2N4449

Silicon NPN Transistor

Data Sheet

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N4449J)
- JANTX level (2N4449JX)
- JANTXV level (2N4449JV)
- JANS level (2N4449JS)
- 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

- High-speed switching transistor
- Low power
- NPN silicon transistor

Features

- Hermetically sealed TO-46 metal can
- Also available in chip configuration
- Chip geometry 0005
- Reference document: MIL-PRF-19500/317

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}	15	Volts
Collector-Base Voltage	V_{CBO}	40	Volts
Emitter-Base Voltage	V_{EBO}	4.5	Volts
Power Dissipation, T_A = 25°C Derate linearly above 25°C	P_T	0.36 2.06	mW mW/°C
Thermal Resistance	$R_{\theta JA}$	325	°C/W
Operating Junction Temperature	T_J	-65 to +200	°C
Storage Temperature	T_{STG}	-65 to +200	°C

Rev. J

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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 = 10 mA	15			Volts
Collector-Base Cutoff Current	I_{CBO1} I_{CBO2} I_{CBO3}	V_{CB} = 40 Volts V_{CB} = 32 Volts V_{CB} = 20 Volts, T_A = 150°C			10 0.2 30	µA
Collector-Emitter Cutoff Current	I_{CEX}	V_{CE}= 10Volts, V_{EB}= 0.25Volts T_A = 125°C			30	µA
Collector-Emitter Cutoff Current	I_{CES}	V_{CE} = 20 Volts			400	nA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{EB} = 4.5 Volts V_{EB} = 4 Volts			10 0.25	µA

On Characteristics

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE1} h_{FE2} h_{FE3} h_{FE4} h_{FE5}	I_C = 10 mA, V_{CE} = 0.35 Volts I_C = 30 mA, V_{CE} = 0.4 Volts I_C = 10 mA, V_{CE} = 1 Volts I_C = 100 mA, V_{CE} = 1 Volts I_C = 10 mA, V_{CE} = 1 Volts T_A = -55°C	40 30 40 20 20		120 120 120 120	
Base-Emitter Saturation Voltage	V_{BEsat1} V_{BEsat2} V_{BEsat3} V_{BEsat4} V_{BEsat5}	I_C = 10 mA, I_B = 1 mA I_C = 30 mA, I_B = 3 mA I_C = 100 mA, I_B = 10 mA I_C= 10mA, I_B= 1mA,T_A=+125°C I_C= 10mA, I_B= 1mA, T_A = -55°C	0.70 0.80 0.59		0.85 0.90 1.20 1.02	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2} V_{CEsat3} V_{CEsat4}	I_C = 10 mA, I_B = 1 mA I_C = 30 mA, I_B = 3 mA I_C = 100 mA, I_B = 10 mA I_C= 10mA, I_B= 1mA,T_A=+125°C			0.20 0.25 0.45 0.30	Volts

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$\|h_{FE}\|$	V_{CE} = 10 Volts, I_C = 10 mA, f = 100 MHz	5		10	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 5 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			4	pF
Open Circuit Input Capacitance	C_{IBO}	V_{EB} = 0.5 Volts, I_C = 0 mA, 100 kHZ < f < 1 MHz			5	pF
Storage Time	t_s	I_C = 10 mA, I_{B1}=I_{B2} = 10 mA			13	ns
Saturated Turn-On Time	t_{ON}	I_C = 10 mA, I_{B1}= 3 mA, I_{B2} = 1.5 mA			12	ns
Saturated Turn-Off Time	t_{OFF}	I_C = 10 mA, I_{B1}= 3 mA, I_{B2} = 1.5 mA			18	ns

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