SEMICOA
SEMICONDUCTORS

2N4033
Silicon PNP Transistor

Data Sheet

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 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°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°C Derate linearly above 60°C	P_T	0.8 5.7	W mW/°C
Thermal Resistance	$R_{\theta JA}$	175	°C/W
Operating Junction Temperature	T_J	-65 to +200	°C
Storage Temperature	T_{STG}	-65 to +200	°C

ELECTRICAL CHARACTERISTICS

characteristics specified at $T_A = 25°C$

Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Base Cutoff Current	I_{CBO1} I_{CBO2} I_{CBO3}	V_{CB} = 80 Volts V_{CB} = 60 Volts V_{CB} = 60 Volts, T_A = 150°C			10 10 25	μA nA μA
Collector-Emitter Cutoff Current	I_{CEX}	V_{CE} = 60 Volts, V_{EB} = 2 Volts			25	nA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{BE} = 5 Volts V_{BE} = 3 Volts			10 25	μA nA

On Characteristics   Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE1} h_{FE2} h_{FE3} h_{FE4} h_{FE5}	I_C = 100 μA, V_{CE} = 5 Volts I_C = 100 mA, V_{CE} = 5 Volts I_C = 500 mA, V_{CE} = 5 Volts I_C = 1 A, V_{CE} = 5 Volts I_C = 500 mA, V_{CE} = 5 Volts T_A = -55°C	50 100 70 25 30		300	
Base-Emitter Saturation Voltage	V_{BEsat1} V_{BEsat2}	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA			0.9 1.2	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2} V_{CEsat3}	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA I_C = 1 A, I_B = 100 mA			0.15 0.50 1.00	Volts

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 Rise Time	t_d t_r	I_C = 500 mA, I_B = 50 mA			15 25	ns
Storage Time Fall Time	t_s t_f	I_C = 500 mA, I_B = 50 mA			175 35	ns

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