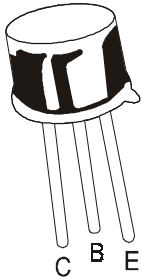


NPN SILICON PLANAR TRANSISTORS

2N 1893



**TO-39
Metal Can Package**

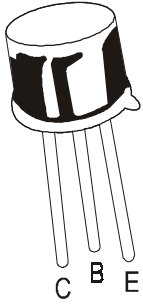
General Purpose Transistors.

ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	VALUE	UNITS
Collector Emitter Voltage	V_{CEO}	80	V
Collector Emitter Voltage	V_{CER}	100	V
Collector Base Voltage	V_{CBO}	120	V
Emitter Base Voltage	V_{EBO}	7.0	V
Collector Current Continuous	I_C	0.5	A
Total Device Dissipation @ Ta=25°C	P_D	0.8	W
Derate Above 25°C		4.57	mW/°C
Total Device Dissipation @ Tc=25°C	P_D	3.0	W
Derate Above 25°C		17.2	mW/°C
Operating And Storage Junction Temperature Range	T_j, T_{stg}	-65 to +200	°C
THERMAL RESISTANCE			
Junction to Ambient	$R_{th(j-a)}$	219	°C/W
Junction to Case	$R_{th(j-c)}$	58.3	°C/W

ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNITS
Collector Emitter Breakdown Voltage	$BV_{CER(sus)}$	$I_C=100mA, R_{BE}=10\Omega$	100		V
Collector Emitter Sustaining Voltage	$BV_{CEO(sus)}^*$	$I_C=10mA, I_B=0$	80		V
Collector Base Breakdown Voltage	BV_{CBO}	$I_C=100\mu A, I_E=0$	120		V
Emitter Base Breakdown Voltage	BV_{EBO}	$I_E=100\mu A, I_C=0$	7.0		V
Collector Cutoff Current	I_{CBO}	$V_{CB}=90V, I_E=0$		10	nA
		$V_{CB}=90V, I_E=0, T_A=150^\circ C$		15	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=5V, I_C=0$		10	nA
DC Current Gain	h_{FE}^*	$I_C=1mA, V_{CE}=10V$	20		
		$I_C=10mA, V_{CE}=10V$	35		
		$I_C=10mA, V_{CE}=10V$	20		
		$T_C=-55^\circ C$			
		$I_C=150mA, V_{CE}=10V$	40	120	
Collector Emitter (Sat) Voltage	$V_{CE(Sat)}$	$I_C=50mA, I_B=5.0mA$		1.2	V
		$I_C=150mA, I_B=15mA$		5.0	V
Base Emitter (Sat) Voltage	$V_{BE(Sat)}$	$I_C=50mA, I_B=5.0mA$		0.9	V
		$I_C=150mA, I_B=15mA$		1.3	V

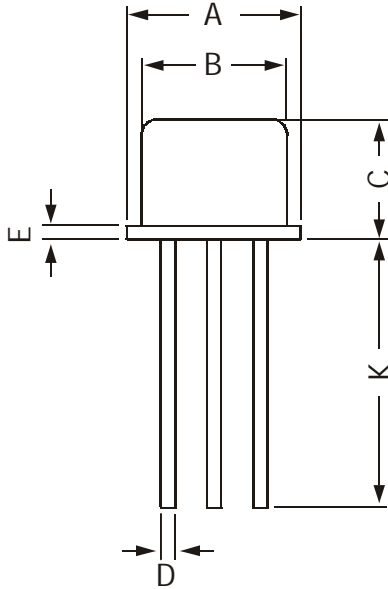


ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNITS
SMALL SIGNAL CHARACTERISTICS					
Current Gain Bandwidth Product	f_T	$I_C=50\text{mA}, V_{CE}=10\text{V}$ $f=20\text{MHz}$	50		MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		15	pF
Input Capacitance	C_{ib}	$V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$		85	pF
Input Impedance	h_{ib}	$I_C=1.0\text{mA}, V_{CB}=5.0\text{V},$ $f=1.0\text{kHz}$	20	30	Ω
Voltage Feedback Ratio	h_{rb}	$I_C=5.0\text{mA}, V_{CB}=10\text{V},$ $f=1.0\text{kHz}$	4.0	8.0	
		$I_C=1.0\text{mA}, V_{CB}=5.0\text{V},$ $f=1.0\text{kHz}$		1.25	$\times 10^{-4}$
Small Signal Current Gain	$ h_{fe} $	$I_C=5.0\text{mA}, V_{CB}=10\text{V},$ $f=1.0\text{kHz}$		1.5	
		$I_C=1.0\text{mA}, V_{CB}=5.0\text{V},$ $f=1.0\text{kHz}$	30	100	
Output Admittance	h_{ob}	$I_C=1.0\text{mA}, V_{CB}=5.0\text{V},$ $f=1.0\text{kHz}$		0.5	μmho
		$I_C=5.0\text{mA}, V_{CB}=10\text{V},$ $f=1.0\text{kHz}$		0.5	

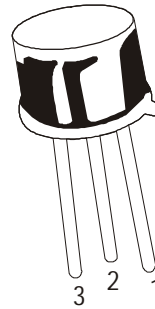
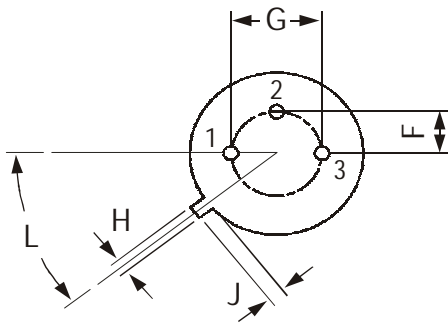
*Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

TO-39 Metal Can Package



All dimensions are in mm

DIM	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 DEG	48 DEG



PIN CONFIGURATION
1. EMITTER
2. BASE
3. COLLECTOR

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-39	500 pcs/polybag	540 gm/500 pcs	3" x 7.5" x 7.5"	20K	17" x 15" x 13.5"	32K	40 kgs

Disclaimer

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