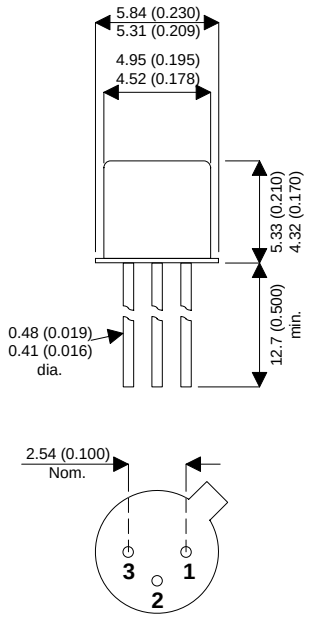
2N930

MECHANICAL DATA
Dimensions in mm (inches)



TO18 (TO-206AA) PACKAGE

Underside View

Pin 1 =Emitter Pin 2 = Base Pin 3 = Collector

BIPOLAR NPN SILICON AMPLIFIER TRANSISTORS

FEATURES

- **SILICON PLANAR EPITAXIAL NPN TRANSISTOR**
- **HERMETICALLY SEALED METAL PACKAGE**
- **CECC SCREENING OPTIONS AVAILABLE**
- **SPACE QUALITY LEVELS AVAILABLE**

APPLICATIONS:

The 2N930 is designed for small general purpose and amplifier applications

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise stated)

V_{CBO}	Collector – Base Voltage		45V
V_{CEO}	Collector – Emitter Voltage		45V
V_{EBO}	Emitter – Base Voltage		5V
I_C	Collector Current		30mA
P_D	Total Device Dissipation	@ T_A =25°C	0.5W
		Derate above 25°C	350°C / W
P_D	Total Device Dissipation	@ T_C =25°C	1.2W
		Derate above 25°C	146°C / W
T_{STG} , T_J	Operating and Storage Temperature Range		–65 to +200°C

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2N930

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
	OFF CHARACTERISTICS						
$V_{(BR)CEO*}$	Collector – Emitter Breakdown Voltage	I_C = 10mA	I_B = 0	45			V
$V_{(BR)CBO}$	Collector – Base Breakdown Voltage	I_C = 10µA	I_E = 0	45			
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	I_E = 10µA	I_C = 0	5			
I_{CEO}	Collector Cut-off Current	V_{CE} = 5V	I_B = 0			2	nA
I_{CBO}	Collector – Cut-off Current	V_{CB} = 45V	I_E = 0			10	
I_{CES}	Collector – Cut-off Current	V_{CE} = 45V	V_{BE} = 0			10	nA
			T_A =170°C			10	µA
I_{EBO}	Emitter – Cut-off Current	V_{BE} = 5V	I_C = 0			10	nA
	ON CHARACTERISTICS						
$V_{CE(sat)*}$	Collector – Emitter Saturation Voltage	I_C = 10mA	I_B = 0.5mA			1	V
$V_{BE(sat)*}$	Base – Emitter Saturation Voltage	I_C = 10mA	I_B = 0.5mA	0.7		0.9	
$h_{FE}*$	DC Current Gain	I_C = 10µA	V_{CE} = 5V	100		300	—
			T_A = - 55°C	20			
		I_C = 500µA	V_{CE} = 5V	150			
		I_C = 10mA	V_{CE} = 5V	600			
	SMALL SIGNAL CHARACTERISTICS						
f_T	Current Gain Bandwidth Product	I_C = 500µA f = 30MHz	V_{CE} = 5V	30			MHz
C_{ob}	Output Capacitance	I_E = 1mA f = 1KHz	V_{CB} = 5V			8	pF
h_{ib}	Input Impedance	I_E = 1mA f = 1KHz	V_{CB} = 5V	25		32	Ω
h_{rb}	Voltage Feedback Ratio					600	$x10^{-6}$
h_{ob}	Output Admittance					1	µmho
h_{fe}	Small Signal Current Gain			150		600	—
NF	Noise Figure	V_{CE} = 5V R_S = 10kΩ f = 10Hz to 15.7kHz	I_C = 10µA			3	dB

* Pulse Test: $t_p \leq 300\mu s$, $\delta \leq 2\%$

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