



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	$T_{amb} = 25^\circ C$	0.8
		$T_{case} = 25^\circ C$	3
		$T_{case} = 100^\circ C$	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

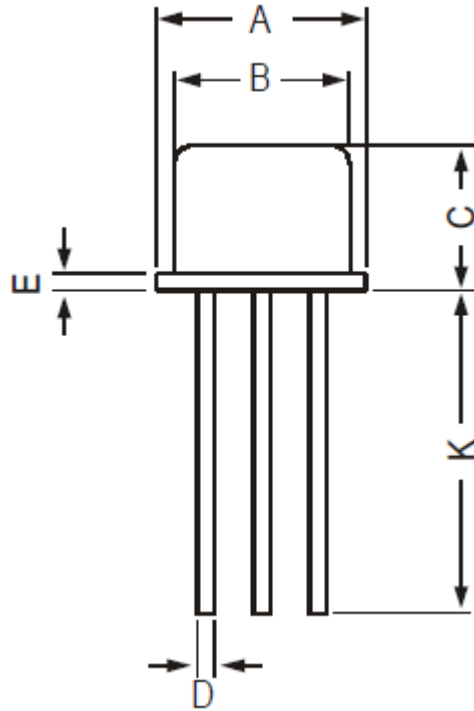
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
I_{CBO}	Collector Cutoff Current	$V_{CB} = 90\text{ V}$ $I_E = 0$	$T_{amb} = 25^\circ\text{C}$	-	-	10	nA
			$T_{amb} = 150^\circ\text{C}$	-	-	15	μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 5\text{ V}, I_B = 0$	-	-	10	nA	
V_{CBO}	Collector Base Sustaining 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 : $t_p < 300\ \mu\text{s}, \delta = 2\%$.

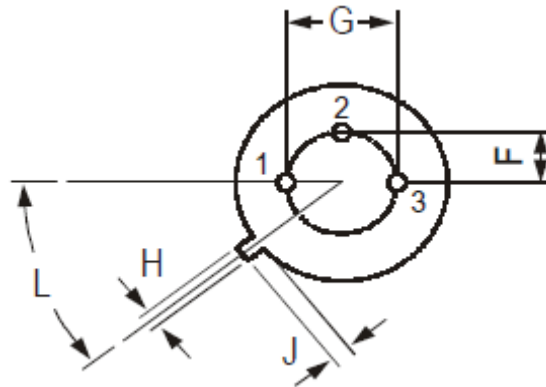
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MECHANICAL DATA CASE TO-39

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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