

### FEATURES

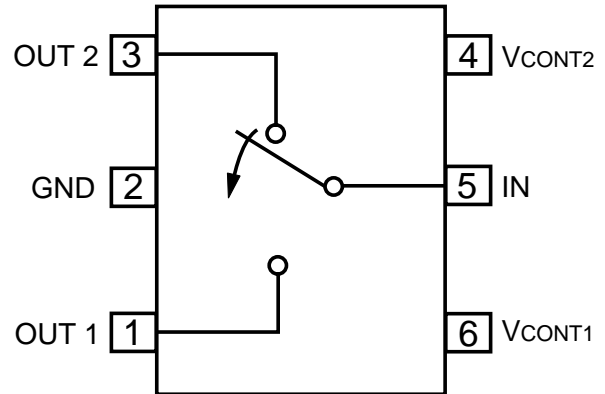
- **WIDE FREQUENCY RANGE:** 100 MHz to 2.5 GHz
- **LOW INSERTION LOSS:** 0.5 dB Typical at 2.0 GHz
- **HIGH P<sub>1dB</sub>:** +30 dBm typ. @ 2 GHz
- **LOW CONTROL VOLTAGE:** +3V or 0V
- **SUPER SMALL SURFACE MOUNT PACKAGE:** SOT-26
- **AVAILABLE ON TAPE AND REEL**

### DESCRIPTION

The UPG152TA is an L-Band Single Pole Double Throw (SPDT) GaAs MMIC switch developed for digital cellular, cordless, and PCS handset, WLAN, and other RF control applications. The device features low insertion loss, high P<sub>1dB</sub>, and low voltage operation. It is housed in a super small, low-cost SOT-26 package and is also available on tape-and-reel.

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

### INTERNAL BLOCK DIAGRAM



### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C, V<sub>CONT</sub> = 3V/0V)

PART NUMBER PACKAGE OUTLINE			UPG152TA T06		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
IL	Insertion Loss f = 0.1 – 2 GHz f = 2.0 – 2.5 GHz	dB dB		0.5 0.8	1.0
ISOL	Isolation f = 0.1 – 2 GHz f = 2.0 – 2.5 GHz	dB dB	20	22 20	
RLIN	Input Return Loss f = 0.1 - 2 GHz	dB	11		
RLOUT	Output Return Loss f = 0.1 - 2 GHz	dB	11		
P <sub>1dB</sub>	Input Power at 1 dB Compression f = 0.1 - 2 GHz	dBm	27	30	
IIP <sub>3</sub>	Input IP3 at f = 900 MHz, V <sub>CONT</sub> = +3 V f = 1900 MHz, V <sub>CONT</sub> = +3 V	dBm dBm		+48 +44	
t <sub>SW</sub>	Switching Speed f = 0.1 - 2 GHz	ns		30	
I <sub>CONT</sub>	Control Current f = 0.1 - 2 GHz, V <sub>CONT</sub> = 3V/0V, no RF signal	μA			5

# UPG152TA

## ABSOLUTE MAXIMUM RATINGS<sup>1</sup> (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS UPG152TA
V <sub>CONT 1,2</sub>	Control Voltage 1 and 2	V	-6.0 to +6.0 2.7 ≤  V <sub>CONT1</sub> - V <sub>CONT2</sub>   ≤ 6.0V
P <sub>IN</sub>	Input Power	dBm	31
P <sub>TOT</sub>	Total Power Dissipation	W	0.4
T <sub>OPT</sub>	Operating Case Temperature	°C	-50 to +90
T <sub>STG</sub>	Storage Temperature	°C	-65 to +150

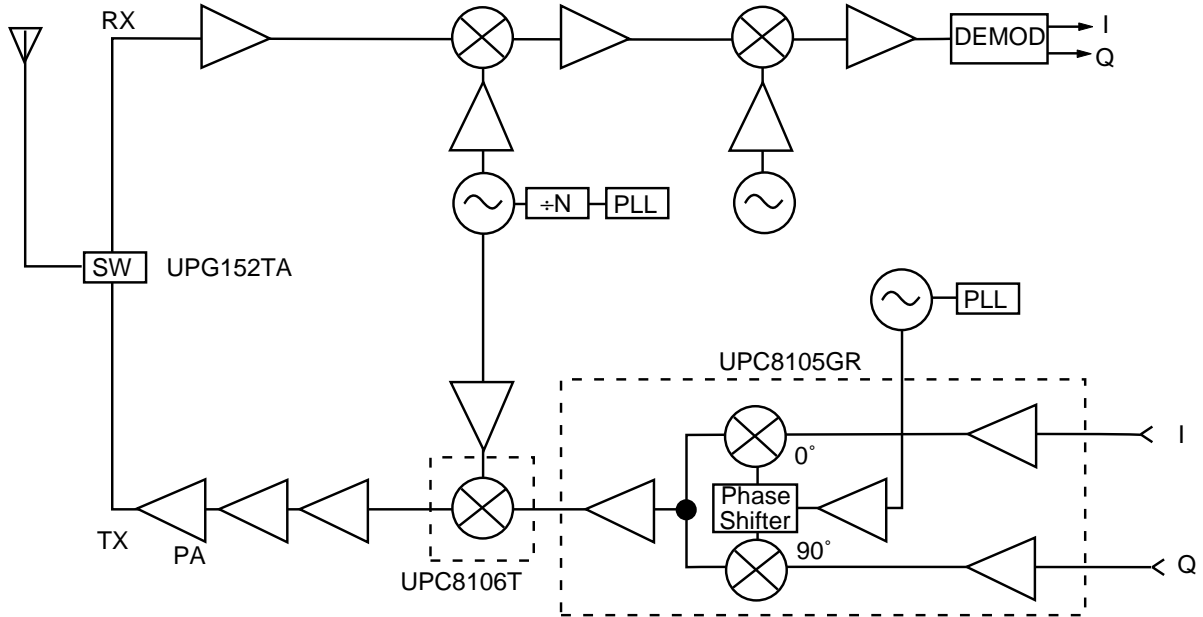
Note:

