

HIGH-FREQUENCY LOW NOISE AMPLIFIER

NPN SILICON EPITAXIAL TRANSISTOR

(WITH BUILT-IN 2 $\times$ 2SC4227) SMALL MINI MOLD

The μ PA812T has built-in 2 low-voltage transistors which are designed to amplify low noise in the VHF band to the UHF band.

FEATURES

- Low Noise
NF = 1.4 dB TYP. @ f = 1 GHz, $V_{CE} = 3$ V, $I_C = 7$ mA
- High Gain
 $|S_{21e}|^2 = 12$ dB TYP. @ f = 1 GHz, $V_{CE} = 3$ V, $I_C = 7$ mA
- A Small Mini Mold Package Adopted
- Built-in 2 Transistors (2 $\times$ 2SC4227)

ORDERING INFORMATION

PART NUMBER	QUANTITY	PACKING STYLE
μ PA812T	Loose products (50 PCS)	Embossed tape 8 mm wide. Pin 6 (Q1 Base), Pin 5 (Q1 Emitter), Pin 4 (Q2 Emitter) face to perforation side of the tape.
μ PA812T-T1	Taping products (3 KPCS/Reel)	

Remark If you require an evaluation sample, please contact an NEC Sales Representative. (Unit sample quantity is 50 pcs.)

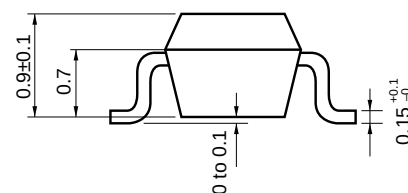
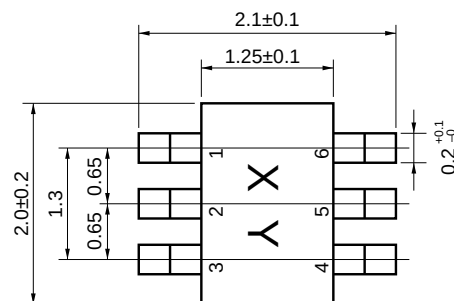
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

PARAMETER	SYMBOL	RATING	UNIT
Collector to Base Voltage	V_{CBO}	20	V
Collector to Emitter Voltage	V_{CEO}	10	V
Emitter to Base Voltage	V_{EBO}	1.5	V
Collector Current	I_C	65	mA
Total Power Dissipation	P_T	150 in 1 element 200 in 2 elements ^{Note}	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

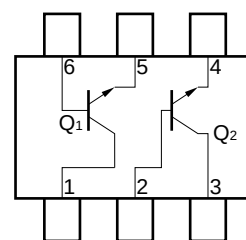
Note 110 mW must not be exceeded in 1 element.

PACKAGE DRAWINGS

(Unit: mm)



PIN CONFIGURATION (Top View)



PIN CONNECTIONS

- | | |
|-------------------|-----------------|
| 1. Collector (Q1) | 4. Emitter (Q2) |
| 2. Base (Q2) | 5. Emitter (Q1) |
| 3. Collector (Q2) | 6. Base (Q1) |

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

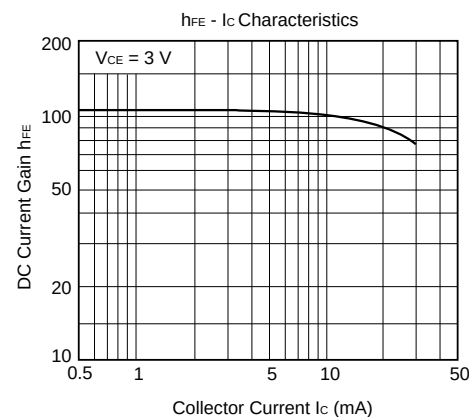
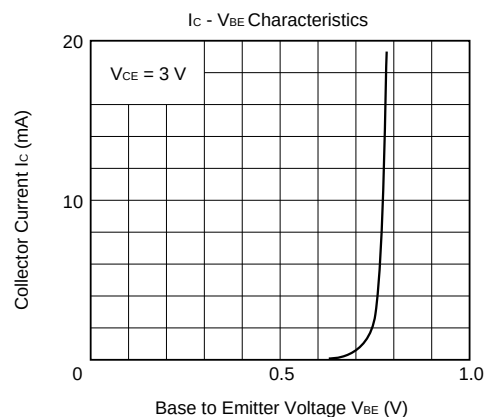
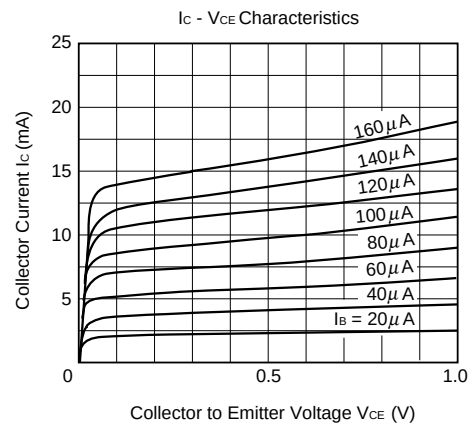
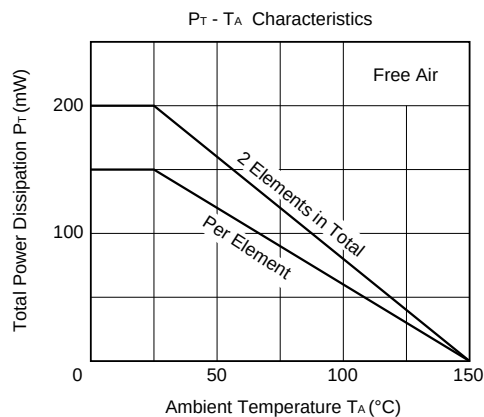
PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cutoff Current	I_{CBO}	$V_{CB} = 10\text{ V}, I_E = 0$			0.8	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 1\text{ V}, I_C = 0$			0.8	μA
DC Current Gain	h_{FE}	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}$ ^{Note 1}	70		240	
Gain Bandwidth Product	f_T	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$	4.5	7.0		GHz
Feed-back Capacitance	C_{re}	$V_{CB} = 3\text{ V}, I_E = 0, f = 1\text{ MHz}$ ^{Note 2}			0.9	pF
Insertion Power Gain	$ S_{21e} ^2$	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$	10	12		dB
Noise Figure	NF	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$		1.4	2.7	dB
h_{FE} Ratio	h_{FE1}/h_{FE2}	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}$ A smaller value among h_{FE} of $h_{FE1} = Q1, Q2$ A larger value among h_{FE} of $h_{FE2} = Q1, Q2$	0.85			

