

## Description

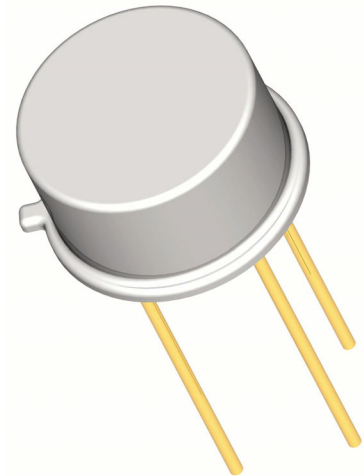
Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N5238J)
- JANTX level (2N5238JX)
- JANTXV level (2N5238JV)
- 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

- General purpose
- Low power, High voltage
- NPN silicon transistor



## Features

- Hermetically sealed TO-5 metal can
- Also available in chip configuration
- Chip geometry 3111
- Reference document: MIL-PRF-19500/394

## Benefits

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

Absolute Maximum Ratings		T <sub>C</sub> = 25°C unless otherwise specified	
Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	170	Volts
Collector-Base Voltage	V <sub>CB0</sub>	200	Volts
Emitter-Base Voltage	V <sub>EBO</sub>	10	Volts
Collector Current, Continuous	I <sub>C</sub>	10	A
Power Dissipation, T <sub>A</sub> = 25°C Derate linearly above 25°C	P <sub>T</sub>	1 5.7	W mW/°C
Power Dissipation, T <sub>C</sub> = 25°C Derate linearly above 100°C	P <sub>T</sub>	5 50	W mW/°C
Thermal Resistance	R <sub>θJA</sub> R <sub>θJC</sub>	.175 .020	°C/W
Operating Junction Temperature Storage Temperature	T <sub>J</sub> T <sub>STG</sub>	-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	$V_{(BR)CEO}$	$I_C = 100\text{ mA}$	170			Volts
Collector-Base Cutoff Current	$I_{CBO1}$	$V_{CB} = 200\text{ Volts}$			10	$\mu\text{A}$
	$I_{CBO2}$	$V_{CB} = 80\text{ Volts}$			100	nA
Collector-Emitter Cutoff Current	$I_{CEO}$	$V_{CE} = 160\text{ Volts}$			10	$\mu\text{A}$
Collector-Emitter Cutoff Current	$I_{CEX1}$	$V_{CE} = 160\text{ Volts}$ , $V_{EB} = .5\text{ Volts}$			10	$\mu\text{A}$
	$I_{CEX2}$	$V_{CE} = 160\text{ Volts}$ , $V_{EB} = .5\text{ Volts}$ , $T_A = 150^\circ\text{C}$			100	$\mu\text{A}$
Emitter-Base Cutoff Current	$I_{EBO1}$	$V_{EB} = 7\text{ Volts}$			10	$\mu\text{A}$
	$I_{EBO2}$	$V_{EB} = 5\text{ Volts}$			100	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	$h_{FE1}$	$I_C = 1\text{ A}$ , $V_{CE} = 5\text{ Volts}$	50		225	
	$h_{FE2}$	$I_C = 5\text{ A}$ , $V_{CE} = 5\text{ Volts}$	40		120	
	$h_{FE3}$	$I_C = 10\text{ A}$ , $V_{CE} = 5\text{ Volts}$	10			
	$h_{FE4}$	$I_C = 5\text{ A}$ , $V_{CE} = 5\text{ Volts}$ , $T_A = -55^\circ\text{C}$	20			
Base-Emitter Saturation Voltage	$V_{BEsat1}$	$I_C = 5\text{ A}$ , $I_B = 500\text{ mA}$			1.5	Volts
	$V_{BEsat2}$	$I_C = 10\text{ A}$ , $I_B = 1\text{ A}$			2.5	
Collector-Emitter Saturation Voltage	$V_{CEsat1}$	$I_C = 5\text{ A}$ , $I_B = 500\text{ mA}$			0.6	Volts
	$V_{CEsat2}$	$I_C = 10\text{ A}$ , $I_B = 1\text{ A}$			2.5	

Dynamic Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 10\text{ Volts}$ , $I_C = 200\text{ mA}$ , $f = 10\text{ MHz}$	1.5		7.5	
Small Signal Short Circuit Forward Current Transfer Ratio	$h_{FE}$	$V_{CE} = 5\text{ Volts}$ , $I_C = 50\text{ mA}$ , $f = 1\text{ kHz}$	40		250	
Open Circuit Output Capacitance	$C_{OBO}$	$V_{CB} = 10\text{ Volts}$ , $I_E = 0\text{ mA}$ , $100\text{ kHz} < f < 1\text{ MHz}$			350	pF

Switching Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Delay Time	$t_d$	$I_C = 5\text{ A}$ , $I_B = 500\text{ mA}$ ,			50	ns
Rise Time	$t_r$				500	
Storage Time	$t_s$	$I_C = 5\text{ A}$ , $I_{B1} = I_{B2} = 500\text{ mA}$			1.5	$\mu\text{s}$
Fall Time	$t_f$				500	