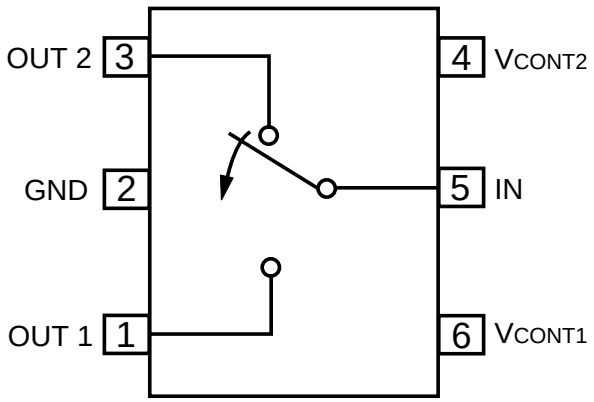
NEC

L, S BAND SPDT GaAs MMIC SWITCH | UPG152TA

FEATURES

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

INTERNAL BLOCK DIAGRAM



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_{1dB}, 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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C, V_{CONT} = 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	
RL_{IN}	Input Return Loss f = 0.1 - 2 GHz	dB	11		
RL_{OUT}	Output Return Loss f = 0.1 - 2 GHz	dB	11		
P_{1dB}	Input Power at 1 dB Compression f = 0.1 - 2 GHz	dBm	27	30	
I_{IP3}	Input IP3 at f = 900 MHz, V_{CONT} = +3 V f = 1900 MHz, V_{CONT} = +3 V	dBm dBm		+48 +44	
t_{SW}	Switching Speed f = 0.1 - 2 GHz	ns		30	
I_{CONT}	Control Current f = 0.1 - 2 GHz, V_{CONT} = 3V/0V, no RF signal	μA			5

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

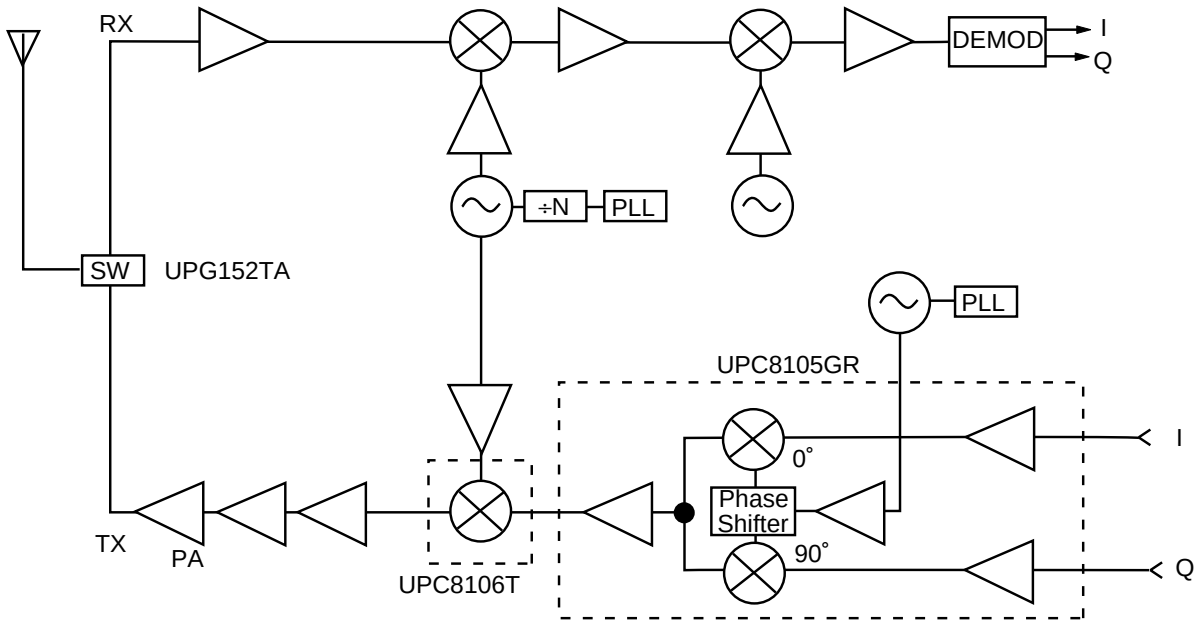
SYMBOLS	PARAMETERS	UNITS	RATINGS UPG152TA
$V_{CONT\ 1,2}$	Control Voltage 1 and 2	V	-6.0 to +6.0 $2.7 \le \lvert V_{CONT1}-V_{CONT2} \rvert \le 6.0V$
P_{IN}	Input Power	dBm	31
P_{TOT}	Total Power Dissipation	W	0.4
T_{OPT}	Operating Case Temperature	°C	-50 to +90
T_{STG}	Storage Temperature	°C	-65 to +150

