

NPN SILICON HIGH FREQUENCY TRANSISTOR

FEATURES

- **SMALL PACKAGE STYLE:**
2 NE680 Die in a 2 mm x 1.25 mm package
- **LOW NOISE FIGURE:**
NF = 1.9 dB TYP at 2 GHz
- **HIGH GAIN:**
 $IS_{21EI}^2 = 7.5$ dB TYP at 2 GHz
- **EXCELLENT LOW VOLTAGE, LOW CURRENT PERFORMANCE**

DESCRIPTION

The UPA811T 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 ideally suited for pager and other hand-held wireless applications.

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

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CBO}	Collector to Base Voltage	V	20
V_{CEO}	Collector to Emitter Voltage	V	10
V_{EBO}	Emitter to Base Voltage	V	1.5
I_C	Collector Current	mA	35
P_T	Total Power Dissipation		
	1 Die	mW	110
	2 Die	mW	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 ($T_A = 25^\circ\text{C}$)

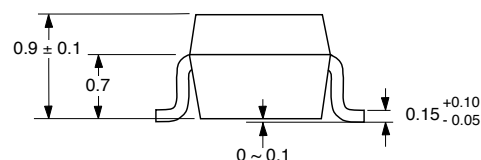
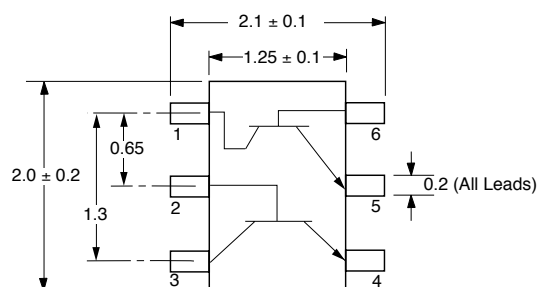
PART NUMBER PACKAGE OUTLINE			UPA811T S06		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I_{CBO}	Collector Cutoff Current at $V_{CB} = 10$ V, $I_E = 0$	μA			1.0
I_{EBO}	Emitter Cutoff Current at $V_{EB} = 1$ V, $I_C = 0$	μA			1.0
h_{FE}^1	Forward Current Gain at $V_{CE} = 3$ V, $I_C = 5$ mA		80	120	200
f_t	Gain Bandwidth at $V_{CE} = 3$ V, $I_C = 5$ mA	GHz	5.5	8.0	
C_{re}^2	Feedback Capacitance at $V_{CB} = 3$ V, $I_E = 0$, $f = 1$ MHz	pF		0.3	0.7
IS_{21EI}^2	Insertion Power Gain at $V_{CE} = 3$ V, $I_C = 5$ mA, $f = 2$ GHz	dB	5.5	7.5	
NF	Noise Figure at $V_{CE} = 3$ V, $I_C = 5$ mA, $f = 2$ GHz	dB		1.9	3.2

Notes:

1. Pulsed measurement, pulse width ≤ 350 μs , 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 UPA811T-T1, 3K per reel.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE S06
(Top View)



