

**NPN SILICON HIGH
FREQUENCY TRANSISTOR**

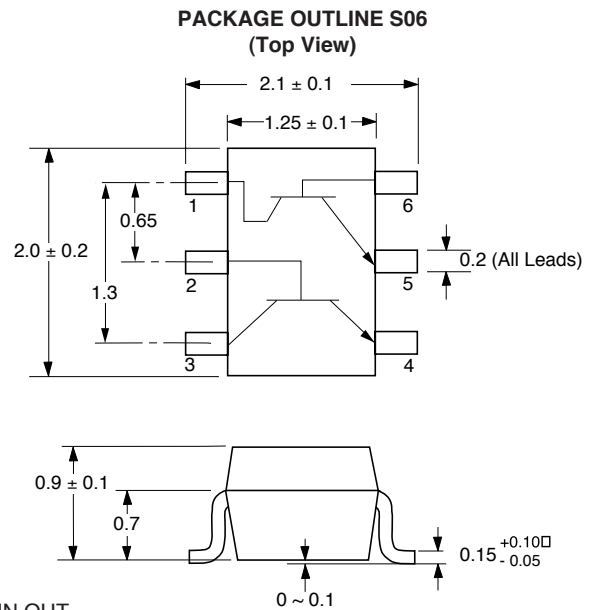
FEATURES

- **SMALL PACKAGE STYLE:**
2 NE856 Die in a 2 mm x 1.25 mm package
- **LOW NOISE FIGURE:**
NF = 1.2 dB TYP at 1 GHz
- **HIGH GAIN:**
 $IS_{21EI}^2 = 9.0$ dB TYP at 1 GHz
- **EXCELLENT LOW VOLTAGE, LOW CURRENT PERFORMANCE**
- **HIGH COLLECTOR CURRENT:** 100 mA

DESCRIPTION

The UPA810T 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.

OUTLINE DIMENSIONS (Units in mm)



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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER PACKAGE OUTLINE			UPA810T 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 = 7 mA		70	120	250
f _T	Gain Bandwidth at V _{CE} = 3 V, I _C = 7 mA	GHz	3.0	4.5	
C _{re} ²	Feedback Capacitance at V _{CB} = 3 V, I _E = 0, f = 1 MHz	pF		0.7	1.5
IS _{21EI} ²	Insertion Power Gain at V _{CE} = 3 V, I _C = 7 mA, f = 1 GHz	dB	7	9	
NF	Noise Figure at V _{CE} = 3 V, I _C = 7 mA, f = 1 GHz	dB		1.2	2.5
h _{FE1} /h _{FE2}	h _{FE} Ratio: h _{FE1} = Smaller Value of Q ₁ , or Q ₂ h _{FE2} = Larger Value of Q ₁ or Q ₂		0.85		

Notes: 1. Pulsed measurement, pulse width ≤ 350 μs, duty cycle ≤ 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 UPA810T-T1, 3K per reel.

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ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{CBO}	Collector to Base Voltage	V	20
V _{CEO}	Collector to Emitter Voltage	V	12
V _{EBO}	Emitter to Base Voltage	V	3
I _C	Collector Current	mA	100
P _T	Total Power Dissipation		
	1 Die	mW	110
	2 Die	mW	200
T _J	Junction Temperature	°C	150
T _{STG}	Storage Temperature	°C	-65 to +150

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

ORDERING INFORMATION (Solder Contains Lead)

PART NUMBER	QUANTITY	PACKAGING
UPA810T	Loose Products (50 pcs)	Embossed tape 8mm wide. Pin 6 (Q1 Base), Pin 5 (Q1 Emmitter) Pin 4 (Q2 Emitter) face to perforation side of tape
UPA810T-T1	Taping products (3 KPCS/Reel)	

ORDERING INFORMATION (Pb-Free)

PART NUMBER	QUANTITY	PACKAGING
UPA810T-A	Loose Products (50 pcs)	Embossed tape 8mm wide. Pin 6 (Q1 Base), Pin 5 (Q1 Emmitter) Pin 4 (Q2 Emitter) face to perforation side of tape
UPA810T-T1-A	Taping products (3 KPCS/Reel)	