

FEATURES

- **SMALL PACKAGE STYLE:**
2 NE688 Die in a 2 mm x 1.25 mm package
- **LOW NOISE FIGURE:**
NF = 1.5 dB TYP at 2 GHz
- **HIGH GAIN BANDWIDTH:** $f_T = 9$ GHz
- **HIGH COLLECTOR CURRENT:** 100 mA

DESCRIPTION

The UPA814T is two NPN high frequency silicon epitaxial transistors encapsulated in an ultra small 6 pin SMT package. Each transistor is independently mounted and easily configured for either dual transistor or cascode operation. The high f_T , low voltage bias and small size make this device suited for various hand-held wireless applications.

ABSOLUTE MAXIMUM RATINGS¹ ($T_A = 25^\circ\text{C}$)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CBO}	Collector to Base Voltage	V	9
V_{CEO}	Collector to Emitter Voltage	V	6
V_{EBO}	Emitter to Base Voltage	V	2
I_C	Collector Current	mA	100
P_T	Total Power Dissipation 1 Die 2 Die	mW mW	110 200
T_J	Junction Temperature	$^\circ\text{C}$	150
T_{STG}	Storage Temperature	$^\circ\text{C}$	-65 to +150

Note: 1.Operation in excess of any one of these parameters may result in permanent damage.

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

PART NUMBER PACKAGE OUTLINE			UPA814T S06		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I_{CBO}	Collector Cutoff Current at $V_{CB} = 5\text{ V}$, $I_E = 0$	μA			0.1
I_{EBO}	Emitter Cutoff Current at $V_{EB} = 1\text{ V}$, $I_C = 0$	μA			0.1
h_{FE}^1	Forward Current Gain at $V_{CE} = 1\text{ V}$, $I_C = 3\text{ mA}$		80	110	160
f_T	Gain Bandwidth at $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$, $f = 2\text{ GHz}$	GHz		9.0	
C_{re}^2	Feedback Capacitance at $V_{CB} = 1\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$	pF		0.75	0.85
$ S_{21E} ^2$	Insertion Power Gain at $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$, $f = 2\text{ GHz}$	dB		6.5	
NF	Noise Figure at $V_{CE} = 3\text{ V}$, $I_C = 7\text{ mA}$, $f = 2\text{ GHz}$	dB		1.5	
h_{FE1}/h_{FE2}	h_{FE} Ratio: $h_{FE1} = \text{Smaller Value of } Q_1, \text{ or } Q_2$ $h_{FE2} = \text{Larger Value of } Q_1 \text{ or } Q_2$		0.85		

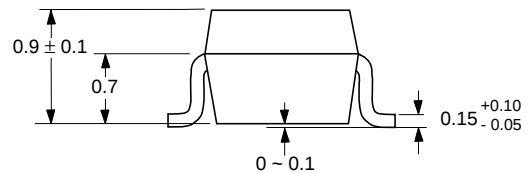
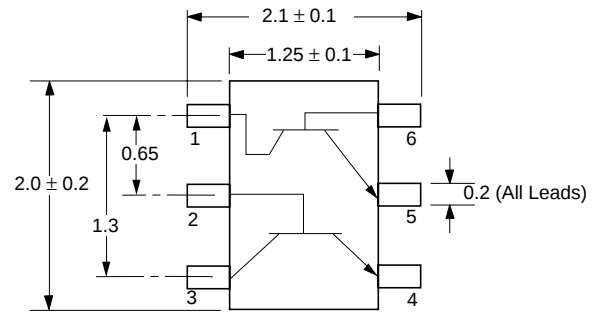
Notes: 1. Pulsed measurement, pulse width $\leq 350\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

2. The emitter terminal should be connected to the ground terminal of the 3 terminal capacitance bridge.

For Tape and Reel version use part number UPA814T-T1, 3K per reel.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE S06

