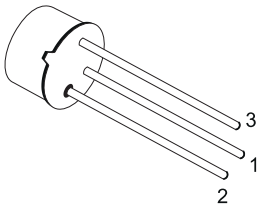
2N3700

General purpose amplifiers

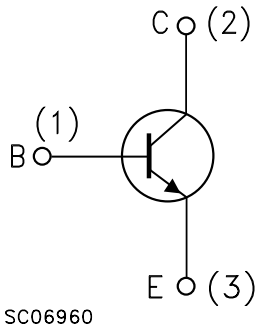
Description

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



TO-18

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 $T_{amb} \leq 25°C$ at $T_{case} \leq 25°C$ at $T_{case} \leq 100°C$	0.5 1.8 1	W W W
T_{stg}	Storage temperature	-65 to 200	°C
T_J	Max. operating junction temperature	200	°C

Table 2. Thermal data

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

2 Electrical characteristics

(T_{CASE} = 25°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 V_{CB} = 90V T_{amb} = 150°C			10 10	nA 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 = 100µA	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 = 100µA	7			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 150mA I_B = 15mA I_C = 0.5A I_B = 50mA			0.2 0.5	V 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 I_C = 10mA V_{CE} = 10V I_C = 150mA V_{CE} = 10V I_C = 500mA V_{CE} = 10V I_C = 1A V_{CE} = 10V I_C = 150mA V_{CE} = 10V T_{amb} = -55°C	50 90 100 50 15 40		300	
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

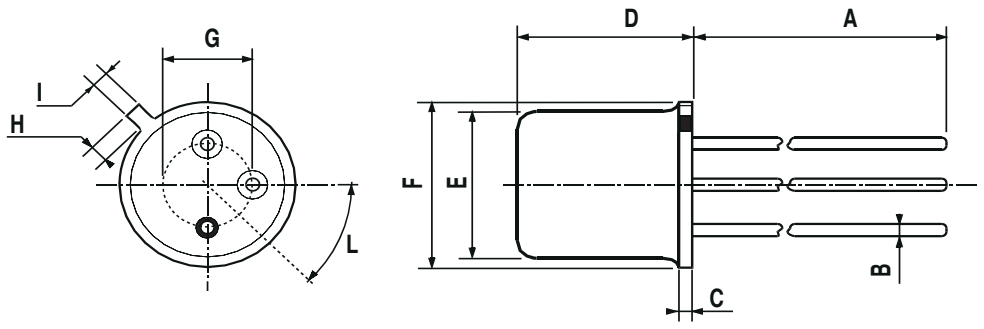
Note: (1) Pulsed: Pulse duration = 300 µs, duty cycle ≤ 1 %

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°		



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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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