

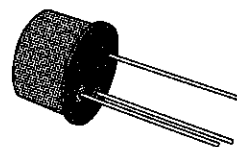
GENERAL PURPOSE HIGH-VOLTAGE TYPE

DESCRIPTION

The 2N1893 is a silicon planar epitaxial NPN transistor in Jedec TO-39 metal case, designed for use in high-performance amplifier, oscillator and switching circuits.

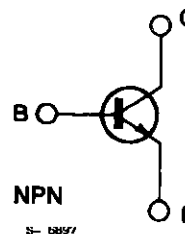
It provides greater voltage swings in oscillator and amplifier circuits and more protection in inductive switching circuits due to its 120 V collector-to-base voltage rating.

 Products approved to CECC 50002-104 available on request.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage ($I_E = 0$)	120	V
V_{CER}	Collector-emitter Voltage ($R_{BE} \leq 10 \Omega$)	100	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	80	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	7	V
I_C	Collector Current	0.5	A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25^\circ\text{C}$	0.8	W
	at $T_{case} \leq 25^\circ\text{C}$	3	W
	at $T_{case} \leq 100^\circ\text{C}$	1.7	W
T_{stg}, T_j	Storage and Junction Temperature	- 65 to 200	$^\circ\text{C}$

THERMAL DATA

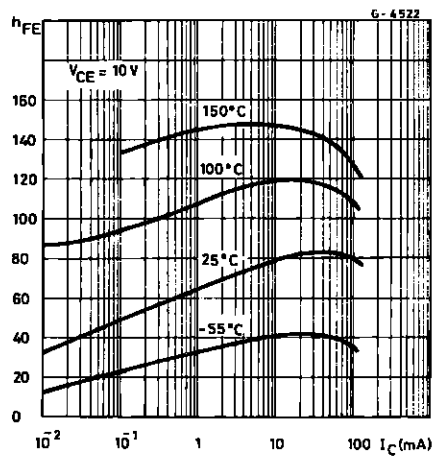
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	58	$^{\circ}C/W$
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	219	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}C$ unless otherwise specified)

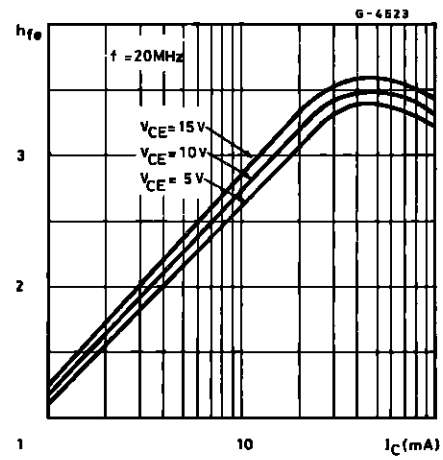
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current ($I_E = 0$)	$V_{CB} = 90\ V$ $V_{CB} = 90\ V$ $T_{amb} = 150^{\circ}C$			10 15	nA μA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5\ V$			10	nA
$V_{(BR)\ CBO}$	Collector-base Breakdown Voltage ($I_E = 0$)	$I_C = 100\ \mu A$	120			V
$V_{(BR)CER}^*$	Collector-emitter Breakdown Voltage ($R_{BE} \leq 10\ \Omega$)	$I_C = 10\ mA$	100			V
$V_{(BR)CEO}$	Collector-emitter Breakdown Voltage ($I_B = 0$)	$I_C = 10\ mA$	80			V
$V_{(BR)\ EBO}$	Emitter-base Breakdown Voltage ($I_C = 0$)	$I_E = 100\ \mu A$	7			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 50\ mA$ $I_B = 5\ mA$ $I_C = 150\ mA$ $I_B = 15\ mA$			1.2 5	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 50\ mA$ $I_B = 5\ mA$ $I_C = 150\ mA$ $I_B = 15\ mA$		0.82 0.96	0.9 1.3	V V
h_{FE}^*	DC Current Gain	$I_C = 0.1\ mA$ $V_{CE} = 10\ V$ $I_C = 10\ mA$ $V_{CE} = 10\ V$ $I_C = 150\ mA$ $V_{CE} = 10\ V$ $I_C = 10\ mA$ $V_{CE} = 10\ V$ $T_{amb} = -55^{\circ}C$	20 35 40 20	50 80 80 40	120	
h_{fe}	Small Signal Current Gain	$I_C = 1\ mA$ $V_{CE} = 5\ V$ $f = 1\ kHz$ $I_C = 5\ mA$ $V_{CE} = 10\ V$ $f = 1\ kHz$	30 45	70 85	150	
f_T	Transition Frequency	$I_C = 50\ mA$ $V_{CE} = 10\ V$ $f = 20\ MHz$	50	70		MHz
C_{EBO}	Emitter-base Capacitance	$I_C = 0$ $V_{EB} = 0.5\ V$ $f = 1\ MHz$		55	85	pF
C_{CBO}	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 10\ V$ $f = 1\ MHz$		13	15	pF

* Pulsed : pulse duration = 300 μs , duty cycle = 1 %.

DC Current Gain.

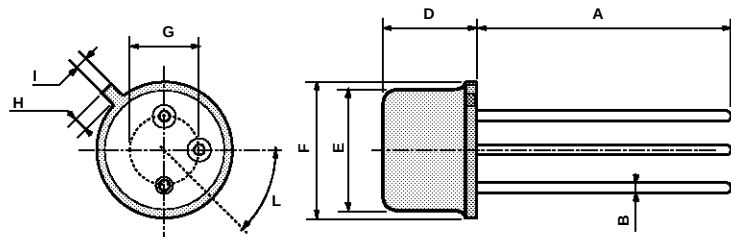


High-frequency Current Gain.



TO39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45° (typ.)					



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