Notes 1. Pulse Measurement: $P_w \leq 350\text{ }\mu\text{s}$, Duty cycle $\leq 2\%$

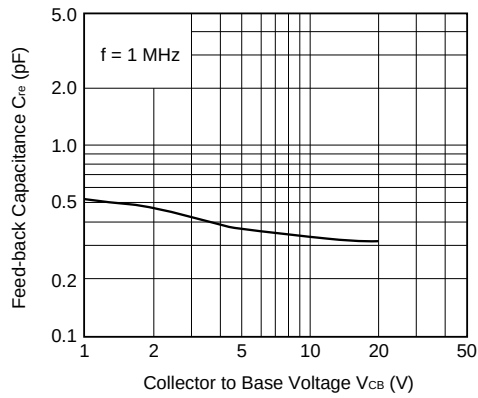
2. Measured with 3-pin bridge, emitter and case should be connected to guard pin of bridge.

 h_{FE} CLASSIFICATION

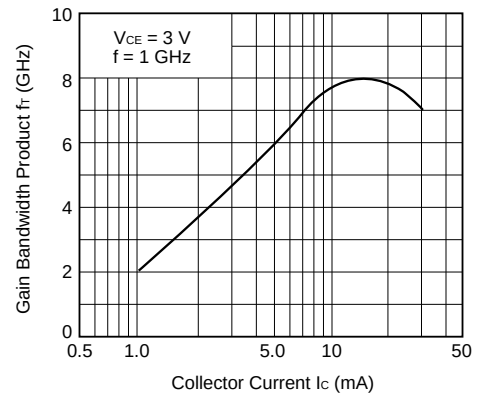
Rank	FB	GB
Marking	34R	35R
h_{FE} Value	70 to 150	110 to 240

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

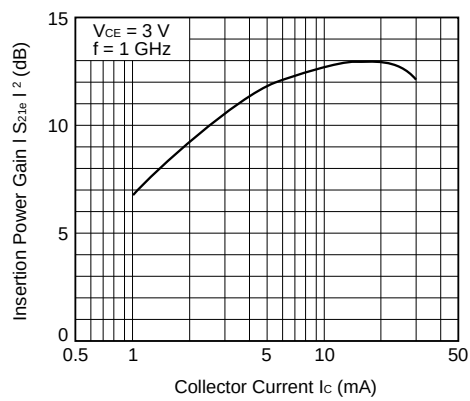
$C_{re} - V_{CB}$ Characteristics



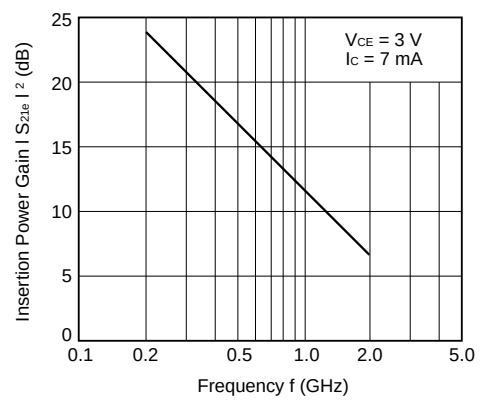
$f_r - I_c$ Characteristics



$|S_{21e}|^2 - I_c$ Characteristics



$|S_{21e}|^2 - f$ Characteristics



NF - I_c Characteristics

