SEMICOA SEMICONDUCTORS

Data Sheet No. 2N5039

Type 2N5039
Geometry H9352
Polarity NPN
Qual Level: Pending

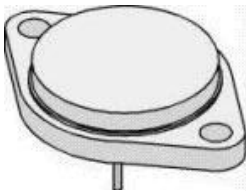
Generic Part Number: 2N5039

REF: MIL-PRF-19500/439

Request Quotation

Features:

- General-purpose high power transistor for use in high speed switching applications.
- Housed in TO-3 case.
- Also available in chip form using the H9352 chip geometry.
- The Min and Max limits shown are per MIL-PRF-19500/439 which Semicoa meets in all cases.



TO-3

Maximum Ratings

$T_C = 25^oC$ unless otherwise specified

Rating	Symbol	Rating	Unit
Collector-Emitter voltage	V_{CEO}	75	V
Collector-Base Voltage	V_{CBO}	125	V
Emitter-Base voltage	V_{EBO}	7.0	V
Base Current Continuous	I_B	5.0	
Collector Current, Continuous	I_C	2.0	A
Power Dissipation, $T_C = 25^oC$	P_T	140	Watt
Derate above 25^oC		800	$mW/^oC$
Operating Junction Temperature	T_J	-65 to +200	^oC
Storage Temperature	T_{STG}	-65 to +200	^oC

Electrical Characteristics

T_C = 25°C unless otherwise specified

OFF Characteristics	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage I_C = 200 mA, I_C = 200 mA, pulsed	$V_{(BR)CBO}$	75	---	V
Emitter-Base Breakdown Voltage I_C = 200 mA, I_C = 200 mA, pulsed	$V_{(BR)EBO}$	7	---	V
Collector-Base Cutoff Current V_{CE} = 125 V	I_{CBO}	---	1.0	µA
Emitter-Base Cutoff Current V_{EB} = 55 V	I_{CEO}	---	1.0	µA
Collector-Emitter Cutoff Current V_{BE} = -1.5 V, V_{CE} = 85 V V_{BE} = -1.5 V, V_{CE} = 85 V, T_C = 150°C	I_{CEX1} I_{CEX2}	--- ---	5 100	µA µA

ON Characteristics	Symbol	Min	Max	Unit
Forward Current Transfer Ratio				
I_C = 0.5 mA, V_{CE} = 5 V	h_{FE1}	30	---	---
I_C = 2.0 A, V_{CE} = 5.0 V, pulsed	h_{FE2}	30	150	---
I_C = 10 A, V_{CE} = 5 V, pulsed	h_{FE3}	15	---	---
I_C = 10 A, V_{CE} = 5 V, T_C = -55°C	h_{FE4}	10	---	---
Base-Emitter Voltage, Nonsaturated V_{CE} = 5 V, pulsed	$V_{BE(on)}$	---	1.8	V dc
Base-Emitter Saturation Voltage I_C = 20 A, I_B = 5 A	$V_{BE(sat)}$	---	3.3	V dc
Collector-Emitter Saturation Voltage				
I_C = 10 A, I_B = 1.2 A, pulsed	$V_{CE(sat)}$	---	1.0	V dc
I_C = 20 A, I_B = 5 A, pulsed	$V_{CE(sat)2}$	---	2.5	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
Magnitude of Common Emitter, Small Signal, Short Circuit Forward Current Transfer Ratio V_{CE} = 10 V, I_C = 2 A, f = 5 MHz	$\|h_{FE}\|$	12	48	---
Open Circuit Output Capacitance V_{CB} = 10 V, I_E = 0, 100 kHz < f < 1 MHz	C_{OBO}	---	500	pF

Pulse Response	Symbol	Min	Max	Unit
Turn on Time V_{CC} = 30 V, I_C = 10 A, I_{B1} = 1.0 A	t_{on}	---	0.5	µs
Turn off Time V_{CC} = 30 V, I_C = 10 A, I_{B1} = -I_{B2} = 1.0 A	t_{off}	---	2.0	µs
Open Circuit Output Capacitance V_{CB} = 10 V, I_E = 0, 100 kHz < f < 1 MHz	C_{OBO}	---	500	pF