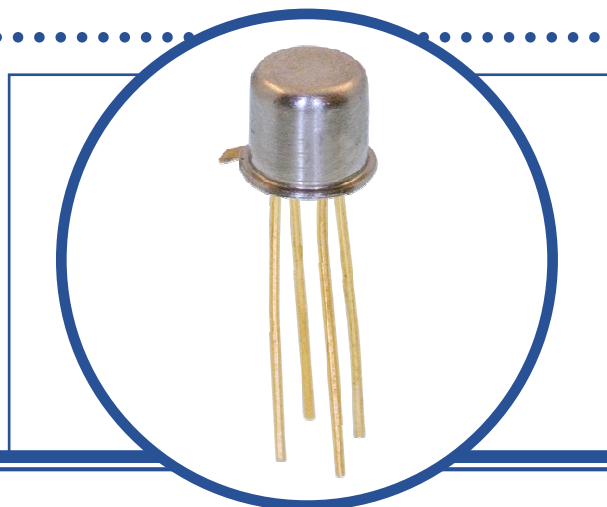


SILICON RF SMALL SIGNAL NPN TRANSISTOR

2N2857

- High Current Gain-Bandwidth Product (f_T)
- Hermetic Ceramic Surface Mount Package
- Designed For High Gain, Low Noise Amplifier, Oscillator and Mixer Applications
- Screening Options Available



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	3V
I_C	Continuous Collector Current	40mA
P_D	Total Power Dissipation at $T_A = 25^\circ\text{C}$ Derate Above 25°C	200mW 1.14mW/ $^\circ\text{C}$
T_J	Junction Temperature Range	-65 to +200 $^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65 to +200 $^\circ\text{C}$

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	875	$^\circ\text{C}/\text{W}$

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.



SILICON RF SMALL SIGNAL NPN TRANSISTOR 2N2857

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

Symbols	Parameters	Test Conditions	Min	Typ	Max	Units
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 3\text{mA}$ $I_B = 0$	15			V
I_{CBO}	Collector-Cut-Off Current	$V_{CB} = 15\text{V}$ $I_E = 0$			10	nA
		$T_A = 150^\circ\text{C}$			1.0	μA
		$V_{CB} = 30\text{V}$ $I_E = 0$			1.0	
I_{CES}	Collector-Cut-Off Current	$V_{CE} = 16\text{V}$ $I_B = 0$			100	nA
I_{EBO}	Emitter-Cut-Off Current	$V_{EB} = 3\text{V}$ $I_C = 0$			10	μA
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 3\text{mA}$ $V_{CE} = 1.0\text{V}$	30		150	
		$T_A = -55^\circ\text{C}$	10			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{mA}$ $I_B = 1.0\text{mA}$			0.4	V
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 10\text{mA}$ $I_B = 1.0\text{mA}$			1.0	

DYNAMIC CHARACTERISTICS

$ h_{fe} $	Small signal forward-current transfer ratio ⁽³⁾	$I_C = 5\text{mA}$ $V_{CE} = 6\text{V}$	8.5		21	
		$f = 100\text{MHz}$				
		$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$		10.6		
		$f = 100\text{MHz}$				
h_{fe}	Small Signal Current Gain	$I_C = 2\text{mA}$ $V_{CE} = 6\text{V}$	50		220	
		$f = 1.0\text{KHz}$				
C_{cb}	Collector – Base Feedback Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$			1.0	pF
		$f = 1.0\text{MHz}$				
$r_b' C_C^{(2)}$	Collector Base Time Constant	$I_E = 2\text{mA}$ $V_{CB} = 6\text{V}$	4		15	ps
		$f = 31.9\text{MHz}$				
$G_{pe}^{(2)}$	Small Signal Power Gain	$V_{CE} = 6\text{V}$ $I_C = 1.5\text{mA}$	12.5			dB
		$f = 450\text{MHz}$				
NF ⁽²⁾⁽³⁾	Noise Figure	$V_{CE} = 6\text{V}$ $I_C = 1.5\text{mA}$			4.5	
		$f = 450\text{MHz}$ $R_G = 50\Omega$				

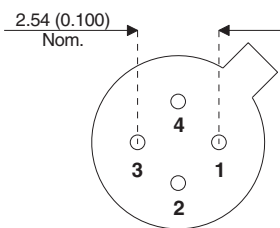
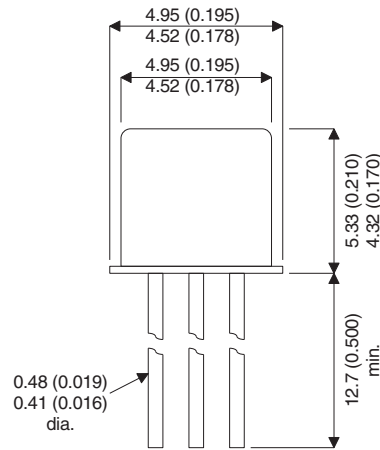
Notes

- (1) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$
- (2) By design only, not a production test.
- (3) Case Lead Grounded

SILICON RF SMALL SIGNAL NPN TRANSISTOR 2N2857

MECHANICAL DATA

Dimensions in mm (inches)



TO-72 (TO-206AF) METAL PACKAGE Underside View

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector

Pin 4 - Case