CEL

NEC's 1 W ULTRA SMALL SPDT SWITCH

UPG2030TK

FEATURES

- **SWITCH CONTROL VOLTAGE:**
  $V_{cont\ (H)}$ = 2.7 to 3.0 V (2.8 V TYP.)
  $V_{cont\ (L)}$ = –0.2 to +0.2 V (0 V TYP.)
- **LOW INSERTION LOSS:**
  0.25 dB TYP. @ 0.5 to 1.0 GHz
  0.30 dB TYP. @ 1.0 to 2.0 GHz
  0.35 dB TYP. @ 2.0 to 2.5 GHz
- **HIGH ISOLATION:**
  27 dB TYP. @ 0.5 to 2.0 GHz
  24 dB TYP. @ 2.0 to 2.5 GHz
- **POWER HANDLING:**
  $P_{in\ (0.1\ dB)}$ = +27.0 dBm TYP. @ 2.0 GHz, V_{cont} = 2.8 V/0 V
  $P_{in\ (1\ dB)}$ = +30.0 dBm TYP. @ 2.0 GHz, V_{cont} = 2.8 V/0 V
  (Reference value)
- **HIGH-DENSITY SURFACE MOUNTING:**
  6-pin minimold package (1.5 × 1.1 × 0.55 mm)
- **PB-FREE**

DESCRIPTION

NEC's UPG2030TK is a GaAs MMIC L, S-band SPDT (Single Pole Double Throw) switch for mobile phone and L, S-band applications.

This device has low insertion loss and high isolation, and can operate from 0.5 to 3 GHz at 2.7 to 3.0 V.

This device is housed in a 6-pin low profile, Pb-Free minimold package and this package is also suitable for high-density surface mounting.

APPLICATIONS

- **CELLULAR AND CORDLESS HANDSETS**
- **PCS, BLUETOOTH™, WLAN, AND WLL**
- **SHORT RANGE WIRELESS**

ORDERING INFORMATION

PART NUMBER	PACKAGE	MARKING	SUPPLYING FORM
UPG2030TK-E2-A	6-pin lead-less minimold (1511)	G3R	• Embossed tape 8 mm wide • Pin 1, 6 face the perforation side of the tape • Qty 5 kpcs/reel

Remark To order evaluation samples, contact your nearby sales office.
Part number for sample order: UPG2030TK-A

ELECTRICAL CHARACTERISTICS

(T_A = +25°C, V_{cont} = 2.8V/0 V , DC blocking capacotors = 56 pF, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Insertion Loss 1	L_{INS1}	f = 0.5 to 1.0 GHz	–	0.25	0.45	dB
Insertion Loss 2	L_{INS2}	f = 1.0 to 2.0 GHz	–	0.30	0.50	dB
Insertion Loss 3	L_{INS3}	f = 2.0 to 2.5 GHz	–	0.35	0.55	dB
Isolation 1	ISL_1	f = 0.5 to 2.0 GHz	23	27	–	dB
Isolation 2	ISL_2	f = 2.0 to 2.5 GHz	20	24	–	dB
Input Return Loss	RL_{in}	f = 0.5 to 2.5 GHz	15	20	–	dB
Output Return Loss	RL_{out}	f = 0.5 to 2.5 GHz	15	20	–	dB
0.1 dB Gain Compression Input Power Note	$P_{in\ (0.1\ dB)}$	f = 2.0 GHz	+25.5	+27.0	–	dBm
		f = 2.5 GHz	+25.5	+27.0	–	dBm
Switch Control Current	I_{cont}	No signal	–	4	20	μA
Switch Control Speed	t_{SW}		–	50	500	ns

Notes $P_{in\ (0.1\ dB)}$ is the measured input power level when the insertion loss increases 0.1 dB more than that of linear range.

STANDARD CHARACTERISTICS FOR REFERENCE

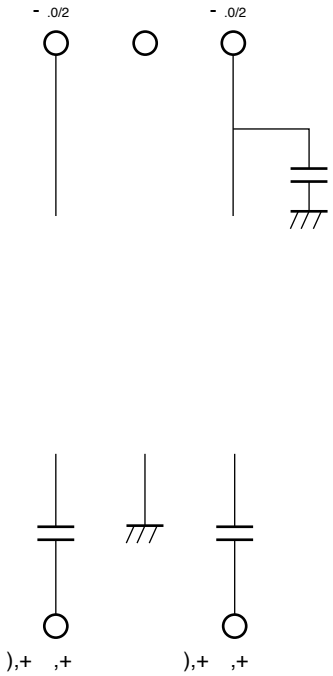
(T_A = +25°C, V_{cont} = 2.8 V/0 V, DC blocking capacitors = 56 pF, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
1 dB Gain Compression Input Power Note	$P_{in\ (1\ dB)}$	f = 2.0 GHz	–	+30.0	–	dBm

Notes $P_{in\ (1\ dB)}$ is the measured input power level when the insertion loss increases 1 dB more than that of linear range.

Caution It is necessary to use DC blocking capacitors with this device.
The value of DC blocking capacitors should be chosen to accommodate the frequency of operation, bandwidth, switching speed and the condition with the actual board of your system. The range of recommended DC blocking capacitor value is less than 100 pF for frequencies above 0.5 GHz, and 1,000 pF for frequencies below 0.5 GHz.

EVALUATION CIRCUIT (V_{cont} = 2.8 V/0 V, DC blocking capacitors = 56 pF)



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

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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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