NEC

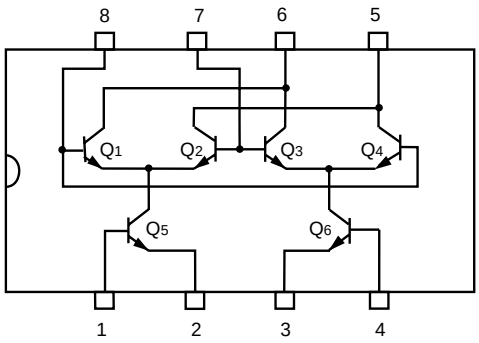
TRANSISTOR ARRAY | UPA101G

FEATURES

- **BUILT-IN ULTRAHIGH FREQUENCY MULTIPLIER:** (9 GHz Single Transistors)
- **OUTSTANDING h_{FE} LINEARITY**
- **SMALL PACKAGE**
- **TAPE AND REEL PACKAGING OPTION AVAILABLE**

CONNECTION DIAGRAM (Top View)

UPA101G



DESCRIPTION

This Silicon MMIC transistor array contains six (6), 9 GHz bipolar transistors. Applications include a multiplier, double balanced mixer, phase detector, or AGC circuit.

NEC's stringent quality assurance and test procedures ensure the highest reliability and performance.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER PACKAGE OUTLINE			UPA101G G08		
SYMBOLS	**PARAMETERS AND CONDITIONS**	**UNITS**	**MIN**	**TYP**	**MAX**
I_{CBO}	Collector Cut-off Current at V_{CB} = 5 V, I_E = 0 (All transistors)	µA			1.0
I_{EBO}	Emitter Cut-off Current at V_{EB} = 1 V, I_C = 0 (Q5 and Q6)	µA			1.0
h_{FE}	Direct Current Amplification, V_{CE} = 3 V, I_C = 1 mA (Q5 and Q6)		40	100	250
h_{FE1}/h_{FE2}	Direct Current Amplification Ratio, V_{CE} = 3 V, I_C = 1 mA, (Q5 and Q6)		0.9	1.0	1.1
C_{EB}	Emitter to Base Capacitance at V_{EB} = 0, f = 1 MHz	pF		1.4	2.8
f_T[1]	Gain Bandwidth Product at V_{CE} = 3 V, I_C = 10 mA	GHz		9	
R_{TH}	Thermal Resistance, Single Transistor Whole device	°C/W °C/W			40 25

Note:
1. Measured by installing a single transistor in a Micro-X package: the value shown is a reference value.

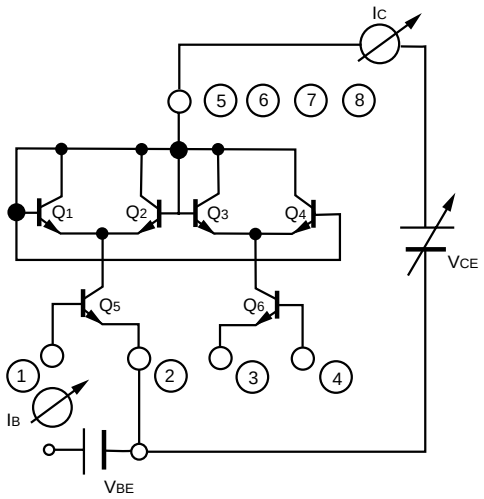
ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CBO}	Collector to Base Voltage[2]	V	15
V_{CEO}	Collector to Emitter Voltage[2]	V	6
V_{EBO}	Emitter to Base Voltage[2]	V	2.5
I_C	Collector Current[2]	mA	40
P_T	Total Power Dissipation	mW	350
T_J	Junction Temperature	°C	125
T_{STG}	Storage Temperature	°C	-55 to +125

Note:
1. Operation in excess of any one of these conditions may result in permanent damage.
2. Absolute maximum ratings for each transistor.

