PRELIMINARY DATA SHEET

CEL

SILICON TRANSISTOR

UPA810T

NPN SILICON HIGH FREQUENCY TRANSISTOR

FEATURES

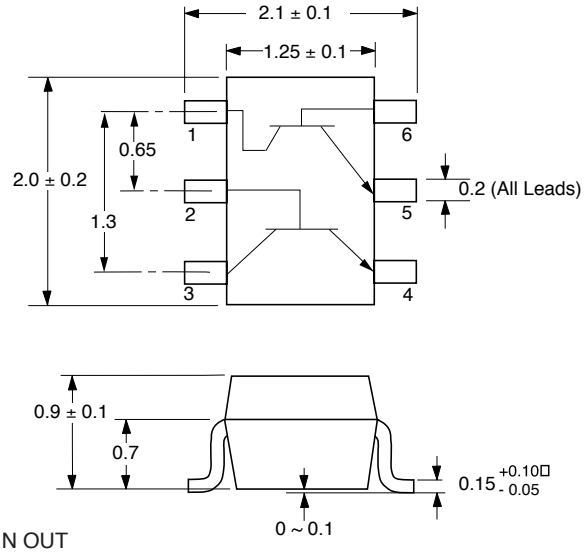
- **SMALL PACKAGE STYLE:**
  2 NE856 Die in a 2 mm x 1.25 mm package
- **LOW NOISE FIGURE:**
  NF = 1.2 dB TYP at 1 GHz
- **HIGH GAIN:**
  $|S_{21E}|^2$ = 9.0 dB TYP at 1 GHz
- **EXCELLENT LOW VOLTAGE, LOW CURRENT PERFORMANCE**
- **HIGH COLLECTOR CURRENT:** 100 mA

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)

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.

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	
Cre[2]	Feedback Capacitance at V_{CB} = 3 V, I_E = 0, f = 1 MHz	pF		0.7	1.5
$\|S_{21E}\|^2$	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 RATINGS[1] (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 2 Die	 mW mW	 110 200
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)	