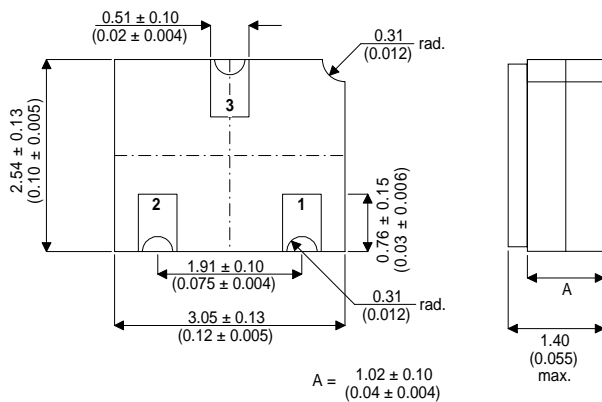


**HIGH SPEED, MEDIUM POWER, NPN  
GENERAL PURPOSE TRANSISTOR IN A  
HERMETICALLY SEALED  
CERAMIC SURFACE MOUNT PACKAGE  
FOR HIGH RELIABILITY APPLICATIONS**

**MECHANICAL DATA**  
Dimensions in mm (inches)



**SOT23 CERAMIC  
(LCC1 PACKAGE)**

**Underside View**

PAD 1 – Base    PAD 2 – Emitter    PAD 3 – Collector

**FEATURES**

- SILICON PLANAR EPITAXIAL NPN TRANSISTOR
- HERMETIC CERAMIC SURFACE MOUNT PACKAGE (SOT23 COMPATIBLE)
- CECC SCREENING OPTIONS

**APPLICATIONS:**

Hermetically sealed surface mount version of the popular 2N930 for high reliability applications requiring small size and low weight devices.

**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  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 @ $T_A = 25^\circ\text{C}$	500mW
	Derate above $25^\circ\text{C}$	2.85mW / $^\circ\text{C}$
$P_D$	Total Device Dissipation @ $T_C = 25^\circ\text{C}$	1.16W
	Derate above $25^\circ\text{C}$	12mW / $^\circ\text{C}$
$T_{STG}, T_J$	Operating and Storage Temperature Range	-65 to +175 $^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CEO}^*$ Collector – Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $I_B = 0$	45			V
$V_{(BR)CBO}$ Collector – Base Breakdown Voltage	$I_C = 10\mu\text{A}$ $I_E = 0$	80			
$V_{(BR)EBO}$ Emitter – Base Breakdown Voltage	$I_E = 10\mu\text{A}$ $I_C = 0$	5			
$I_{CBO}$ Collector – Base Cut-off Current	$V_{CE} = 5\text{V}$ $I_B = 0$			2	nA
	$V_{CB} = 45\text{V}$ $I_E = 0$			10	
	$V_{CE} = 45\text{V}$ $V_{BE} = 0$			10	
$I_{EBO}$ Emitter – Base Cut-off Current	$V_{BE} = 5\text{V}$ $I_C = 0$			10	nA
$V_{CE(sat)}^*$ Collector – Emitter Saturation Voltage	$I_C = 10\text{mA}$			1	V
$V_{BE(sat)}^*$ Base – Emitter Saturation Voltage	$I_B = 0.5\text{mA}$	0.7		0.9	
$h_{FE}$ DC Current Gain	$V_{CE} = 10\text{V}$ $I_C = 500\mu\text{A}$	150			—
	$V_{CE} = 10\text{V}$ $I_C = 10\text{mA}^*$			600	
$f_T$ Current Gain Bandwidth Product	$I_C = 500\mu\text{A}$ $V_{CE} = 5\text{V}$ $f = 30\text{MHz}$	30			MHz
$C_{ob}$ Output Capacitance	$I_E = 0$ $V_{CB} = 5\text{V}$ $f = 1\text{MHz}$			8	pF
$h_{ib}$ Input Impedance	$I_E = 1\text{mA}$	25		32	$\Omega$
$h_{rb}$ Voltage Feedback Ratio	$V_{CB} = 5\text{V}$			600	$\times 10^{-6}$
$h_{ob}$ Output Admittance	$f = 1\text{kHz}$			1	$\mu\text{mhos}$
$h_{fe}$ Small Signal Current Gain	$V_{CE} = 5\text{V}$ $I_C = 0$ $f = 1\text{MHz}$	150		600	—
NF Noise Figure	$V_{CE} = 5\text{V}$ $I_C = 10\mu\text{A}$ $R_S = 10\text{k}\Omega$ $f = 10\text{Hz to } 15.7\text{kHz}$			3	dB

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