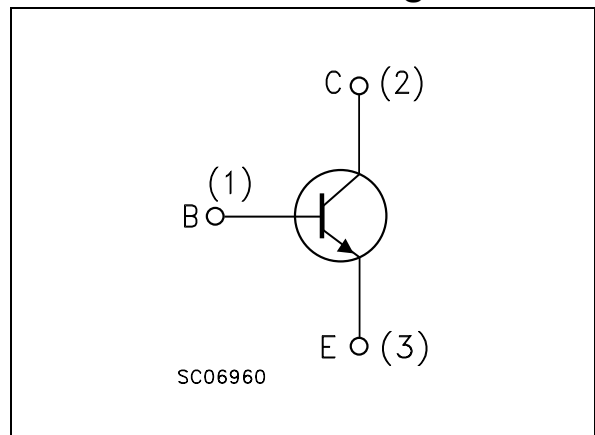


Description

The 2N3700 is silicon planar epitaxial NPN transistor in Jedec TO-18 metal case. It is intended for small signal, low noise industrial applications.

**Internal schematic diagram****Order codes**

Part Number	Marking	Package	Packing
2N3700	2N3700	TO-18	Bag

1 Electrical ratings

Table 1. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-emitter voltage ($I_E = 0$)	140	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	80	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	7	V
I_C	Collector current	1	A
P_{tot}	Total dissipation at $T_{amb} \leq 25^\circ\text{C}$	0.5	W
	at $T_{case} \leq 25^\circ\text{C}$	1.8	W
	at $T_{case} \leq 100^\circ\text{C}$	1	W
T_{stg}	Storage temperature	-65 to 200	$^\circ\text{C}$
T_J	Max. operating junction temperature	200	$^\circ\text{C}$

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal resistance junction-case max	97	$^\circ\text{C/W}$
$R_{thj-amb}$	Thermal resistance junction-ambient max	350	$^\circ\text{C/W}$

2 Electrical characteristics

($T_{CASE} = 25^{\circ}C$; unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current ($I_E = 0$)	$V_{CB} = 90V$			10	nA
		$V_{CB} = 90V$ $T_{amb} = 150^{\circ}C$			10	μA
I_{EBO}	Emitter cut-off current ($I_C = 0$)	$V_{EB} = 5V$			10	nA
$V_{(BR)CBO}$	Collector-base breakdown voltage ($I_E = 0$)	$I_C = 100\mu A$	140			V
$V_{(BR)CEO}^{(1)}$	Collector-emitter breakdown voltage ($I_B = 0$)	$I_C = 30mA$	80			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage ($I_C = 0$)	$I_E = 100\mu A$	7			V
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = 150mA$ $I_B = 15mA$			0.2	V
		$I_C = 0.5A$ $I_B = 50mA$			0.5	V
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = 150mA$ $I_B = 15mA$			1.1	V
h_{FE}	DC current gain	$I_C = 0.1mA$ $V_{CE} = 10V$	50		300	
		$I_C = 10mA$ $V_{CE} = 10V$	90			
		$I_C = 150mA$ $V_{CE} = 10V$	100			
		$I_C = 500mA$ $V_{CE} = 10V$	50			
		$I_C = 1A$ $V_{CE} = 10V$	15			
		$I_C = 150mA$ $V_{CE} = 10V$ $T_{amb} = -55^{\circ}C$	40			
h_{fe}	Small signal current gain	$I_C = 1mA$ $V_{CE} = 5V$ $f = 1kHz$	80		400	
f_T	Transition frequency	$I_C = 50mA$ $V_{CE} = 10V$ $f = 20MHz$		100		MHz
C_{EBO}	Emitter-base capacitance	$I_C = 0$ $V_{EB} = 0.5V$ $f = 1MHz$		60		pF
C_{CBO}	Collector-base capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$		12		pF
$r_{bb'} C_{b'c}$	Feedback time constant	$I_C = 10mA$ $V_{CB} = 10V$ $f = 4MHz$	25		400	ps

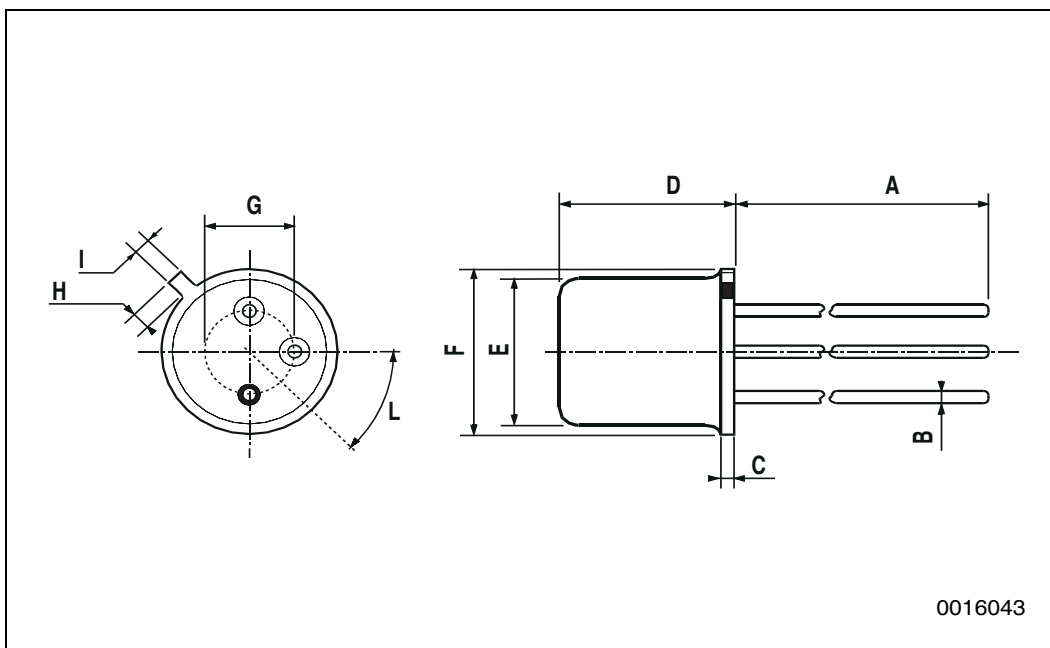
Note: (1) Pulsed: Pulse duration = 300 μs , duty cycle $\leq 1\%$

3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

TO-18 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



4 Revision history

Table 4. Revision history

Date	Revision	Changes
31-Jan-1989	1	First release
06-Nov-2006	2	The document has been reformatted

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