NEC

NPN SILICON EPITAXIAL TWIN TRANSISTOR | UPA821TC

FEATURES

- **SMALL PACKAGE STYLE:**
  1.5 mm x 1.1 mm, 33% smaller than conventional SOT-363 package

- **LOW HEIGHT PROFILE:**
  Just 0.55 mm high

- **FLAT LEAD STYLE:**
  Reduced lead inductance improves electrical performance

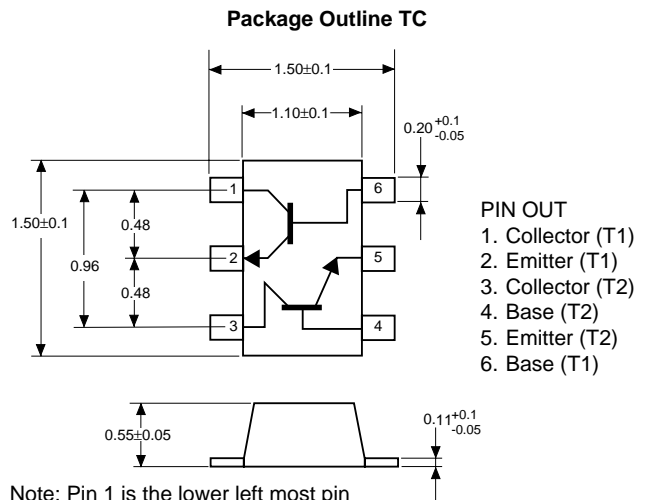- **HIGH COLLECTOR CURRENT:**
  lc MAX = 100 mA

DESCRIPTION

The UPA821TC contains two NE856 NPN high frequency silicon bipolar chips. NEC's new ultra small TC package is ideal for all portable wireless applications where reducing board space is a prime consideration. Each transistor chip is independently mounted and easily configured for oscillator buffer amplifier and other applications.

OUTLINE DIMENSIONS (Units in mm)

Package Outline TC

PIN OUT
1. Collector (T1)
2. Emitter (T1)
3. Collector (T2)
4. Base (T2)
5. Emitter (T2)
6. Base (T1)

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

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	 TBD TBD
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.

ELECTRICAL CHARACTERISTICS ($T_A = 25°C$)

PART NUMBER PACKAGE OUTLINE			UPA821TC TC		
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}	DC Current Gain[1] at $V_{CE} = 3$ V, $I_C = 7$ mA		70		140
f_T	Gain Bandwidth at $V_{CE} = 3$ V, $I_C = 7$ mA	GHz	3.0	4.5	
C_{re}	Feedback Capacitance[2] 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

Notes: 1. Pulsed measurement, pulse width ≤ 350 µs, duty cycle ≤ 2 %.
2. Collector to base capacitance when measured with capacitance meter (automatic balanced bridge method), with emitter connected to guard pin of capacitance meter.
3. For tape and reel version, use part number UPA821TC-T1, 3K per reel.

California Eastern Laboratories

DATA SUBJECT TO CHANGE WITHOUT NOTICE