


**GaAs MMIC SPDT SWITCH FOR 2.4 GHz AND 5 GHz DUALBAND WIRELESS LAN**
**DESCRIPTION**

The uPG2163T5N is a GaAs MMIC SPDT switch for 2.4 GHz and 5 GHz dualband wireless LAN. Low insertion loss and dual band operations suit to dualband wireless LAN system.

**FEATURES**

- Operating frequency :  $f = 2.4$  to  $2.5$  GHz and  $4.9$  to  $6.0$  GHz
- Low insertion loss :  $L_{INS} = 0.4$  dB TYP. @  $f = 2.4$  to  $2.5$  GHz  
:  $L_{INS} = 0.5$  dB TYP. @  $f = 4.9$  to  $6.0$  GHz
- Handling power :  $P_{in(1dB)} = +31$  dBm TYP. @  $f = 2.5$  GHz  
+29 dBm TYP. @  $f = 6.0$  GHz
- High isolation :  $ISL = 35$  dB TYP. @  $f = 2.4$  to  $2.5$  GHz  
:  $ISL = 30$  dB TYP. @  $f = 4.9$  to  $6.0$  GHz
- Input/output return loss :  $RL_{in}/RL_{out} = 15$  dB TYP. @  $f = 2.4$  to  $2.5$  GHz  
:  $RL_{in}/RL_{out} = 15$  dB TYP. @  $f = 4.9$  to  $6.0$  GHz
- 6-pin plastic TSON package ( $1.5 \times 1.5 \times 0.4$  mm)

**APPLICATION**

- 2.4 GHz and 5 GHz dualband wireless LAN : IEEE802.11a+b/g

**ORDERING INFORMATION**

Part Number	Package	Marking	Supplying Form
uPG2163T5N-E2-A	6pinTSON	TBD	<ul style="list-style-type: none"> <li>• Embossed tape 8 mm wide</li> <li>• Pin 1.6 face to tape perforation side</li> <li>• Qty TBD kpcs/reel</li> </ul>

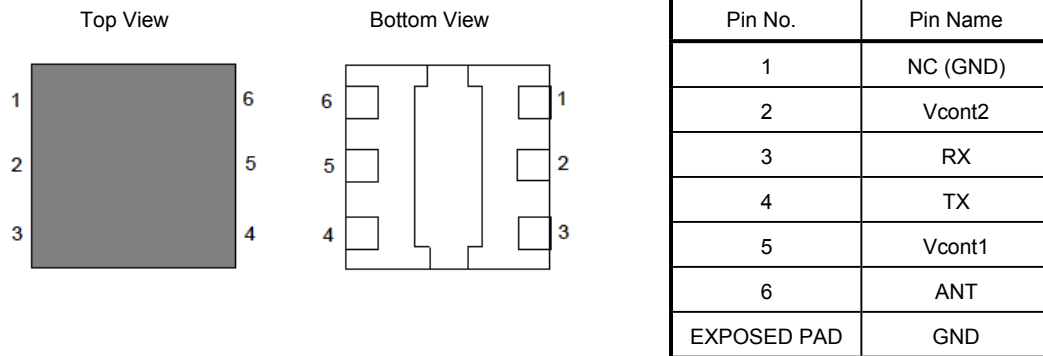
**Remark** To order evaluation samples, contact your nearby sales office.

Part number for sample order: uPG2163T5N

**Caution** Observe precautions when handling because these devices are sensitive to electrostatic discharge.

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.

**PIN CONNECTIONS AND INTERNAL BLOCK DIAGRAM**



**Remark** NC is functionally non-connection pin but actually grounding is recommended.

**TRUTH TABLE**

V <sub>cont1</sub>	V <sub>cont2</sub>	ANT-RX	ANT-TX
High	Low	ON	OFF
Low	High	OFF	ON

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = +25°C, unless otherwise specified)**

Parameter	Symbol	Ratings	Unit
Switch Control Voltage	V <sub>cont</sub>	-6.0 to +6.0 <sup>Note 1</sup>	V
Input Power	P <sub>in</sub>	TBD	dBm
Operating Ambient Temperature	T <sub>A</sub>	-45 to +85	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

