

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		$T_c = 25^\circ\text{C}$ 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, $T_A = 25^\circ\text{C}$ Derate linearly above 25°C	P_T	0.36 2.06	mW mW/ $^\circ\text{C}$
Thermal Resistance	$R_{\theta JA}$	325	$^\circ\text{C}/\text{W}$
Operating Junction Temperature	T_J	-65 to +200	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 to +200	$^\circ\text{C}$

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	$V_{(BR)CEO}$	$I_C = 10\text{ mA}$	15			Volts
Collector-Base Cutoff Current	I_{CBO1}	$V_{CB} = 40\text{ Volts}$			10	μA
	I_{CBO2}	$V_{CB} = 32\text{ Volts}$			0.2	
	I_{CBO3}	$V_{CB} = 20\text{ Volts}, T_A = 150^\circ\text{C}$			30	
Collector-Emitter Cutoff Current	I_{CEX}	$V_{CE} = 10\text{ Volts}, V_{EB} = 0.25\text{ Volts}$ $T_A = 125^\circ\text{C}$			30	μA
Collector-Emitter Cutoff Current	I_{CES}	$V_{CE} = 20\text{ Volts}$			400	nA
Emitter-Base Cutoff Current	I_{EBO1}	$V_{EB} = 4.5\text{ Volts}$			10	μA
	I_{EBO2}	$V_{EB} = 4\text{ Volts}$			0.25	

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}	$I_C = 10\text{ mA}, V_{CE} = 0.35\text{ Volts}$	40		120	
	h_{FE2}	$I_C = 30\text{ mA}, V_{CE} = 0.4\text{ Volts}$	30		120	
	h_{FE3}	$I_C = 10\text{ mA}, V_{CE} = 1\text{ Volts}$	40		120	
	h_{FE4}	$I_C = 100\text{ mA}, V_{CE} = 1\text{ Volts}$	20		120	
	h_{FE5}	$I_C = 10\text{ mA}, V_{CE} = 1\text{ Volts}$ $T_A = -55^\circ\text{C}$	20			
Base-Emitter Saturation Voltage	V_{BEsat1}	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$	0.70		0.85	
	V_{BEsat2}	$I_C = 30\text{ mA}, I_B = 3\text{ mA}$			0.90	
	V_{BEsat3}	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$	0.80		1.20	
	V_{BEsat4}	$I_C = 10\text{ mA}, I_B = 1\text{ mA}, T_A = +125^\circ\text{C}$	0.59			
	V_{BEsat5}	$I_C = 10\text{ mA}, I_B = 1\text{ mA}, T_A = -55^\circ\text{C}$			1.02	
Collector-Emitter Saturation Voltage	V_{CEsat1}	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$			0.20	
	V_{CEsat2}	$I_C = 30\text{ mA}, I_B = 3\text{ mA}$			0.25	
	V_{CEsat3}	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$			0.45	
	V_{CEsat4}	$I_C = 10\text{ mA}, I_B = 1\text{ mA}, T_A = +125^\circ\text{C}$			0.30	

Dynamic Characteristics

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