2N5003

Silicon PNP Transistor

Data Sheet

Description

Complement to the 2N5002

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N5003J)
- JANTX level (2N5003JX)
- JANTXV level (2N5003JV)
- QCI to the applicable level
- 100% die visual inspection per MIL-STD-750 method 2072 for JANTXV
- Radiation testing (total dose) upon request

Please contact Semicoa for special configurations
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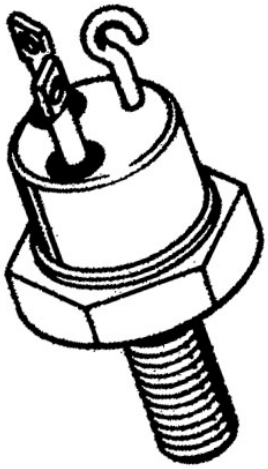
Applications

- High-speed power-switching
- Power Transistor
- PNP silicon transistor



Features

- Hermetically sealed TO-59 metal can
- Also available in chip configuration
- Chip geometry 9702
- Reference document: MIL-PRF-19500/535

Benefits

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

Absolute Maximum Ratings

T_C = 25°C unless otherwise specified

Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	80	Volts
Collector-Base Voltage	V_{CBO}	100	Volts
Emitter-Base Voltage	V_{EBO}	5.5	Volts
Collector Current, Continuous	I_C	5	A
Power Dissipation, T_A = 25°C Derate linearly above 25°C	P_T	2 11.4	W mW/°C
Power Dissipation, T_C = 25°C Derate linearly above 25°C	P_T	58 331	W mW/°C
Thermal Resistance	$R_{\theta JA}$ $R_{\theta JC}$	88 3	°C/W
Operating Junction Temperature	T_J	-65 to +200	°C
Storage Temperature	T_{STG}	-65 to +200	°C

Semicoa Semiconductors, Inc.
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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 mA	80			Volts
Collector-Emitter Cutoff Current	I_{CEO}	V_{CE} = 40 Volts			50	µA
Collector-Emitter Cutoff Current	I_{CEX}	V_{CE} = 60 Volts, V_{EB} = 2 Volts, T_A = 150°C			500	µA
Collector-Emitter Cutoff Current	I_{CES1} I_{CES2}	V_{CE} = 60 Volts V_{CE} = 100 Volts			1 1	µA mA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{EB} = 4 Volts V_{EB} = 5.5 Volts			1 1	µA mA
Thermal Impedance	θ_{JC}				3.1	°C/W

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}	I_C = 50 mA, V_{CE} = 5 Volts I_C = 2.5 A, V_{CE} = 5 Volts I_C = 5 A, V_{CE} = 5 Volts I_C = 2.5 A, V_{CE} = 5 Volts T_A = -55°C	20 30 20 15		90	
Base-Emitter Voltage	V_{BE}	V_{CE} = 5 Volts, I_C = 2.5 A			1.45	Volts
Base-Emitter Saturation Voltage	V_{BEsat1} V_{BEsat2}	I_C = 2.5 A, I_B = 250 mA I_C = 5 A, I_B = 500 mA			1.45 2.20	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2}	I_C = 2.5 A, I_B = 250 mA I_C = 5 A, I_B = 500 mA			0.75 1.50	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 = 500 mA, f = 10 MHz	6			
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	V_{CE} = 5 Volts, I_C = 100 mA, f = 1 kHz	20			
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 10 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			250	pF

Switching Characteristics

Saturated Turn-On Time Rise Time Fall Time Saturated Turn-Off Time	t_{ON} t_r t_f t_{OFF}	I_C = 5 A, I_{B1}=I_{B2} = 500 mA, V_{BE} = 3.7 Volts, RL = 6 Ω			0.5 1.4 0.5 1.5	µs

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