SILICON TRANSISTOR
NPN SILICON EPITAXIAL TRANSISTOR
POWER MINI MOLD

DESCRIPTION
The 2SC3357 is an NPN silicon epitaxial transistor designed for low noise amplifier at VHF, UHF and CATV band.
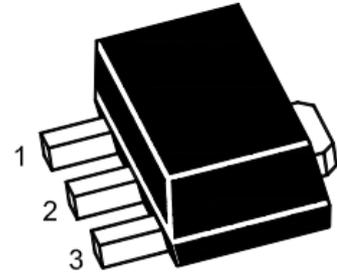It has large dynamic range and good current characteristic.

FEATURES
• Low Noise and High Gain
  NF = 1.1 dB TYP., Ga = 8.0 dB TYP. @VCE = 10 V,
  IC = 7 mA, f = 1.0 GHz
  NF = 1.8 dB TYP., Ga = 9.0 dB TYP. @VCE = 10 V,
  IC = 40 mA, f = 1.0 GHz
• Large PT in Small Package
  PT : 2 W with 16 cm2 $\times$ 0.7 mm Ceramic Substrate.

1.Base 2.Collector 3.Emitter
SOT-89 Plastic Package

ABSOLUTE MAXIMUM RATINGS (TA = 25 $^\circ$ C)

Collector to Base Voltage	VCBO	20	V
Collector to Emitter Voltage	VCEO	12	V
Emitter to Base Voltage	VEBO	3.0	V
Collector Current	IC	100	mA
Total Power Dissipation	PT*	1.2	W
Thermal Resistance	Rth(j-a)*	62.5	$^\circ$ C/W
Junction Temperature	Tj	150	$^\circ$ C
Storage Temperature	Tstg	$-$65 to +150	$^\circ$ C

* mounted on 16 cm2 $\times$ 0.7 mm Ceramic Substrate

ELECTRICAL CHARACTERISTICS (TA = 25 ° C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			1.0	μA	V_{CB} = 10 V, I_E = 0
Emitter Cutoff Current	I_{EBO}			1.0	μA	V_{EB} = 1.0 V, I_C = 0
DC Current Gain	h_{FE}*	50	120	300		V_{CE} = 10 V, I_C = 20 mA
Gain Bandwidth Product	f_T		6.5		GHz	V_{CE} = 10 V, I_C = 20 mA
Feed-Back Capacitance	C_{re}**		0.65	1.0	pF	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz
Insertion Power Gain	$\|S_{21}e\|^2$		9		dB	V_{CE} = 10 V, I_C = 20 mA, f = 1.0 GHz
Noise Figure	NF		1.1		dB	V_{CE} = 10 V, I_C = 7 mA, f = 1.0 GHz
Noise Figure	NF		1.8	3.0	dB	V_{CE} = 10 V, I_C = 40 mA, f = 1.0 GHz

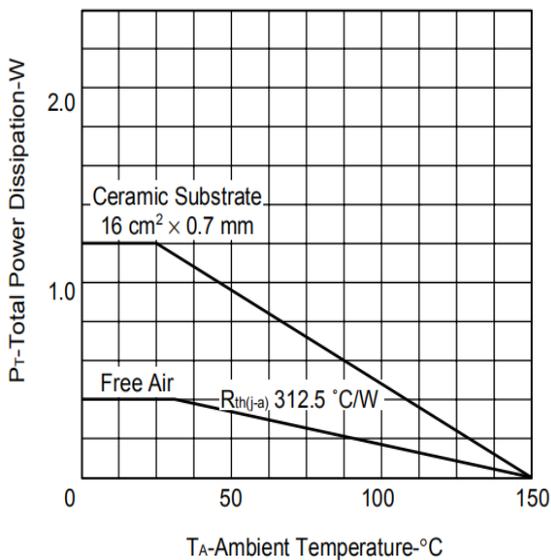*   Pulse Measurement PW $\leq$ 350 μs, Duty Cycle $\leq$ 2 %

**   The emitter terminal and the case shall be connected to the guard terminal of the three-terminal capacitnace bridge.

h_{FE} Classification

Class	RH	RF	RE
Marking	RH	RF	RE
h_{FE}	50 to 100	80 to 160	125 to 250

TYPICAL CHARACTERISTICS (TA = 25 ℃)

TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE

FEED-BACK CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE

DC CURRENT GAIN vs. COLLECTOR CURRENT

$V_{CE} = 10$ V

INSERTION GAIN vs. COLLECTOR CURRENT

$V_{CE} = 10$ V
$f = 1.0$ GHz

GAIN BANDWIDTH PROUDCT vs. COLLECTOR CURRENT

$V_{CE} = 10$ V

INSERTION GAIN, MAXIMUM GAIN vs. FREQUENCY

G_{max}
$|S_{21e}|^2$

$V_{CE} = 10$ V
$I_C = 20$ mA

NOISE FIGURE vs. COLLECTOR CURRENT

$V_{CE} = 10$ V
$f = 1.0$ GHz

INTERMODULATION DISTORTION vs. COLLECTOR CURRENT

IM_3
IM_2

at $\begin{cases} V_{CE} = 10 \text{ V} \\ V_0 = 100 \text{ dB} \mu V/50 \ \Omega \\ R_g = R_e = 50 \ \Omega \end{cases}$

IM_2 $f = 90 + 100$ MHz
IM_3 $f = 2 \times 200 - 190$ MHz