SEMICOA SEMICONDUCTORS

Data Sheet No. 2N5005

Type 2N5005
Geometry 9702
Polarity PNP
Qual Level: JAN - JANTXV

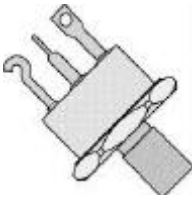
Generic Part Number:
2N5005

REF: MIL-PRF-19500/512

Features:

Request Quotation

- Silicon power transistor for use in high speed power switching applications.
- Housed in a TO-59 case.
- Also available in chip form using the 9702 chip geometry.
- The Min and Max limits shown are per MIL-PRF-19500/512 which Semicoa meets in all cases.



TO-59

Maximum Ratings

T_C = 25°C unless otherwise specified

Rating	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	80	V
Collector-Base Voltage	V_{CBO}	100	V
Emitter-Base Voltage	V_{EBO}	5.5	V
Collector Current, Continuous	I_C	10	A
Collector Current, P_W < 8.3 ms, < 1% duty cycle	I_C	15	A
Reverse Pulse Energy		15	mJ
Power Disipation T_A = 25°C ambient Derate above 25°C	P_T	2 11.4	Watt mW/°C
Power Disipation T_C = 25°C ambient Derate above 25°C	P_T	58 331	Watt mW/°C
Operating Junction Temperature	T_J	-55 to +200	°C
Storage Temperature	T_{STG}	-55 to +200	°C

Electrical Characteristics

T_C = 25°C unless otherwise specified

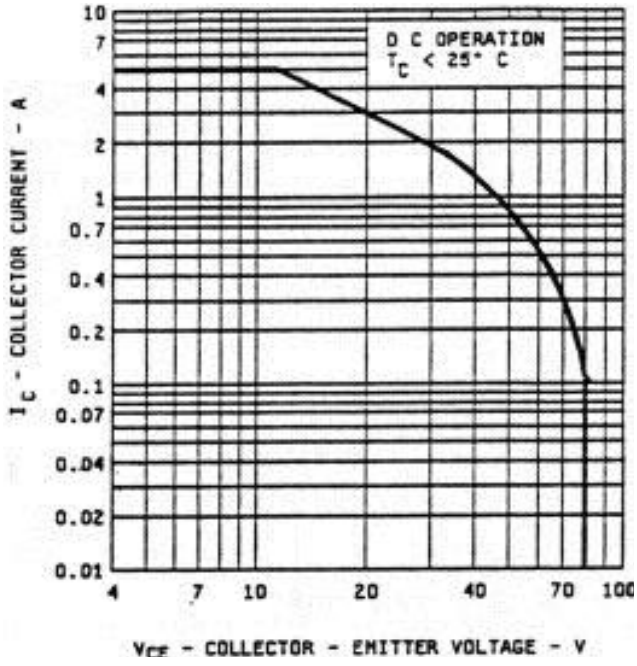
OFF Characteristics	Symbol	Min	Max	Unit
Thermal Impedance			3.1	°C/W
Collector-Emitter Breakdown Voltage I_C = 100 mA, I_B = 0, pulsed	$V_{(BR)CEO}$	80	---	V
Collector-Emitter Cutoff Current V_{CE} = 40 V, V_{BE} = 0, Bias Condition D V_{CE} = 60 V, V_{BE} = 0, Bias Condition C V_{CE} = 100 V, V_{BE} = 0, Bias Condition C	 I_{CEO} I_{CES1} I_{CES2}	 --- --- ---	 50 1.0 1.0	 µA µA mA
Collector-Emitter Cutoff Current V_{CE} = 60 V, V_{BE} = +2.0 V, T_C = +150°C	I_{CEX}	---	500	µA
Base-Emitter Cutoff Current V_{EB} = 4 V, I_C = 0, Bias Condition D V_{EB} = 5.5 V, I_C = 0, Bias Condition D	 I_{EBO1} I_{EBO2}	 --- ---	 1.0 1.0	 µA mA

ON Characteristics	Symbol	Min	Max	Unit
Forward Current Transfer Ratio I_C = 50 mA, V_{CE} = 5 V I_C = 2.5 A, V_{CE} = 5 V, pulsed I_C = 5.0 A, V_{CE} = 5 V, pulsed I_C = 2.5 A, V_{CE} = 5 V pulsed, T_A = -55°C	 h_{FE1} h_{FE2} h_{FE3} h_{FE4}	 50 70 40 25	 --- 200 --- ---	 --- --- --- ---
Base-Emitter Voltage, Nonsaturted I_C = 2.5 V, V_{CE} = 5 V pulsed	V_{BE}	---	1.45	V dc
Base-Emitter Saturation Voltage I_C = 2.5 A, I_B = 250 mA, pulsed I_C = 5 A, I_B = 500 mA, pulsed	 $V_{BE(sat)1}$ $V_{BE(sat)2}$	 --- ---	 1.45 2.2	 V dc V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
Magnitude of Common Emitter Small Signal Short Circuit Forward Current Transfer Ratio V_{CE} = 5 V, I_C = 500 mA, f = 10 MHz	$\|h_{fe}\|$	7.0	---	---
Common Emitter, Small Signal Short Circuit Forward Current Transfer Ratio V_{CE} = 5 V, I_C = 100 mA, f = 1 kHz	h_{fe}	50	---	---
Open Circuit Output Capacitance V_{CB} = 10 V, I_E = 0, f = 1 MHz	C_{OBO}	---	250	pF

Switching Time	Symbol	Min	Max	Unit
Delay Time I_C = 5 A, I_{B1} = 500 mA	t_{ON}	---	0.5	µs
Storage Time I_{B2} = -500 mA	t_s	---	1.4	µs
Fall Time $V_{BE(off)}$ = 3.7 V	t_f	---	0.5	µs
Turn-Off Time R_L = 6 ohms	t_{OFF}	---	1.5	µs

Maximum Ratings



Switching Time