**Notes 1.** |V<sub>cont1</sub> - V<sub>cont2</sub>| ≤ 6.0 V

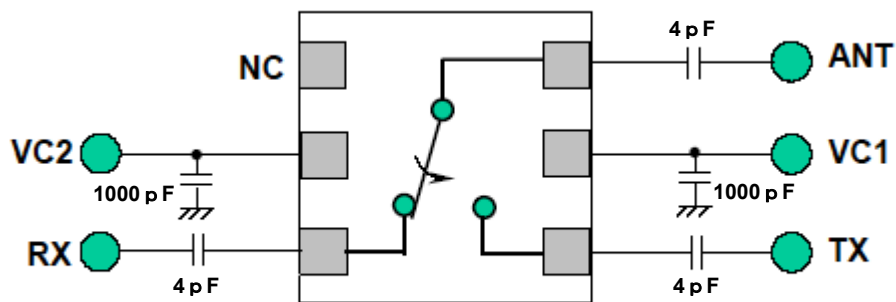
**RECOMMENDED OPERATING RANGE (TA = +25°C)**

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating Frequency 1	f1	2.4	–	2.5	GHz
Operating Frequency 2	f2	4.9	–	6.0	GHz
Switch Control Voltage (H)	V <sub>cont (H)</sub>	2.7	3.0	5.0	V
Switch Control Voltage (L)	V <sub>cont (L)</sub>	–0.2	0	0.2	V

**ELECTRICAL CHARACTERISTICS (TA = +25°C, V<sub>cont</sub> = 3.0 V/0 V, Zo = 50 Ω, DC blocking capacitors value: 4 pF, Each port, unless otherwise specified)**

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Insertion Loss	Lins	f = 2.4 to 2.5 GHz	–	0.4	TBD	dB
		f = 4.9 to 6.0 GHz	–	0.5	TBD	dB
Isolation	ISL	f = 2.4 to 2.5 GHz	TBD	35	–	dB
		f = 4.9 to 6.0 GHz	TBD	30	–	dB
Input Return Loss	RLin	f = 2.4 to 2.5 GHz	–	15	–	dB
		f = 4.9 to 6.0 GHz	–	15	–	dB
Output Return Loss	RLout	f = 2.4 to 2.5 GHz		15	–	dB
		f = 4.9 to 6.0 GHz	–	15	–	dB
1 dB Gain Compression Input Power	P <sub>in (1 dB)</sub>	f = 2.5 GHz	–	31	–	dBm
		f = 6.0 GHz	–	29	–	dBm
Switch Control Speed	t <sub>sw</sub>		–	50	–	ns
Control Current	I <sub>cont</sub>	RF Non	–	0.7	1.5	μ A

EVALUATION CIRCUIT

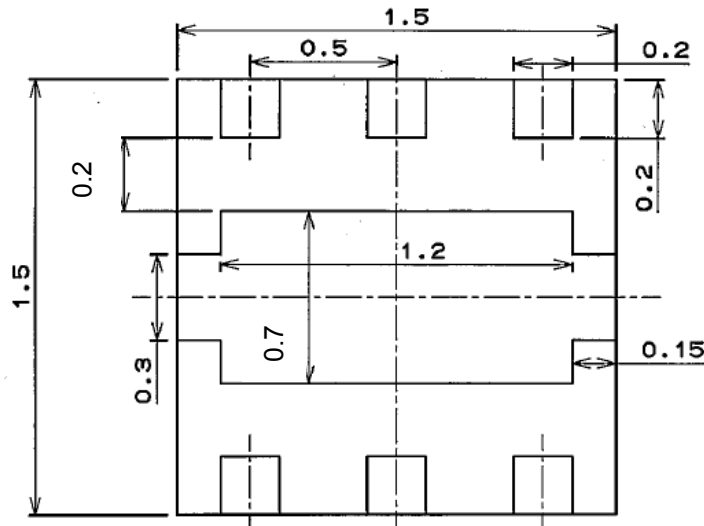


The application circuits and their parameters are for reference only and are not intended for use in actual design-ins.

PACKAGE DIMENSIONS

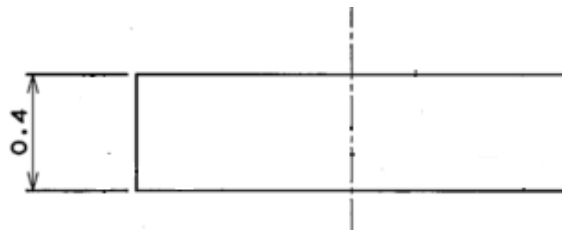
6-PIN PLASTIC TSON (UNIT: mm)

(Bottom View)



*Preliminary*

(Side View)



Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (\*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL’s understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices	
		-A	-AZ
Lead (Pb)	< 1000 PPM	Not Detected	(*)
Mercury	< 1000 PPM	Not Detected	
Cadmium	< 100 PPM	Not Detected	
Hexavalent Chromium	< 1000 PPM	Not Detected	
PBB	< 1000 PPM	Not Detected	
PBDE	< 1000 PPM	Not Detected	

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

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