TEST CIRCUIT SCHEMATIC*

(For Electrical Characteristics Measurements excluding f_T)

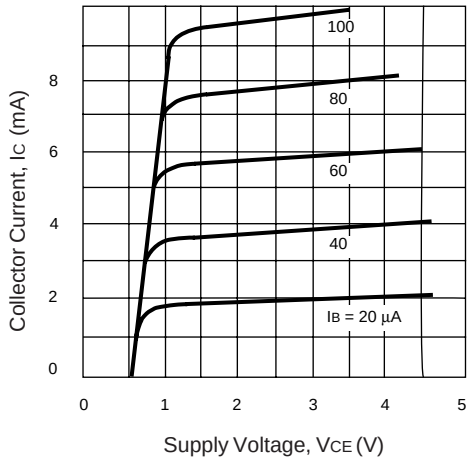


*See Performance Characteristics for voltage.

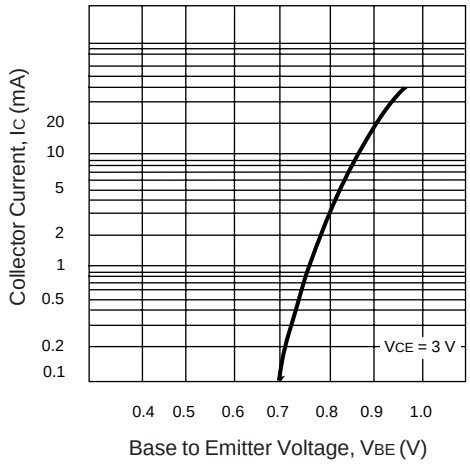
TYPICAL PERFORMANCE CURVES (T_A = 25°C)

See Test Circuit Schematic

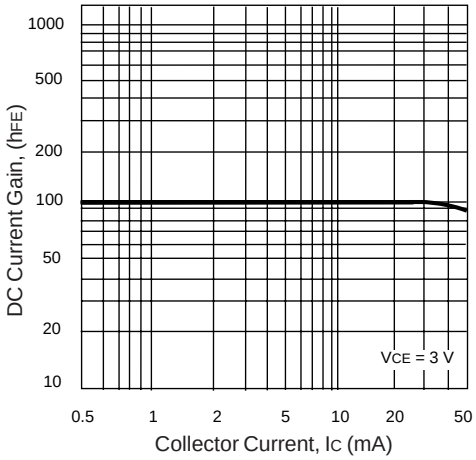
COLLECTOR CURRENT vs. PIN 5 TO PIN 2 VOLTAGE



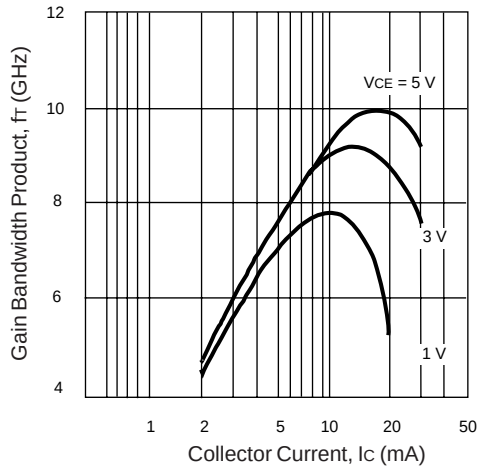
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT

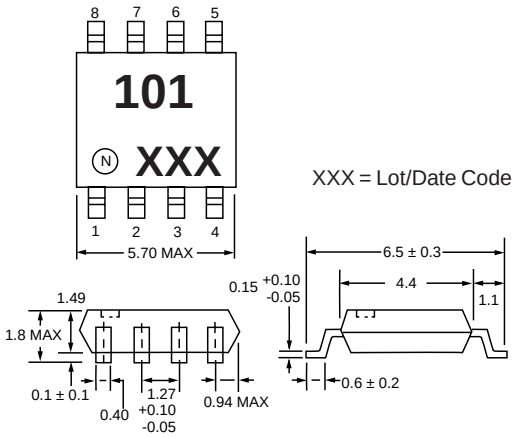


GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



OUTLINE DIMENSIONS (Units in mm)

UPA101G
PACKAGE OUTLINE G08



See Connection Diagram for description of leads.

ORDERING INFORMATION

PART NUMBER	QUANTITY
UPA101G-E1	2500/REEL