

## PNP MEDIUM POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/561

### Devices

**2N6193**

### Qualified Level

**JAN, JANTX  
JANTXV**

### MAXIMUM RATINGS

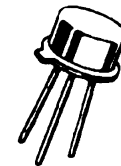
Ratings	Symbol	2N6193	Units
Collector-Emitter Voltage	$V_{CEO}$	100	Vdc
Collector-Base Voltage	$V_{CBO}$	100	Vdc
Emitter-Base Voltage	$V_{EBO}$	6.0	Vdc
Collector Current	$I_C$	5.0	Adc
Base Current	$I_B$	1.0	Adc
Total Power Dissipation	$P_T$	@ $T_A = +25^{\circ}\text{C}^{(1)}$	1.0
		@ $T_C = +25^{\circ}\text{C}^{(2)}$	10
Operating & Storage Temperature Range	$T_{op}, T_{stg}$	-65 to +200	$^{\circ}\text{C}$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	17.5	$^{\circ}\text{C}/\text{W}$

1) Derate linearly  $5.71\text{mW}/^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$

2) Derate linearly  $57.1\text{mW}/^{\circ}\text{C}$  for  $T_C > +25^{\circ}\text{C}$



TO-39\*  
(TO-205AD)

\*See appendix A for package outline

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
-----------------	--------	------	------	------

### OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage $I_C = 50\text{ mAdc}$	$V_{CEO(sus)}$	100		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 100\text{ Vdc}$	$I_{CEO}$		100	$\mu\text{Adc}$
Emitter-Base Cutoff Current $V_{EB} = 6.0\text{ Vdc}$	$I_{EBO}$		100	$\mu\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 90\text{ Vdc}, V_{BE} = 1.5\text{ Vdc}$	$I_{CEX}$		10	$\mu\text{Adc}$
Collector-Base Cutoff Current $V_{CB} = 100\text{ Vdc}$	$I_{CBO}$		10	$\mu\text{Adc}$

## 2N6193 JAN SERIES

### ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS <sup>(3)</sup></b>				
DC Current Gain I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 2.0 Vdc I <sub>C</sub> = 2.0 Adc, V <sub>CE</sub> = 2.0 Vdc I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 2.0 Vdc	h <sub>FE</sub>	60 60 40	240	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 2.0 Adc, I <sub>B</sub> = 0.2 Adc I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 0.5 Adc	V <sub>CE(sat)</sub>		0.7 1.2	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 2.0 Adc, I <sub>B</sub> = 0.2 Adc I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 0.5 Adc	V <sub>BE(sat)</sub>		1.2 1.8	Vdc

### DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short Circuit Forward-Current Transfer Ratio I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 10 Vdc, f = 10 MHz	h <sub>fe</sub>	3.0	15	
Output Capacitance V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz	C <sub>obo</sub>		300	pF
Output Capacitance V <sub>BE</sub> = 2.0 Vdc, I <sub>C</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz	C <sub>ibo</sub>		1250	pF

### SWITCHING CHARACTERISTICS

Delay Time	V <sub>CC</sub> = -40 Vdc, V <sub>BE(off)</sub> = 3.0 Vdc	t <sub>d</sub>		100	ns
Rise Time	I <sub>C</sub> = 2.0 Adc, I <sub>B1</sub> = 0.2 Adc	t <sub>r</sub>		100	ns
Storage Time	V <sub>CC</sub> = -40 Vdc I <sub>C</sub> = 2.0 Adc,	t <sub>s</sub>		2.0	μs
Fall Time	I <sub>B1</sub> = -I <sub>B2</sub> = 0.2 Adc	t <sub>f</sub>		200	ns

### SAFE OPERATING AREA

<b>DC Tests</b> T <sub>C</sub> = +25°C, 1 Cycle, t ≥ 0.5 s					
<b>Test 1</b> V <sub>CE</sub> = 2.0 Vdc, I <sub>C</sub> = 5.0 Adc					
<b>Test 2</b> V <sub>CE</sub> = 90 Vdc, I <sub>C</sub> = 55 mAdc					

(3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.