NEC

NPN SILICON HIGH FREQUENCY TRANSISTOR

UPA809TF

FEATURES

- **SMALL PACKAGE OUTLINE:**
  SOT-363 package measures just 2 mm x 1.25 mm
- **LOW HEIGHT PROFILE:**
  Just 0.60 mm high
- **HIGH COLLECTOR CURRENT:**
  I_C MAX = 100 mA

DESCRIPTION

The UPA809TF contains two NE688 NPN high frequency silicon bipolar chips. NEC's new low profile TF package is ideal for all portable wireless applicatons where reducing component height is a prime consideration. Each transistor chip is independently mounted and easily configured for two stage cascade LNAs and other similar applications.

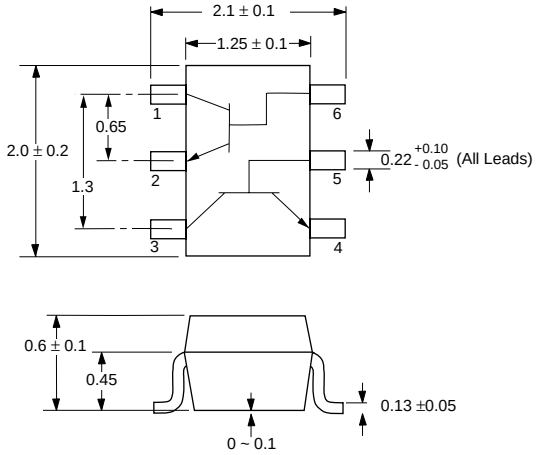
ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CBO}	Collector to Base Voltage	V	9
V_{CEO}	Collector to Emitter Voltage	V	6
V_{EBO}	Emitter to Base Voltage	V	2
I_C	Collector Current	mA	100
PT	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.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE TS06
(Top View)



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 1 is the lower left most pin as the package lettering is oriented and read left to right.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER PACKAGE OUTLINE			UPA809TF TS06		
SYMBOLS	**PARAMETERS AND CONDITIONS**	**UNITS**	**MIN**	**TYP**	**MAX**
I_{CBO}	Collector Cutoff Current at V_{CB} = 5V, I_E = 0	µA			0.1
I_{EBO}	Emitter Cutoff Current at V_{EB} = 1 V, I_C = 0	µA			0.1
h_{FE}	Forward Current Gain[1] at V_{CE} = 1 V, I_C = 3 mA		80	110	160
f_T	Gain Bandwidth at V_{CE} = 3 V, I_C = 20 mA, f = 2 GHz	GHz		9.0	
Cre	Feedback Capacitance[2] at V_{CB} = 1 V, I_E = 0, f = 1 MHz	pF		0.75	0.85
$\|S_{21E}\|^2$	Insertion Power Gain at V_{CE} = 3 V, I_C =20 mA, f = 2 GHz	dB		6.5	
NF	Noise Figure at V_{CE} = 3 V, I_C = 7 mA, f = 2 GHz	dB		1.5	
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 UPA809TF-T1, 3K per reel.