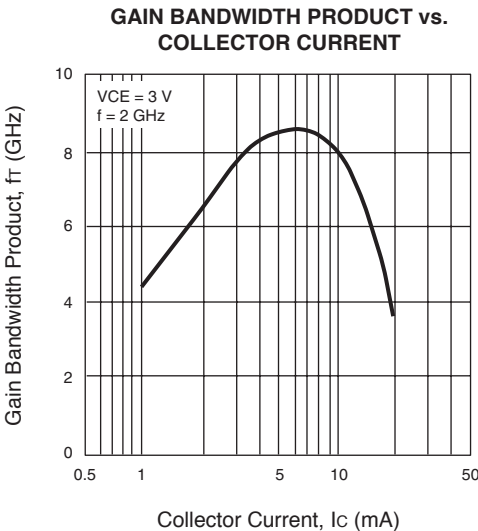
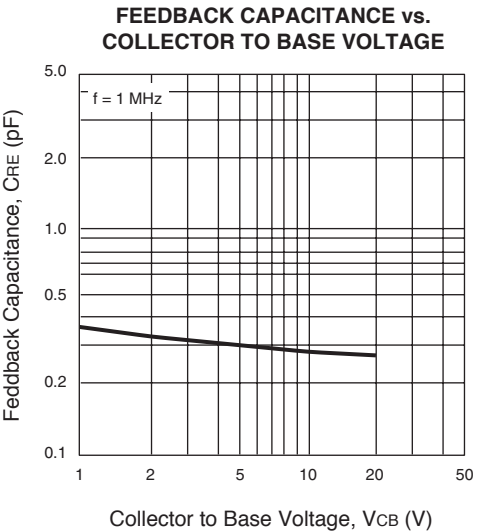
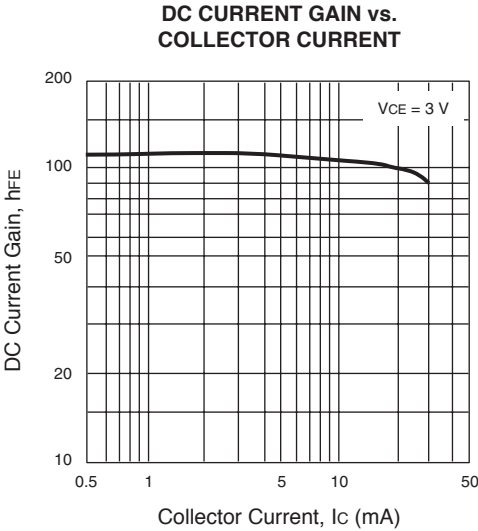
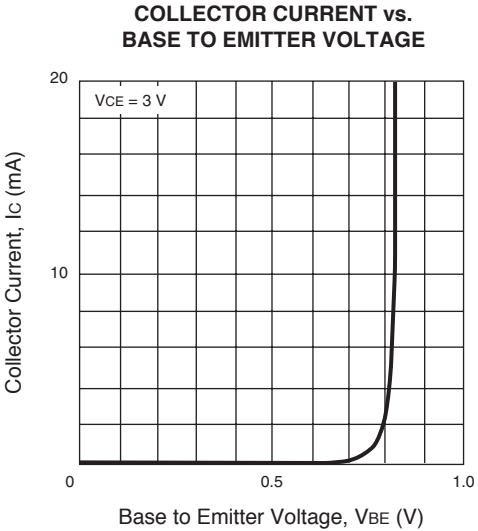
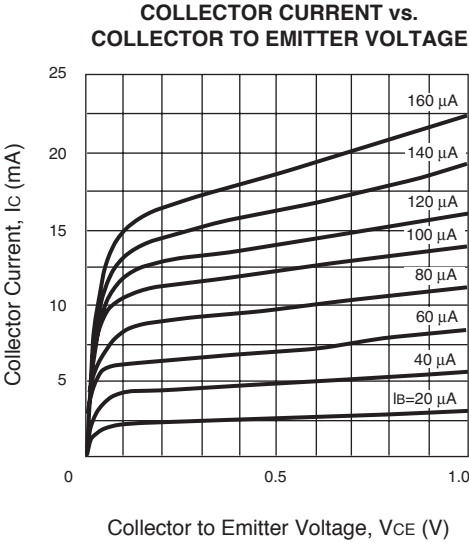
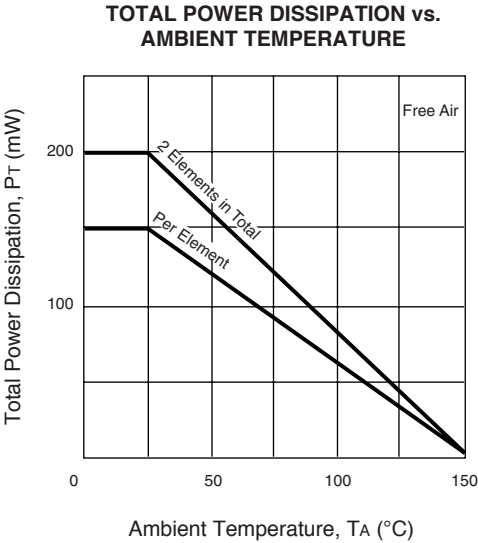
PIN OUT

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:

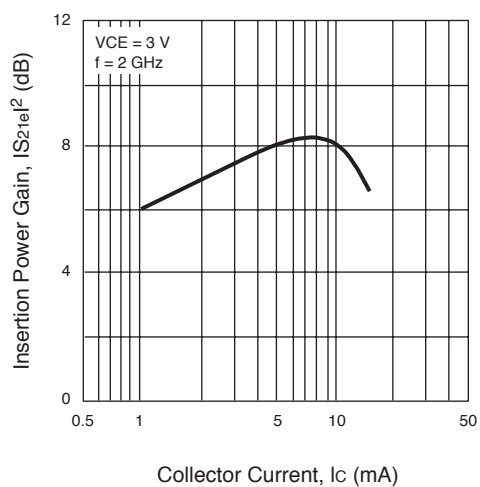
Pin 3 is identified with a circle on the bottom of the package.

TYPICAL PERFORMANCE CURVES (T_A = 25°C)

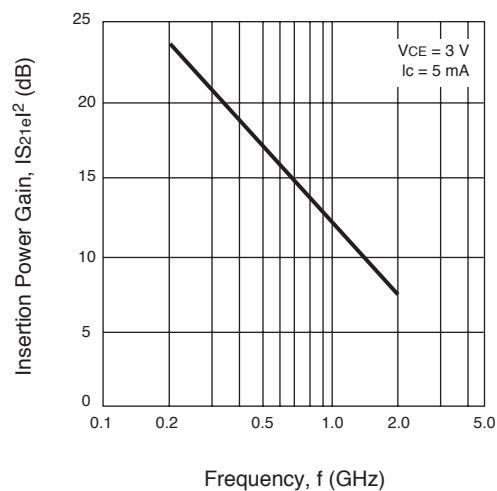


TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)

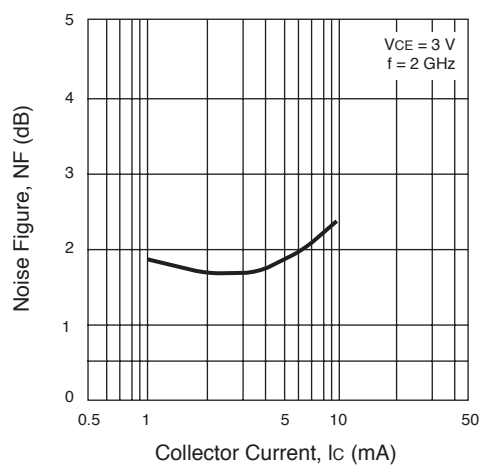
**INSERTION POWER GAIN vs.
COLLECTOR CURRENT**



**INSERTION POWER GAIN vs.
FREQUENCY**



**NOISE FIGURE vs.
COLLECTOR CURRENT**



ORDERING INFORMATION

PART NUMBER	QUANTITY	PACKAGING
UPA811T-T1-A	3000	Tape & Reel

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