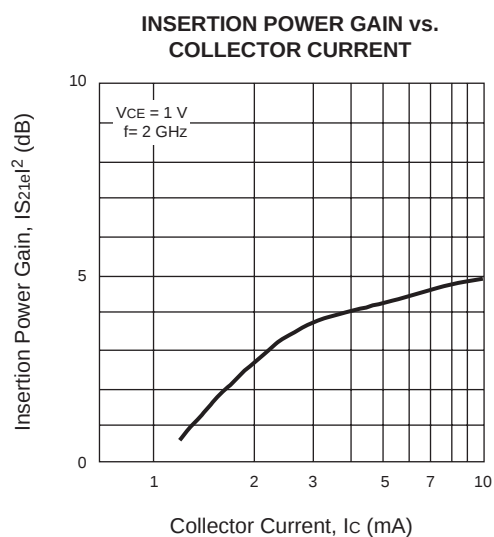
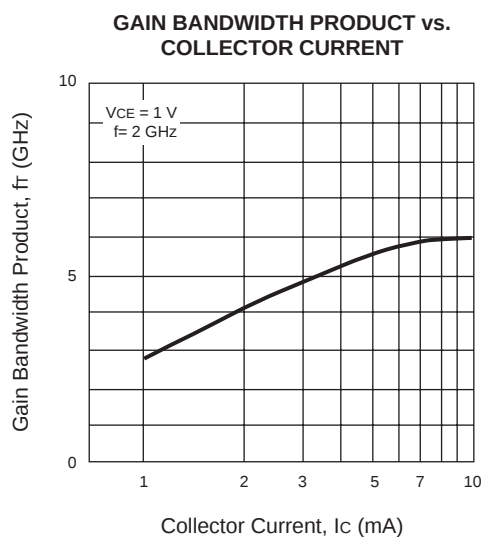
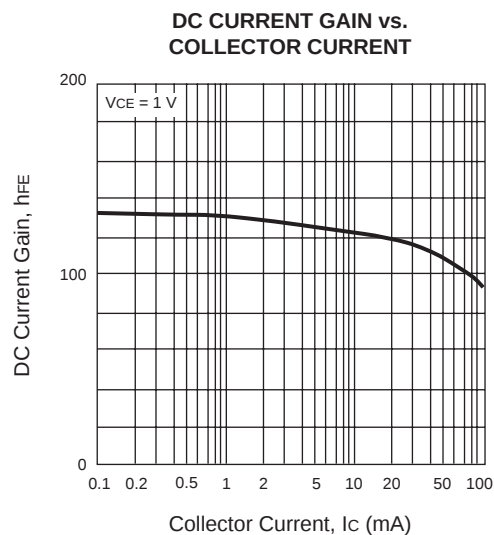
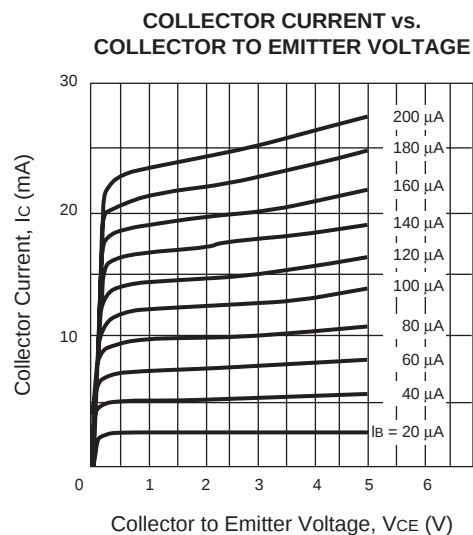
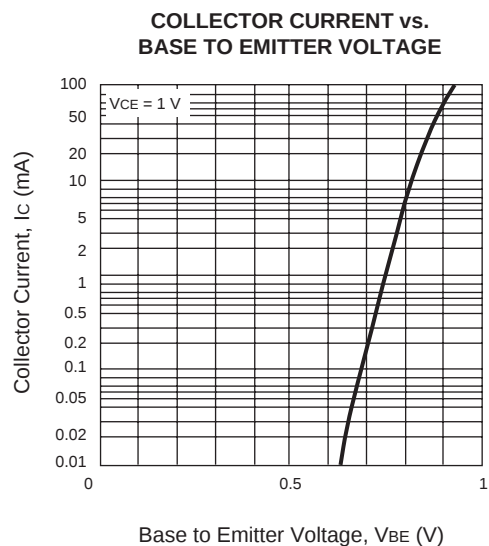
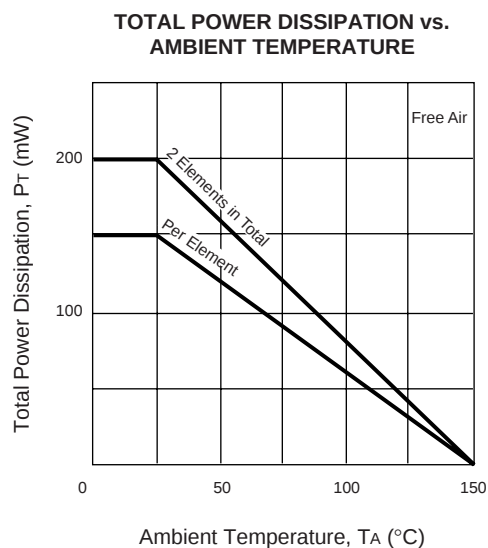


