2N5109UB

Silicon NPN Transistor

Data Sheet

Description

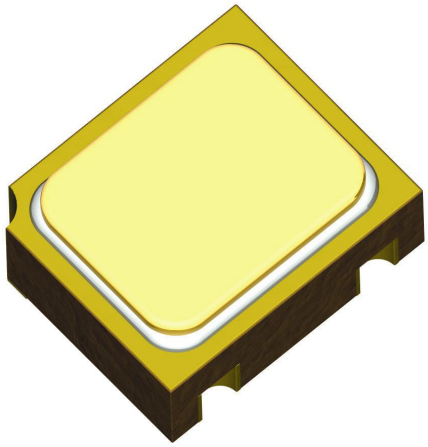
Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N5109UBJ)
- JANTX level (2N5109UBJX)
- JANTXV level (2N5109UBJV)
- JANS level (2N5109UBJS)
- 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
- VHF-UHF amplifier transistor
- NPN silicon transistor



Features

- Hermetically sealed Cersot ceramic
- Also available in chip configuration
- Chip geometry 1009
- Reference document: MIL-PRF-19500/453

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}	20	Volts
Collector-Base Voltage	V_{CBO}	40	Volts
Emitter-Base Voltage	V_{EBO}	3	Volts
Collector Current, Continuous	I_C	400	mA
Power Dissipation, T_A = 25°C Derate linearly above 25°C	P_T	1 5.71	W mW/°C
Power Dissipation, T_C = 25°C Derate linearly above 25°C	P_T	2.9 16.6	W mW/°C
Thermal Resistance	$R_{\theta JA}$	175	°C/W
Operating Junction Temperature	T_J	-65 to +200	°C
Storage Temperature	T_{STG}	-65 to +200	°C

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ELECTRICAL CHARACTERISTICS

characteristics specified at T_A = 25°C

Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100 µA	40			Volts
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 5 mA	20			Volts
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	I_C = 5 mA, R_{BE} = 10 Ω	40			Volts
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100 µA	3			Volts
Collector-Emitter Cutoff Current	I_{CEO1} I_{CEO2}	V_{CE} = 15 Volts V_{CE} = 15 Volts, T_A = 175°C			20 5	µA mA

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}	I_C = 50 mA, V_{CE} = 15 Volts I_C = 50 mA, V_{CE} = 5 Volts T_A = -55°C	40 15		150	
Collector-Emitter Saturation Voltage	V_{CEsat}	I_C = 100 mA, I_B = 10 mA			0.5	Volts

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$\|h_{FE1}\|$ $\|h_{FE2}\|$ $\|h_{FE3}\|$	V_{CE} = 15 Volts, f = 200 MHz, I_C = 25 mA I_C = 50 mA I_C = 100 mA	 5 6 5		 10.0 11.0 10.5	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 5 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			3.5	pF
Power Gain (narrow band) current	G_{PE}	V_{CC} = 15 Volts, I_C = 50 mA, f = 200 MHz, P_{in} = -10 dB	11			dB
Cross Modulation	cm	V_{CC} = 15 Volts, I_C = 50 mA, 54 dB output			-57	dB
Noise Figure	NF	V_{CC} = 15 Volts, I_C = 10 mA, f = 200 MHz, P_{in} = -10 dB			3.5	dB
Voltage Gain (wideband)	G	V_{CC} = 15 Volts, I_C = 50 mA, 50 MHz < f < 216 MHz, P_{in} = -10dB	11			dB

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