

Type 2N5003
Geometry 9702
Polarity PNP
Qual Level: JAN - JANTXV

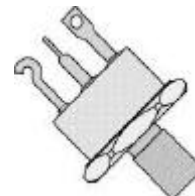
Generic Part Number:
2N5003

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

$T_C = 25^{\circ}\text{C}$ 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
Power Disipation $T_A = 25^{\circ}\text{C}$ ambient Derate above 25°C	P_T	2 11.4	Watt $\text{mW}/^{\circ}\text{C}$
Power Disipation $T_C = 25^{\circ}\text{C}$ ambient Derate above 25°C	P_T	58 331	Watt $\text{mW}/^{\circ}\text{C}$
Operating Junction Temperature	T_J	-55 to +200	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to +200	$^{\circ}\text{C}$

Electrical Characteristics

$T_C = 25^\circ\text{C}$ unless otherwise specified

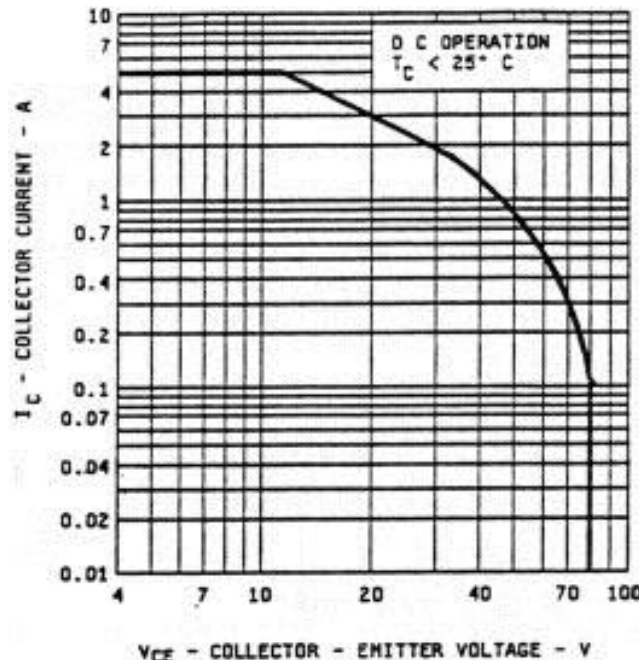
OFF Characteristics	Symbol	Min	Max	Unit
Thermal Impedance			3.1	$^\circ\text{C}/\text{W}$
Collector-Emitter Breakdown Voltage $I_C = 100\text{ mA}, I_B = 0, \text{pulsed}$	$V_{(BR)CEO}$	80	---	V
Collector-Emitter Cutoff Current $V_{CE} = 40\text{ V}, V_{BE} = 0, \text{Bias Condition D}$	I_{CEO}	---	50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

ON Characteristics	Symbol	Min	Max	Unit
Forward Current Transfer Ratio $I_C = 50\text{ mA}, V_{CE} = 5\text{ V}$	h_{FE1}	20	---	---
$I_C = 2.5\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}$	h_{FE2}	30	90	---
$I_C = 5.0\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}$	h_{FE3}	20	---	---
$I_C = 2.5\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}, T_A = -55^\circ\text{C}$	h_{FE4}	15	---	---
Base-Emitter Voltage, Nonsaturated $I_C = 2.5\text{ V}, V_{CE} = 5\text{ V}, \text{pulsed}$	V_{BE}	---	1.45	V dc
Base-Emitter Saturation Voltage $I_C = 2.5\text{ A}, I_B = 250\text{ mA}, \text{pulsed}$	$V_{BE(sat)1}$	---	1.45	V dc
$I_C = 5\text{ A}, I_B = 500\text{ mA}, \text{pulsed}$	$V_{BE(sat)2}$	---	2.2	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
<i>Magnitude of Common Emitter Small Signal Short Circuit Forward Current Transfer Ratio</i> $V_{CE} = 5\text{ V}, I_C = 500\text{ mA}, f = 10\text{ MHz}$	$ h_{fe} $	6	---	---
<i>Common Emitter, Small Signal Short Circuit Forward Current Transfer Ratio</i> $V_{CE} = 5\text{ V}, I_C = 100\text{ mA}, f = 1\text{ kHz}$	h_{fe}	20	---	---
<i>Open Circuit Output Capacitance</i> $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	C_{OBO}	---	250	pF

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

Maximum Ratings



Switching Time

