

Description

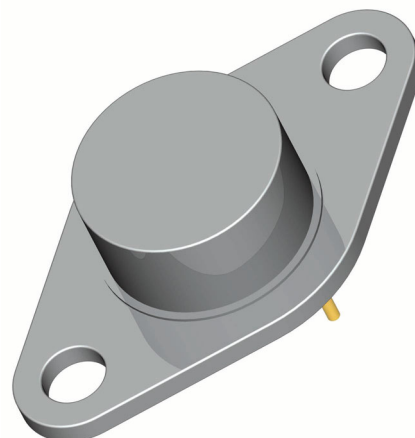
Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N5038J)
- JANTX level (2N5038JX)
- JANTXV level (2N5038JV)
- 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
- High power
- NPN silicon transistor



Features

- Hermetically sealed TO-3 metal can
- Also available in chip configuration
- Chip geometry 9351
- Reference document: MIL-PRF-19500/439

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}	90	Volts
Collector-Base Voltage	V_{CBO}	150	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector Current, Continuous	I_C	20	A
Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above 25°C	P_T	140 800	W mW/ $^\circ\text{C}$
Thermal Resistance	$R_{\theta JA}$	1.25	$^\circ\text{C}/\text{W}$
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	$V_{(BR)CEO}$	$I_C = 200\text{ mA}$	90			Volts
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 25\text{ mA}$	7			Volts
Collector-Base Cutoff Current	I_{CBO1}	$V_{CB} = 150\text{ Volts}$			1	μA
Collector-Emitter Cutoff Current	I_{CEO}	$V_{CE} = 70\text{ Volts}$			1	μA
Collector-Emitter Cutoff Current	I_{CEX1} I_{CEX2}	$V_{CE} = 100\text{ Volts}$, $V_{EB} = 1.5\text{ Volts}$ $V_{CE} = 100\text{ Volts}$, $V_{EB} = 1.5\text{ Volts}$, $T_A = 150^\circ\text{C}$			5 100	μA
Emitter-Base Cutoff Current	I_{EBO}	$V_{EB} = 5\text{ Volts}$			1	μA

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}	$I_C = 0.5\text{ A}$, $V_{CE} = 5\text{ Volts}$	50		200	
	h_{FE2}	$I_C = 2\text{ A}$, $V_{CE} = 5\text{ Volts}$	50			
	h_{FE3}	$I_C = 12\text{ A}$, $V_{CE} = 5\text{ Volts}$	15			
	h_{FE4}	$I_C = 12\text{ A}$, $V_{CE} = 5\text{ Volts}$ $T_A = -55^\circ\text{C}$	10			
Base-Emitter Voltage	V_{BE}	$V_{CE} = 5\text{ Volts}$, $I_C = 12\text{ A}$			1.8	Volts
Base-Emitter Saturation Voltage	V_{BEsat}	$I_C = 20\text{ A}$, $I_B = 5\text{ A}$			3.3	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1}	$I_C = 12\text{ A}$, $I_B = 1.2\text{ A}$			1.0	Volts
	V_{CEsat2}	$I_C = 20\text{ A}$, $I_B = 5\text{ A}$			2.5	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 10\text{ Volts}$, $I_C = 2\text{ A}$, $f = 5\text{ MHz}$	12		48	
Open Circuit Output Capacitance	C_{OBO}	$V_{CB} = 10\text{ Volts}$, $I_E = 0\text{ mA}$, $100\text{ kHz} < f < 1\text{ MHz}$			500	pF

Switching Characteristics

Saturated Turn-On Time	t_{ON}	$I_C = 12\text{ A}$, $I_{B1} = 1.2\text{ A}$			0.5	μs
Saturated Turn-Off Time	t_{OFF}	$I_C = 12\text{ A}$, $I_{B1} = -I_{B2} = 1.2\text{ A}$			2.0	μs