PIN OUT

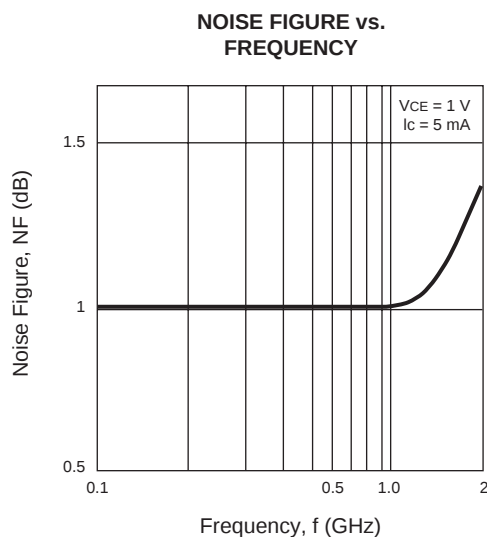
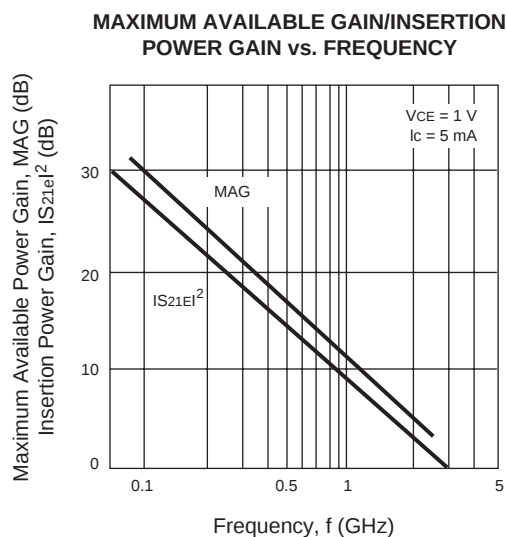
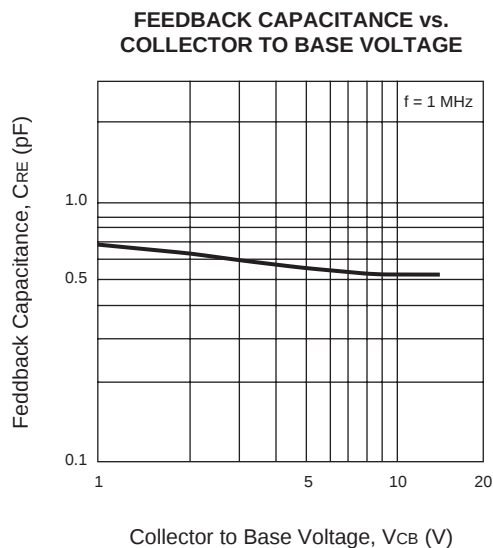
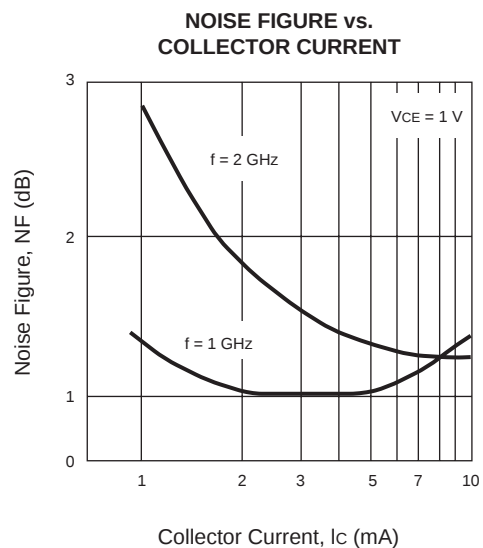
1. Collector Transistor 1
2. Base Transistor 2
3. Collector Transistor 2
4. Emitter Transistor 2
5. Emitter Transistor 1
6. Base Transistor 1

Note:

Pin 3 is identified with a circle on the bottom of the package.

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

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ORDERING INFORMATION

PART NUMBER	QUANTITY	PACKAGING
UPA814T-T1	3000	Tape & Reel

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