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

## RECOMMENDED OPERATING CONDITIONS

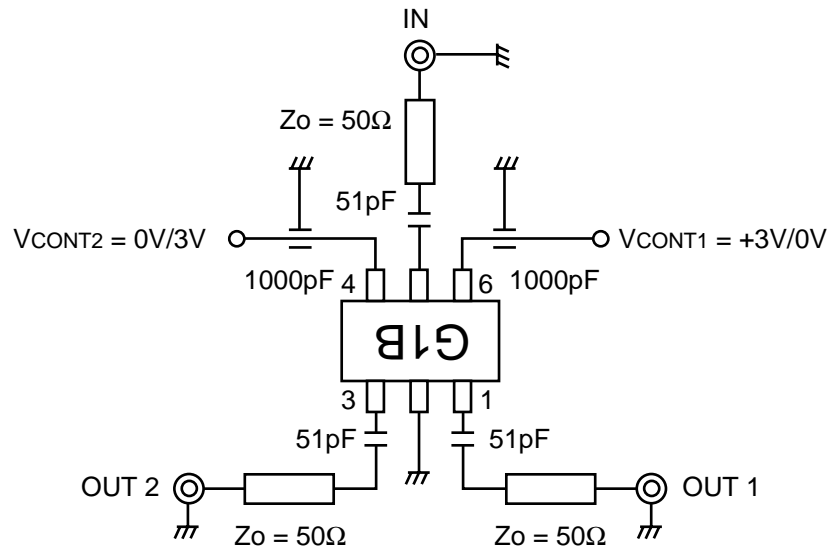
SYMBOL	PARAMETER	UNITS	UPG152TA		
			MIN	TYP	MAX
V <sub>CONT</sub>	Control Voltage (ON)	V	+2.7	+3.0	+5.3
V <sub>CONT</sub>	Control Voltage (OFF)	V	-0.2	0	+0.2
P <sub>IN</sub>	Input Power Level (V <sub>CONT</sub> = 3V/0V)	dBm		+27	+29

## APPLICATION EXAMPLE (PCS Handset)



TEST CIRCUIT

UPG152TA



SWITCH LOGIC TABLE

UPG152TA

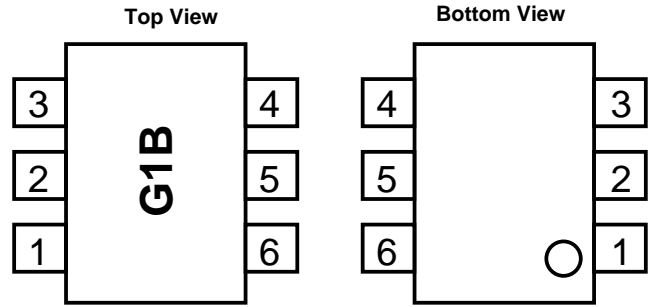
CONTROL INPUTS (V)		CONDITION OF OUTPUT PORTS <sup>1</sup>	
VCONT <sub>1</sub>	VCONT <sub>2</sub>	OUT <sub>1</sub>	OUT <sub>2</sub>
0	0	OFF	OFF
0	+3	ON	OFF
+3	0	OFF	ON
+3	+3	OFF	OFF

Note:

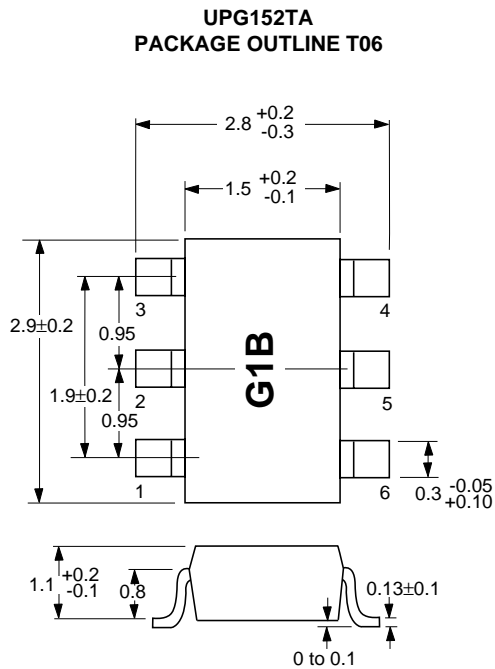
1. Impedance of the output port in the "OFF" state is reflective.

**PIN CONNECTION DIAGRAM**

PIN NO.	CONNECTION
1	OUT 1
2	GND
3	OUT 2
4	VCONT2
5	IN
6	VCONT1



**OUTLINE DIMENSIONS** (Units in mm)



All dimensions are typical unless otherwise specified.

**ORDERING INFORMATION**

PART NUMBER	QTY
UPG152TA-E3	3000/Reel

EXCLUSIVE NORTH AMERICAN AGENT FOR **NEC** RF, MICROWAVE & OPTOELECTRONIC SEMICONDUCTORS

**CALIFORNIA EASTERN LABORATORIES** ¥ Headquarters ¥ 4590 Patrick Henry Drive ¥ Santa Clara, CA 95054-1817 ¥ (408) 988-3500 ¥ Telex 34-6393 ¥ FAX (408) 988-02  
 24-Hour Fax-On-Demand: 800-390-3232 (U.S. and Canada only) ¥ Internet: <http://WWW.CEL.COM>