

**Type 2N1893**  
**Geometry 4500**  
**Polarity NPN**  
**Qual Level: JAN - JANTXV**

**Generic Part Number:**  
**2N1893**

**REF: MIL-PRF-19500/182**

**Features:**

[Request Quotation](#)

- General-purpose low-power NPN silicon transistor.
- Housed in TO-5 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.



TO -5

**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, $R_{BE} = 10$ 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 $25^{\circ}\text{C}$		4.57	mW/ $^{\circ}\text{C}$
Power Dissipation, $T_C = 25^{\circ}\text{C}$	$P_T$	3.0	mW
Derate above $25^{\circ}\text{C}$		17.2	mW/ $^{\circ}\text{C}$
Operating Junction Temperature	$T_J$	-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 $I_E = 10 \mu\text{A}$	$V_{(BR)EBO}$	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	$\mu\text{A}$
Emitter-Base Cutoff Current $V_{EB} = 6 \text{ V}$	$I_{EBO}$	---	10	nA

ON Characteristics	Symbol	Min	Max	Unit
<b>Forward Current Transfer Ratio</b>				
$I_C = 0.1 \text{ mA}$ , $V_{CE} = 10 \text{ V}$ , 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	---
<b>Base-Emitter Saturation Voltage</b>				
$I_C = 150 \text{ mA}$ , $I_B = 15 \text{ mA}$ , pulsed	$V_{BE(sat)1}$	---	1.3	V dc
<b>Collector-Emitter Saturation Voltage</b>				
$I_C = 150 \text{ mA}$ , $I_B = 15 \text{ mA}$ , 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>				
$V_{CB} = 10 \text{ V}$ , $I_C = 5 \text{ mA}$	hib	4.0	8.0	Ohms
<i>Small Signal, Open Circuit Output Admittance</i>				
$V_{CB} = 10 \text{ V}$ , $I_C = 5.0 \text{ mA}$	hob	0	0.5	$\mu\text{Ohms}$
<i>Small signal, Open Circuit reverse Voltage Transfer Ratio</i>				
$V_{CB} = 10 \text{ V}$ , $I_C = 5 \text{ mA}$	hrb	---	$1.5 \times 10^{-4}$	---
<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