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

RECOMMENDED OPERATING CONDITIONS

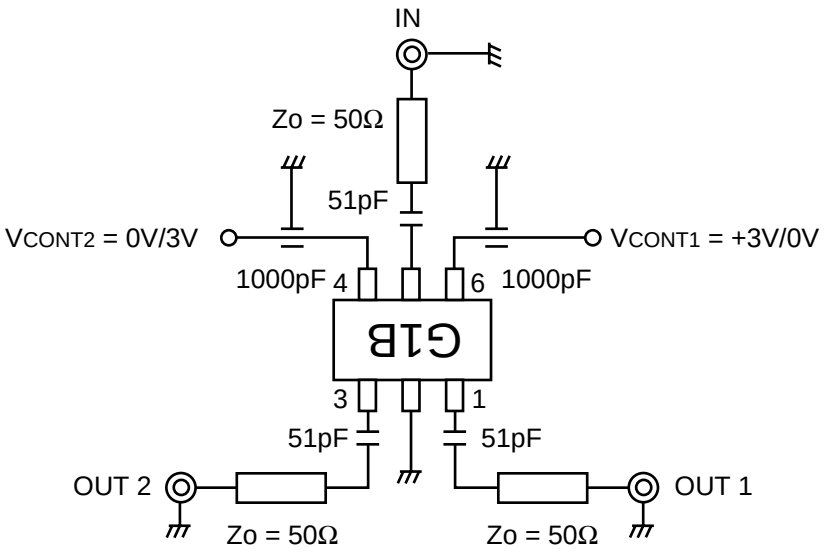
SYMBOL	PARAMETER	UNITS	UPG152TA		
			MIN	TYP	MAX
V_{CONT}	Control Voltage (ON)	V	+2.7	+3.0	+5.3
V_{CONT}	Control Voltage (OFF)	V	-0.2	0	+0.2
P_{IN}	Input Power Level (V_{CONT} = 3V/0V)	dBm		+27	+29

APPLICATION EXAMPLE (PCS Handset)



TEST CIRCUIT

UPG152TA



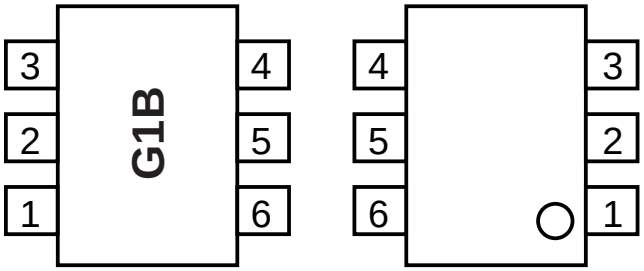
SWITCH LOGIC TABLE

CONTROL INPUTS (V)		CONDITION OF OUTPUT PORTS[1]	
V_{CONT1}	V_{CONT2}	OUT_1	OUT_2
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.

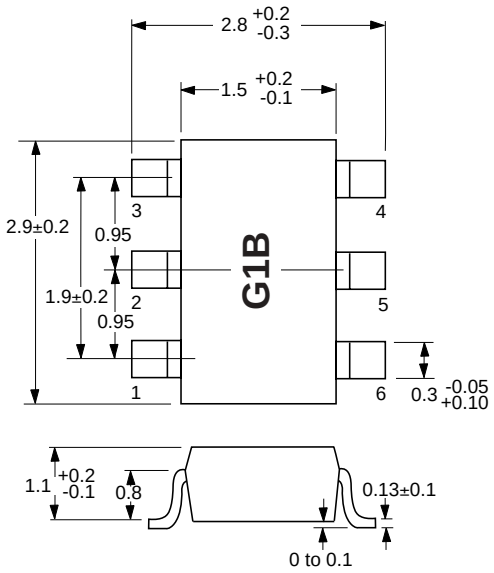
PIN CONNECTION DIAGRAM

PIN NO.	CONNECTION
1	OUT 1
2	GND
3	OUT 2
4	V_{CONT2}
5	IN
6	V_{CONT1}



OUTLINE DIMENSIONS (Units in mm)

UPG152TA
PACKAGE OUTLINE T06



All dimensions are typical unless otherwise specified.

ORDERING INFORMATION

PART NUMBER	QTY
UPG152TA-E3	3000/Reel

Life Support Applications
These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.