

Description

SEMICOA Corporation 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
www.**SEMICOA**.com or (714) 979-1900

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 _{θJA} R _{θJC}	88 3	°C/W
Operating Junction Temperature	T _J	-65 to +200	°C
Storage Temperature	T _{STG}	-65 to +200	°C

ELECTRICAL CHARACTERISTICS

 characteristics specified at $T_A = 25^\circ\text{C}$

Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 100\text{ mA}$	80			Volts
Collector-Emitter Cutoff Current	I_{CEO}	$V_{CE} = 40\text{ Volts}$			50	μA
Collector-Emitter Cutoff Current	I_{CEX}	$V_{CE} = 60\text{ Volts}$, $V_{EB} = 2\text{ Volts}$, $T_A = 150^\circ\text{C}$			500	μA
Collector-Emitter Cutoff Current	I_{CES1}	$V_{CE} = 60\text{ Volts}$			1	μA
	I_{CES2}	$V_{CE} = 100\text{ Volts}$			1	mA
Emitter-Base Cutoff Current	I_{EBO1}	$V_{EB} = 4\text{ Volts}$			1	μA
	I_{EBO2}	$V_{EB} = 5.5\text{ Volts}$			1	mA
Thermal Impedance	θ_{JC}				3.1	$^\circ\text{C}/\text{W}$

On Characteristics

 Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE1}	$I_C = 50\text{ mA}$, $V_{CE} = 5\text{ Volts}$	20			
	h_{FE2}	$I_C = 2.5\text{ A}$, $V_{CE} = 5\text{ Volts}$	30		90	
	h_{FE3}	$I_C = 5\text{ A}$, $V_{CE} = 5\text{ Volts}$	20			
	h_{FE4}	$I_C = 2.5\text{ A}$, $V_{CE} = 5\text{ Volts}$ $T_A = -55^\circ\text{C}$	15			
Base-Emitter Voltage	V_{BE}	$V_{CE} = 5\text{ Volts}$, $I_C = 2.5\text{ A}$			1.45	Volts
Base-Emitter Saturation Voltage	V_{BEsat1}	$I_C = 2.5\text{ A}$, $I_B = 250\text{ mA}$			1.45	Volts
	V_{BEsat2}	$I_C = 5\text{ A}$, $I_B = 500\text{ mA}$			2.20	
Collector-Emitter Saturation Voltage	V_{CEsat1}	$I_C = 2.5\text{ A}$, $I_B = 250\text{ mA}$			0.75	Volts
	V_{CEsat2}	$I_C = 5\text{ A}$, $I_B = 500\text{ mA}$			1.50	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 5\text{ Volts}$, $I_C = 500\text{ mA}$, $f = 10\text{ MHz}$	6			
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	$V_{CE} = 5\text{ Volts}$, $I_C = 100\text{ mA}$, $f = 1\text{ kHz}$	20			
Open Circuit Output Capacitance	C_{OBO}	$V_{CB} = 10\text{ Volts}$, $I_E = 0\text{ mA}$, $100\text{ kHz} < f < 1\text{ MHz}$			250	pF

Switching Characteristics

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