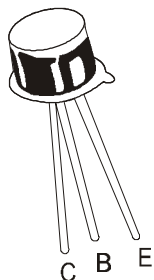


NPN SILICON PLANAR TRANSISTORS

2N930
2N930A



TO-18
Metal Can Package

Low Noise Transistors

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	2N930	2N930A	UNIT
Collector Emitter Voltage	V_{CEO}	45	60	V
Collector Base Voltage	V_{CBO}	45	60	V
Emitter Base Voltage	V_{EBO}	5	6	V
Collector Current Continuous	I_C	30		mA
Power Dissipation @ $T_a=25^\circ\text{C}$ Derate Above 25°C	P_D	300		mW
		1.72		mW/ $^\circ\text{C}$
Power Dissipation @ $T_c=25^\circ\text{C}$ Derate Above 25°C	P_D	600		mW
		3.42		mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 65 to +200		$^\circ\text{C}$

THERMAL CHARACTERISTICS

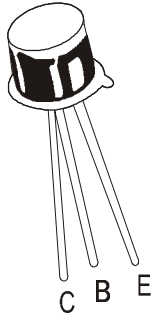
Junction to Ambient in free air	$R_{th(j-a)}$	583	$^\circ\text{C/W}$
Junction to Case	$R_{th(j-c)}$	292	$^\circ\text{C/W}$

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

DESCRIPTION	SYMBOL	TEST CONDITION	2N930	2N930A	UNIT
Collector Emitter Voltage	$*V_{CEO}$	$I_C=10\text{mA}, I_B=0$	>45	>60	V
Collector Base Voltage	V_{CBO}	$I_C=10\mu\text{A}, I_E=0$	>45	>60	V
Emitter Base Voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	>5	>6	V
Collector Cut Off Current	I_{CBO}	$V_{CB}=45\text{V}, I_E=0$	<10	<2	nA
Collector Cut Off Current	I_{CEO}	$V_{CE}=5\text{V}, I_B=0$	<2	<2	nA
Emitter Cut Off Current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$	<10	<2	nA
Collector Cut Off Current	I_{CES}	$V_{CE}=45\text{V}, V_{BE}=0$	<10	<2	nA
		$V_{CE}=45\text{V}, V_{BE}=0, T_a=170^\circ\text{C}$	<10	<2	μA
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$	<1.0	<0.5	V
Base Emitter Saturation Voltage	$*V_{BE(sat)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$	0.7 - 0.9	0.7 - 0.9	V
DC Current Gain	h_{FE}	$I_C=1\mu\text{A}, V_{CE}=5\text{V}$		>60	
		$I_C=10\mu\text{A}, V_{CE}=5\text{V}$	100-300	100-300	
		$I_C=10\mu\text{A}, V_{CE}=5\text{V}, T_a= -55^\circ\text{C}$	>20	>30	
		$I_C=500\mu\text{A}, V_{CE}=5\text{V}$	>150		
		$*I_C=10\text{mA}, V_{CE}=5\text{V}$	<600	<600	

*Pulse Test: Pulse width $\leq 300\text{ms}$, Duty cycle $\leq 2\%$

NPN SILICON PLANAR TRANSISTORS



2N930
2N930A

TO-18
Metal Can Package

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

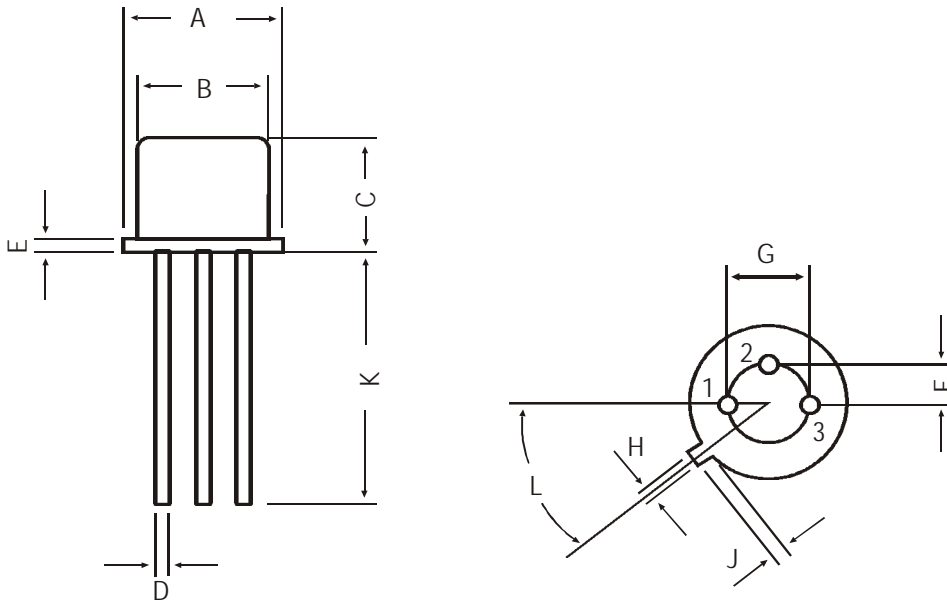
DYNAMIC CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Transition frequency	f_T	$I_C=500\mu\text{A}, V_{CE}=5\text{V}, f=30\text{MHz}$ 2N930 2N930A	30 45			MHz MHz
Output Capacitance	C_{ob}	$V_{CB}=5\text{V}, I_E=0, f=1\text{MHz}$ 2N930 2N930A			8 6	pF pF
Input Impedance	h_{ib}	$I_C=1\text{mA}, V_{CB}=5\text{V}, f=1\text{kHz}$	25		32	Ω
Voltage Feedback Ratio	h_{rb}	$I_C=1\text{mA}, V_{CB}=5\text{V}, f=1\text{kHz}$			600	$\times 10^{-6}$
Small Signal Current Gain	h_{fe}	$I_C=1\text{mA}, V_{CE}=5\text{V}, f=1\text{kHz}$	150		600	
Output Admittance	h_{ob}	$I_C=1\text{mA}, V_{CB}=5\text{V}, f=1\text{kHz}$			1	μS
Noise Figure	NF	$I_C=10\mu\text{A}, V_{CE}=5\text{V}, R_g=10\text{k}\Omega,$ $f=10\text{Hz to } 15.7\text{kHz}$			3	dB

**2N930
2N930A**

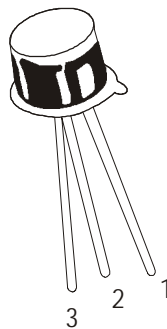
**TO-18
Metal Can Package**

TO-18 Metal Can Package



All dimensions in mm.

DIM	MIN	MAX
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.40	0.53
E	—	0.76
F	—	1.27
G	—	2.97
H	0.91	1.17
J	0.71	1.21
K	12.70	—
L	45 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-18	1K/polybag	350 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	34 kgs

Disclaimer

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Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.
Telephone + 91-11-2579 6150, 5141 1112 Fax + 91-11-2579 5290, 5141 1119
email@cdil.com www.cdilsemi.com