

## Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N4033J)
- JANTX level (2N4033JX) and
- JANTXV level (2N4033JV)
- 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](http://www.SEMICOA.com) or (714) 979-1900

## Applications

- High-speed switching
- Low Power
- PNP silicon transistor



## Features

- Hermetically sealed TO-39 metal can
- Also available in chip configuration
- Chip geometry 6700
- Reference document:  
MIL-PRF-19500/512

## Benefits

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

Absolute Maximum Ratings		$T_C = 25^\circ\text{C}$ unless otherwise specified	
Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO}$	80	Volts
Collector-Base Voltage	$V_{CBO}$	80	Volts
Emitter-Base Voltage	$V_{EBO}$	5	Volts
Collector Current, Continuous	$I_C$	1	A
Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above $60^\circ\text{C}$	$P_T$	0.8 5.7	W mW/ $^\circ\text{C}$
Thermal Resistance	$R_{\theta JA}$	175	$^\circ\text{C}/\text{W}$
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-Base Cutoff Current	$I_{CBO1}$	$V_{CB} = 80$ Volts			10	$\mu\text{A}$
	$I_{CBO2}$	$V_{CB} = 60$ Volts			10	nA
	$I_{CBO3}$	$V_{CB} = 60$ Volts, $T_A = 150^\circ\text{C}$			25	$\mu\text{A}$
Collector-Emitter Cutoff Current	$I_{CEX}$	$V_{CE} = 60$ Volts, $V_{EB} = 2$ Volts			25	nA
Emitter-Base Cutoff Current	$I_{EBO1}$	$V_{BE} = 5$ Volts			10	$\mu\text{A}$
	$I_{EBO2}$	$V_{BE} = 3$ Volts			25	nA

On Characteristics			Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle $\leq 2.0\%$			
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	$h_{FE1}$	$I_C = 100$ $\mu\text{A}$ , $V_{CE} = 5$ Volts	50			
	$h_{FE2}$	$I_C = 100$ mA, $V_{CE} = 5$ Volts	100		300	
	$h_{FE3}$	$I_C = 500$ mA, $V_{CE} = 5$ Volts	70			
	$h_{FE4}$	$I_C = 1$ A, $V_{CE} = 5$ Volts	25			
	$h_{FE5}$	$I_C = 500$ mA, $V_{CE} = 5$ Volts $T_A = -55^\circ\text{C}$	30			
Base-Emitter Saturation Voltage	$V_{BEsat1}$	$I_C = 150$ mA, $I_B = 15$ mA			0.9	Volts
	$V_{BEsat2}$	$I_C = 500$ mA, $I_B = 50$ mA			1.2	
Collector-Emitter Saturation Voltage	$V_{CEsat1}$	$I_C = 150$ mA, $I_B = 15$ mA			0.15	Volts
	$V_{CEsat2}$	$I_C = 500$ mA, $I_B = 50$ mA			0.50	
	$V_{CEsat3}$	$I_C = 1$ A, $I_B = 100$ mA			1.00	

Dynamic Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 10$ Volts, $I_C = 50$ mA, $f = 100$ MHz	1.5		6.0	
Open Circuit Output Capacitance	$C_{OBO}$	$V_{CB} = 10$ Volts, $I_E = 0$ mA, $100$ kHz $< f < 1$ MHz			20	pF
Open Circuit Input Capacitance	$C_{IBO}$	$V_{EB} = 0.5$ Volts, $I_C = 0$ mA, $100$ kHz $< f < 1$ MHz			80	pF

Switching Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Delay Time	$t_d$	$I_C = 500$ mA, $I_B = 50$ mA			15	ns
Rise Time	$t_r$		25			
Storage Time	$t_s$	$I_C = 500$ mA, $I_B = 50$ mA			175	ns
Fall Time	$t_f$		35			