

# UPA810T

# NPN SILICON HIGH FREQUENCY TRANSISTOR

#### **FEATURES**

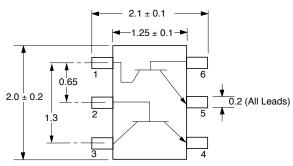
- SMALL PACKAGE STYLE:
   2 NE856 Die in a 2 mm x 1.25 mm package
- LOW NOISE FIGURE: NF = 1.2 dB TYP at 1 GHz
- HIGH GAIN: IS21EI<sup>2</sup> = 9.0 dB TYP at 1 GHz
- EXCELLENT LOW VOLTAGE, LOW CURRENT PERFORMANCE
- HIGH COLLECTOR CURRENT: 100 mA

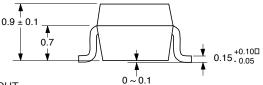
#### **DESCRIPTION**

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  $f\tau$ , 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** (TA = 25°C)

PART NUMBER PACKAGE OUTLINE			UPA810T S06		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
Ісво	Collector Cutoff Current at VcB = 10 V, IE = 0	μА			1.0
<b>І</b> ЕВО	Emitter Cutoff Current at VEB = 1 V, IC = 0	μА			1.0
hFE <sup>1</sup>	Forward Current Gain at VcE = 3 V, Ic = 7 mA		70	120	250
fτ	Gain Bandwidth at VcE = 3 V, Ic = 7 mA	GHz	3.0	4.5	
Cre <sup>2</sup>	Feedback Capacitance at VcB = 3 V, IE = 0, f = 1 MHz	pF		0.7	1.5
IS <sub>21</sub> El <sup>2</sup>	Insertion Power Gain at VcE = 3 V, Ic =7 mA, f = 1 GHz	dB	7	9	
NF	Noise Figure at VcE = 3 V, Ic = 7 mA, f = 1 GHz	dB		1.2	2.5
hFE1/hFE2	hfe Ratio: hfe1 = Smaller Value of Q1, or Q2 hfe2 = Larger Value of Q1 or Q2		0.85		

Notes: 1. Pulsed measurement, pulse width  $\leq$  350  $\mu s,$  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 UPA810T-T1, 3K per reel.

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.

# **ABSOLUTE MAXIMUM RATINGS**<sup>1</sup> (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS	
Vсво	Collector to Base Voltage	٧	20	
VCEO	Collector to Emitter Voltage	<b>V</b>	12	
VEBO	Emitter to Base Voltage	٧	3	
Ic Collector Current		mA	100	
Рт	Total Power Dissipation 1 Die 2 Die	mW mW	110 200	
TJ	Junction Temperature	°C	150	
Tstg	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)	