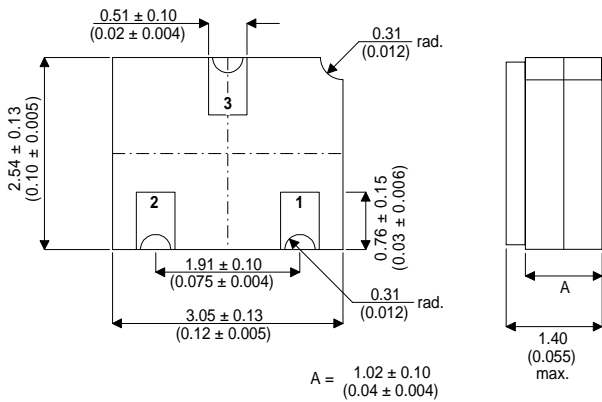


## HIGH FREQUENCY NPN TRANSISTOR IN A HERMETICALLY SEALED CERAMIC SURFACE MOUNT PACKAGE FOR HIGH RELIABILITY APPLICATIONS

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



**SOT23 CERAMIC  
(LCC1 PACKAGE)**

**Underside View**

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

**FEATURES**

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

**APPLICATIONS:**

Hermetically sealed surface mount version of the popular 2N2857 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	30V
$V_{CEO}$	Collector – Emitter Voltage	15V
$V_{EBO}$	Emitter – Base Voltage	2.5V
$I_C$	Collector Current	40mA
$P_D$	Total Device Dissipation @ $T_A = 25^\circ\text{C}$	200mW
	Derate above $25^\circ\text{C}$	1.14mW / °C
$P_D$	Total Device Dissipation @ $T_C = 25^\circ\text{C}$	300mW
	Derate above $25^\circ\text{C}$	1.72mW / °C
$T_{STG}, T_J$	Operating and Storage Temperature Range	-65 to +200°C

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CBO^*}$ Collector – Base Breakdown Voltage	$I_C = 1\mu\text{A}$ $I_E = 0$	30			V
$V_{(BR)CEO}$ Collector – Emitter Breakdown Voltage	$I_C = 3\text{mA}$ $I_B = 0$	15			
$V_{(BR)EBO}$ Emitter – Base Breakdown Voltage	$I_E = 10\mu\text{A}$ $I_C = 0$	2.5			
$I_{CBO}$ Collector – Base Cut-off Current	$V_{CB} = 15\text{V}$ $I_E = 0$ $T_A = -55^\circ\text{C}$			50	$\mu\text{A}$
				1	
$V_{CE(sat)}$ Collector – Emitter Saturation Voltage	$I_C = 10\text{mA}$ $I_B = 1\text{mA}$			0.4	V
$V_{BE(sat)}$ Base – Emitter Saturation Voltage		0.5		1	
$h_{FE}$ DC Current Gain	$V_{CE} = 1\text{V}$ $I_C = 3\text{mA}$ $T_A = 150^\circ\text{C}$			30	—
				10	
$I_{CES}$ Collector – Emitter Cut-off Current	$V_{CB} = 16\text{V}$ $I_B = 0$			100	nA
NF Noise Figure	$V_{CE} = 6\text{V}$ $I_C = 1.5\text{mA}$ $f = 450\text{MHz}$ $R_G = 50\Omega$			4.5	dB
$h_{fe}$ Small Signal Current Gain	$V_{CE} = 6\text{V}$ $I_C = 2\text{mA}$	50		220	—
$ h_{fe} $ Magnitude of $h_{fe}$	$V_{CE} = 6\text{V}$ $I_C = 5\text{mA}$ $f = 100\text{MHz}$	10		21	—
$C_{cb}$ Collector – Base Feedback Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 0.1$ to $1\text{MHz}$			1	pF
$G_{pe}$ Small Signal Power Gain	$V_{CE} = 6\text{V}$ $I_C = 1.50\text{mA}$ $f = 450\text{MHz}$	12.5		21	dB
$r_b'C_c$ Collector – Base Time Constant	$V_{CE} = 6\text{V}$ $I_E = 2\text{mA}$ $f = 31.9\text{MHz}$	4.0		15	ps



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