NEC

NPN SILICON HIGH FREQUENCY TRANSISTOR

UPA800T

PRELIMINARY

FEATURES

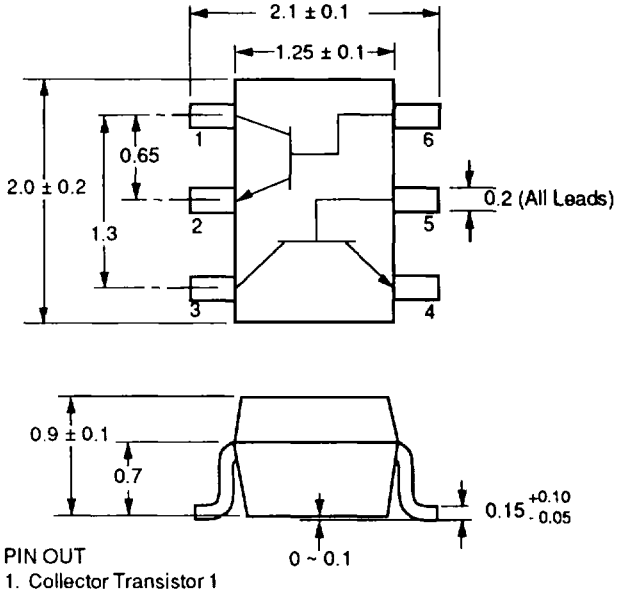
- **SMALL PACKAGE STYLE:**
  2 NE680 Die in a 2 mm x 1.25 mm package
- **LOW NOISE FIGURE:**
  NF = 1.9 dB TYP at 2 GHz
- **HIGH GAIN:**
  $|S_{21E}|^2$ = 7.5 dB TYP at 2 GHz
- **EXCELLENT LOW VOLTAGE, LOW CURRENT PERFORMANCE**

DESCRIPTION

The UPA800T is two NPN high frequency silicon epitaxial transistor 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.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE S06



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

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

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	10
V_{EBO}	Emitter to Base Voltage	V	1.5
I_C	Collector Current	mA	35
T_J	Junction Temperature	°C	150
T_{STG}	Storage Temperature	°C	-65 to +150

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

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER PACKAGE OUTLINE			UPA800T 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
$\|S_{21E}\|^2$	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 ≤ 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 UPA800T-T1, 3K per reel.