



Data Sheet No. 2N1893S

Type 2N1893S

Geometry 4500

Polarity NPN

Qual Level: JAN - JANTXV

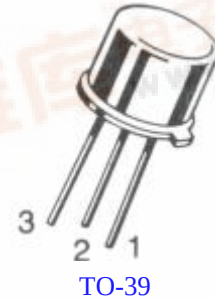
**Generic Part Number:
2N1893**

REF: MIL-PRF-19500/182

Features:

- General-purpose low-power NPN silicon transistor.
- Housed in **TO-39** case.
- Also available in chip form using the **4500** chip geometry.
- The Min and Max limits shown are per **MIL-PRF-19500/182** which Semicoa meets in all cases.

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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}	120	V
Emitter-Base Voltage	V_{EBO}	7.0	V
Collector - Emitter Voltage, $R_{BE} = 10 \text{ Ohms}$	V_{CER}	100	V
Collector Current, Continuous	I_C	500	mA
Power Dissipation, $T_A = 25^\circ\text{C}$	P_T	0.8	mW
Derate above 25°C		4.57	mW/ $^\circ\text{C}$
Power Dissipation, $T_C = 25^\circ\text{C}$	P_T	3.0	mW
Derate above 25°C		17.2	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
Collector-Base Breakdown Voltage $I_C = 100\ \mu\text{A}$, pulsed	$V_{(BR)CBO}$	120	---	V
Collector-Emitter Breakdown Voltage $I_C = 30\ \text{mA}$, pulsed	$V_{(BR)CEO}$	80	---	V
Emitter-Base Breakdown Voltage $I_E = 10\ \mu\text{A}$, pulsed	$V_{(BR)EBO}$	7.0	---	---
Collector-Base Cutoff Current $V_{CB} = 90\ \text{V}$	I_{CBO1}	---	10	nA
Collector-Base Cutoff Current $V_{CB} = 90\ \text{V}$, $T_A = 150^\circ\text{C}$	I_{CBO2}	---	15	μA
Emitter-Base Cutoff Current $V_{EB} = 6\ \text{V}$	I_{EBO}	---	10	nA

ON Characteristics	Symbol	Min	Max	Unit
Forward Current Transfer Ratio $I_C = 0.1\ \text{mA}$, $V_{CE} = 10\ \text{V}$, pulsed	h_{FE1}	20	---	---
$I_C = 10\ \text{mA}$, $V_{CE} = 10\ \text{V}$, pulsed	h_{FE2}	35	---	---
$I_C = 150\ \text{mA}$, $V_{CE} = 10\ \text{V}$, pulsed	h_{FE3}	40	120	---
Base-Emitter Saturation Voltage $I_C = 150\ \text{mA}$, $I_B = 15\ \text{mA}$, pulsed	$V_{BE(sat)1}$	---	1.3	V dc
Collector-Emitter Saturation Voltage $I_C = 150\ \text{mA}$, $I_B = 15\ \text{mA}$, pulsed	$V_{CE(sat)1}$	---	5.0	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
<i>Magnitude of Common Emitter, Small Signal, Short Circuit</i> Forward Current Transfer Ratio $V_{CE} = 5\ \text{V}$, $I_C = 1\ \text{mA}$, $f = 20\ \text{MHz}$	$ h_{FE} $	3.0	10	---
<i>Small Signal, Short Circuit</i> Forward Current Transfer Ratio $V_{CE} = 5\ \text{V}$, $I_C = 5\ \text{mA}$	h_{FE}	35	100	---
<i>Small Signal, Short Circuit</i> Forward Current Transfer Ratio $V_{CE} = 10\ \text{V}$, $I_C = 10\ \text{mA}$, $f = 1\ \text{kHz}$	h_{FE}	45	---	---
<i>Small Signal, Short Circuit Input Impedance</i> $V_{CB} = 10\ \text{V}$, $I_C = 5\ \text{mA}$	h_{ib}	4.0	8.0	Ohms
<i>Small Signal, Open Circuit Output Admittance</i> $V_{CB} = 10\ \text{V}$, $I_C = 5.0\ \text{mA}$	h_{ob}	0	0.5	μOhms
<i>Small signal, Open Circuit Reverse Voltage Transfer Ratio</i> $V_{CB} = 10\ \text{V}$, $I_C = 5\ \text{mA}$	h_{rb}	---	1.5×10^{-4}	---
<i>Open Circuit Output Capacitance</i> $V_{CB} = 10\ \text{V}$, $I_E = 0$, $100\ \text{kHz} < f < 1\ \text{MHz}$	C_{OBO}	5.0	15	pF
<i>Pulse Response</i> See Test Condition in MIL-S-19500/182D	$t_{on} + t_{off}$	---	30	ns