2N3810

Silicon PNP Transistor

Data Sheet

Description

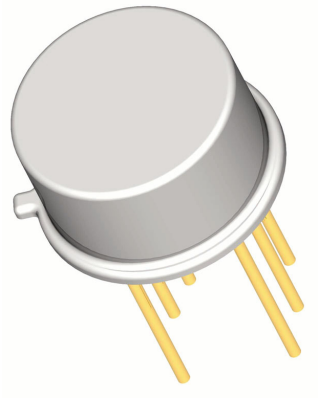
Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N3810J)
- JANTX level (2N3810JX)
- JANTXV level (2N3810JV)
- JANS level (2N3810JS)
- QCI to the applicable level
- 100% die visual inspection per MIL-STD-750 method 2072 for JANTXV and JANS
- Radiation testing (total dose) upon request

Please contact Semicoa for special configurations
www.***SEMICOA***.com or (714) 979-1900

Applications

- General purpose
- Matched Dual transistors
- PNP silicon transistor



Features

- Hermetically sealed TO-78 metal can
- Also available in chip configuration
- Chip geometry 0220
- Reference document: MIL-PRF-19500/336

Benefits

- Qualification Levels: JAN, JANTX, JANTXV and JANS
- Radiation testing available

Absolute Maximum Ratings

T_C = 25°C unless otherwise specified

Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	60	Volts
Collector-Base Voltage	V_{CBO}	60	Volts
Emitter-Base Voltage	V_{EBO}	5	Volts
Collector Current, Continuous	I_C	50	mA
Power Dissipation, T_A = 25°C Derate linearly above 25°C	P_T	300 one section 600 both sections 1.71one section 3.43 both sections	mW mW/°C
Operating Junction Temperature	T_J	-65 to +200	°C
Storage Temperature	T_{STG}	-65 to +200	°C

Rev. G

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ELECTRICAL CHARACTERISTICS

characteristics specified at T_A = 25°C

Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 100 µA	60			Volts
Collector-Base Cutoff Current	I_{CBO1} I_{CBO2} I_{CBO3}	V_{CB} = 60 Volts V_{CB} = 50 Volts V_{CB} = 50 Volts, T_A = 150°C			10 10 10	µA nA µA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{EB} = 5 Volts V_{EB} = 4 Volts			10 10	µA nA

On Characteristics

Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤ 2.0%

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE2} h_{FE3} h_{FE4} h_{FE5} h_{FE6} h_{FE3-1}/h_{FE3-2}	I_C = 10 µA, V_{CE} = 5 Volts I_C = 100 µA, V_{CE} = 5 Volts I_C = 1 mA, V_{CE} = 5 Volts I_C = 10 mA, V_{CE} = 5 Volts I_C = 100 µA, V_{CE} = 5 Volts T_A = -55°C I_C = 100 µA, V_{CE} = 5 Volts	100 150 150 125 60 0.9		 450 450 1.0	
Base-Emitter Voltage	V_{BE} $\|V_{BE1}-V_{BE2}\|_1$ $\|V_{BE1}-V_{BE2}\|_2$ $\|V_{BE1}-V_{BE2}\|_3$	V_{CE} = 5 Volts, I_C = 100 µA V_{CE} = 5 Volts, I_C = 10 µA V_{CE} = 5 Volts, I_C = 100 µA V_{CE} = 5 Volts, I_C = 10 mA			0.7 5 3 5	Volts mVolts mVolts mVolts
Base-Emitter Saturation Voltage	V_{BEsat1} V_{BEsat2}	I_C = 100 µA, I_B = 10 µA I_C = 1 mA, I_B = 100 µA			0.7 0.8	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2}	I_C = 100 µA, I_B = 10 µA I_C = 1 mA, I_B = 100 µA			0.20 0.25	Volts

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Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$\|h_{FE1}\|$ $\|h_{FE2}\|$	V_{CE} = 5 Volts, I_C = 500 µA, f = 30 MHz V_{CE} = 5 Volts, I_C = 1 mA, f = 100 MHz	1 1		 5	
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	V_{CE} = 10 Volts, I_C = 1 mA, f = 1 kHz	150		600	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 5 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			5	pF
Open Circuit Input Capacitance	C_{IBO}	V_{EB} = 0.5 Volts, I_C = 0 mA, 100 kHZ < f < 1 MHz			8	pF
Noise Figure	NF_1 NF_2 NF_3	V_{CE} = 10 Volts, I_C = 100 µA, R_g = 3 kΩ f = 100 Hz f = 1 kHz f = 10 kHz			7 3 2.5	dB
Noise Figure (wideband)	NF	V_{CE} = 10 Volts, I_C = 100 µA, R_g = 3 kΩ 10 Hz < f < 15.7 kHz			3.5	dB
Short Circuit Input Impedance	h_{ie}	V_{CB} =10V, I_C =1mA, f =1kHz	3		30	kΩ
Open Circuit Output Admittance	h_{oe}	V_{CB} =10V, I_C =1mA, f =1kHz	5		60	µΩ
Open Circuit reverse Voltage Transfer Ratio	h_{re}	V_{CB} =10V, I_C=100µA, f=1kHz			$25x10^{-4}$	

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