



## NPN 2N1893

### MEDIUM POWER TRANSISTOR

The 2N1893 are NPN transistors mounted in TO-39 metal package. They are intended for use in high performance amplifier, oscillator and switching applications. Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	80	V
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	120	V
$V_{CER}$	Collector-Emitter Voltage ( $R_{BE} = 10 \Omega$ )	100	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current	0.5	A
$I_{CM}$	Peak Collector Current	1	A
$I_{BM}$	Peak Base Current	0.2	A
$P_D$	Total Power Dissipation	$T_{amb} = 25^\circ\text{C}$	0.8
		$T_{case} = 25^\circ\text{C}$	3
		$T_{case} = 100^\circ\text{C}$	1.7
$T_J$	Junction Temperature	200	°C
$T_{Stg}$	Storage Temperature range	-65 to +150	
$T_{amb}$	operating ambient temperature	-65 to +150	

#### THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{thJ-c}$	Thermal Resistance, Junction-case	58.3	°C/W
$R_{thj-a}$	thermal resistance from junction to ambient in free air	219	

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### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

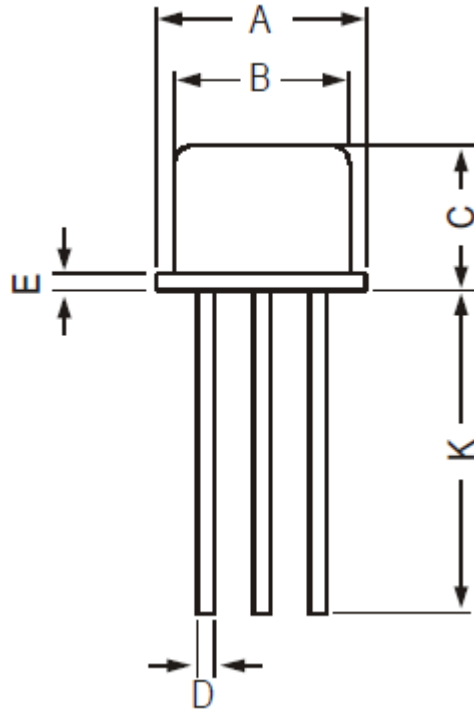
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 90\text{ V}$ $I_E = 0$	$T_{amb} = 25^\circ\text{C}$	-	-	10	nA
			$T_{amb} = 150^\circ\text{C}$	-	-	15	$\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 5\text{ V}, I_B = 0$	-	-	10	nA	
$V_{CBO}$	Collector Base Sustaining Voltage	$I_C = 100\text{ mA}, I_E = 0$	120	-	-	V	
$V_{CEO}$	Collector Emitter Sustaining Voltage (*)	$I_C = 10\text{ mA}, I_B = 0$	80	-	-	V	
$V_{CER}$	Collector Base Breakdown Voltage (*)	$I_C = 10\text{ mA}, R_{BE} = 10\ \Omega$	100	-	-	V	
$V_{EBO}$	Emitter Base Breakdown Voltage	$I_E = 100\ \mu\text{A}, I_C = 0$	7	-	-	V	
$h_{FE}$	DC Current Gain (*)	$I_C = 0.1\text{ mA}, V_{CE} = 10\text{ V}$		20	-	-	-
		$I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$	$T_{amb} = 25^\circ\text{C}$	20	-	-	
			$T_{amb} = -55^\circ\text{C}$	35	-	-	
		$I_C = 150\text{ mA}, V_{CE} = 10\text{ V}$		40	-	120	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C = 50\text{ mA}, I_B = 5\text{ mA}$		-	-	0.9	V
		$I_C = 150\text{ mA}, I_B = 15\text{ mA}$		-	-	0.5	
$V_{BE(SAT)}$	Base-Emitter saturation Voltage (*)	$I_C = 50\text{ mA}, I_B = 5\text{ mA}$		-	-	1.2	V
		$I_C = 150\text{ mA}, I_B = 15\text{ mA}$		-	-	1.3	
$f_T$	Transition Frequency	$I_C = 50\text{ mA}, V_{CE} = 10\text{ V}$ $f = 20\text{ MHz}$	50	-	-	MHz	
$C_C$	Collector Capacitance	$I_E = i_e = 0, V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$	-	-	15	pF	
$C_e$	Base Capacitance	$I_C = i_c = 0, V_{EB} = 0.5\text{ V}$ $f = 1\text{ MHz}$	-	-	85	pF	

(\*) Pulse conditions :  $t_p < 300\ \mu\text{s}, \delta = 2\%$ .

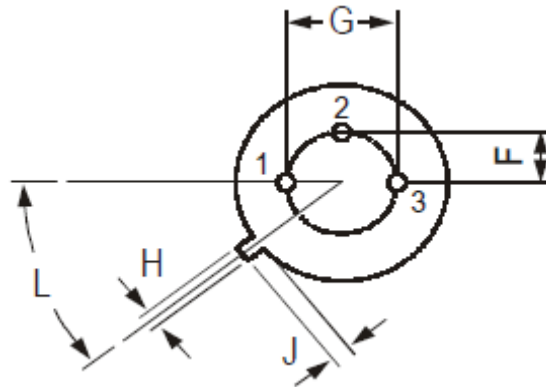
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### MECHANICAL DATA CASE TO-39

DIMENSIONS (mm)		
	min	max
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	0.53
E	-	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.70	-
L	42°	48°



Pin 1 :	Emitter
Pin 2 :	Base
Pin 3 :	Collector
Case :	Collector



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