2N3507

Silicon NPN Transistor

Data Sheet

Description

SEMICOA offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N3507J)
- JANTX level (2N3507JX)
- JANTXV level (2N3507JV)
- JANS level (2N3507JS)
- 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 switching transistor
- Low power
- NPN silicon transistor

Features

- Hermetically sealed TO-39 metal can
- Also available in chip configuration
- Chip geometry 1506
- Reference document: MIL-PRF-19500/349

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}	50	Volts
Collector-Base Voltage	V_{CBO}	80	Volts
Emitter-Base Voltage	V_{EBO}	5	Volts
Collector Current, Continuous	I_C	3	A
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	5 28.6	W mW/°C
Thermal Resistance	$R_{\theta JA}$	175	°C/W
Operating Junction Temperature Storage Temperature	T_J 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	80			Volts
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10 mA	50			Volts
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10 µA	5			Volts
Collector-Emitter Cutoff Current	I_{CEX1}	V_{CE} = 60 Volts, V_{EB} = 4 Volts			1	µA
Collector-Emitter Cutoff Current	I_{CEX2}	V_{CE} = 60 Volts, V_{EB} = 4 Volts, T_A = 150°C			1.5	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} h_{FE3} h_{FE4} h_{FE5}	I_C = 500 mA, V_{CE} = 1 Volts I_C = 1.5 A, V_{CE} = 2 Volts I_C = 2.5 A, V_{CE} = 3 Volts I_C = 3.0 A, V_{CE} = 5 Volts I_C = 500 mA, V_{CE} = 1 Volts T_A = -55°C	35 30 25 20 17		175 150	
Base-Emitter Saturation Voltage	V_{BEsat1} V_{BEsat2} V_{BEsat3}	I_C = 500 mA, I_B = 50 mA I_C = 1.5 A, I_B = 150 mA I_C = 2.5 A, I_B = 250 mA	0.8		1.0 1.3 2.0	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2} V_{CEsat3}	I_C = 500 mA, I_B = 50 mA I_C = 1.5 A, I_B = 150 mA I_C = 2.5 A, I_B = 250 mA			0.5 1.0 1.5	Volts

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$\|h_{FE}\|$	V_{CE} = 5 Volts, I_C = 100 mA, f = 20 MHz	3		15	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 10 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			40	pF
Open Circuit Input Capacitance	C_{IBO}	V_{EB} = 3 Volts, I_C = 0 mA, 100 kHZ < f < 1 MHz			300	pF
Delay Time	t_d	I_C = 1.5 A, I_{B1} = 150 mA			15	ns
Rise Time	t_r	I_C = 1.5 A, I_{B1} = 150 mA			30	ns

Switching Characteristics

Storage Time	t_s	I_C = 1.5 A, I_{B1}=I_{B2} = 150 mA			55	ns
Fall Time	t_f	I_C = 1.5 A, I_{B1}=I_{B2} = 150 mA			35	ns

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