



NEC's WIDE BAND SPDT SWITCH UPD5710TK

FEATURES

- **SUPPLY VOLTAGE :**
 $V_{DD} = 1.8 \text{ to } 3.3 \text{ V (3.0 V TYP.)}$
- **SWITCH CONTROL VOLTAGE:**
 $V_{cont (H)} = 1.8 \text{ to } 3.3 \text{ V (3.0 V TYP.)}$
 $V_{cont (L)} = -0.2 \text{ to } +0.2 \text{ V (0 V TYP.)}$
- **LOW INSERTION LOSS:**
 $L_{ins1} = 0.6 \text{ dB TYP. @ } f = \text{DC to } 1.0 \text{ GHz}$
 $L_{ins2} = 0.8 \text{ dB TYP. @ } f = 1.0 \text{ to } 2.0 \text{ GHz}$
 $L_{ins3} = 0.95 \text{ dB TYP. @ } f = 2.0 \text{ to } 2.5 \text{ GHz}$
- **HIGH ISOLATION:**
 $ISL1 = 32.5 \text{ dB TYP. @ } f = \text{DC to } 1.0 \text{ GHz}$
 $ISL2 = 25 \text{ dB TYP. @ } f = 1.0 \text{ to } 2.0 \text{ GHz}$
 $ISL3 = 22.5 \text{ dB TYP. @ } f = 2.0 \text{ to } 2.5 \text{ GHz}$
- **POWER HANDLING:**
 $P_{in (0.1 \text{ dB})} = +17.0 \text{ dBm TYP. @ } f = 1.0 \text{ GHz, } V_{DD} = 3.0 \text{ V}$
 $P_{in (1 \text{ dB})} = +21.0 \text{ dBm TYP. @ } f = 1.0 \text{ GHz, } V_{DD} = 3.0 \text{ V}$
- **HIGH-DENSITY SURFACE MOUNTING:**
6-pin minimold package ($1.5 \times 1.1 \times 0.55 \text{ mm}$)
- **LEAD FREE**

DESCRIPTION

NEC's UPD5710TK is a wide-band CMOS MMIC SPDT (Single Pole Double Throw) switch for mobile communications, instrumentation, short range wireless, and general-purpose RF switching applications.

This device can operate from DC to 2.5GHz with low insertion loss and high isolation.

The UPD5710TK is housed in a 6-pin minimold (1511) package, suitable for high-density surface mounting.

APPLICATIONS

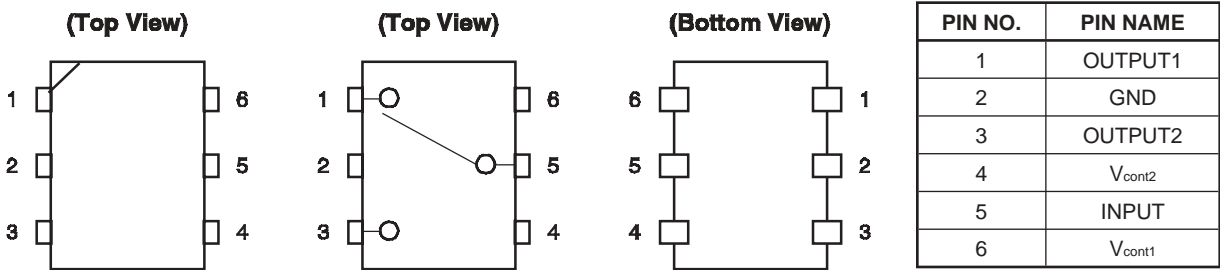
- **MOBILE COMMUNICATIONS**
- **SET TOP BOXES**
- **SHORT RANGE WIRELESS**
- **INSTRUMENTATION**

ORDERING INFORMATION

PART NUMBER	PACKAGE	MARKING	SUPPLYING FORM
μ PD5710TK-E2-A	6-pinlead-less minimold (1511)	C3L	<ul style="list-style-type: none"> • 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: UPD5710TK

PIN CONNECTIONS AND INTERNAL BLOCK DIAGRAM



TRUTH TABLE

V _{CONT}	INPUT-OUTPUT1	INPUT-OUTPUT2
Low	OFF	ON
High	ON	OFF

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{DD}	+4.6	V
Switch Control Voltage	V _{cont}	+4.6	V
Continuous Current	I _{dc}	60	mA
Input Power	P _{in}	+27	dBm
Operating Ambient Temperature	T _A	−45 to +85	°C
Storage Temperature	T _{stg}	−65 to +150	°C

RECOMMENDED OPERATING RANGE (T_A = +25°C, unless otherwise specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{DD}	+1.8	+2.8	+3.3	V
Switch Control Voltage (H)	V _{cont (H)}	+1.8	+2.8	+3.3	V
Switch Control Voltage (L)	V _{cont (L)}	−0.2	0	+0.2	V

Notes 1. | V_{cont(H)} − V_{cont(L)} | ≤ 0.1 V

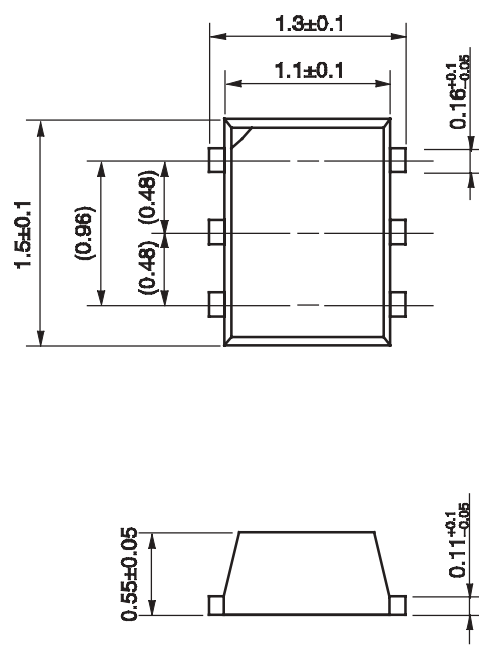
ELECTRICAL CHARACTERISTICS ($T_A = +25^{\circ}\text{C}$, $V_{DD} = 2.8\text{V}$, $V_{\text{cont(H)}} = 3.0\text{ V}$, $V_{\text{cont(L)}} = 0\text{ V}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Insertion Loss 1	L_{ins1}	$f = \text{DC to } 1.0\text{ GHz}$	–	0.6	0.8	dB
Insertion Loss 2	L_{ins2}	$f = 1.0\text{ to } 2.0\text{ GHz}$	–	0.8	1.0	dB
Insertion Loss 3	L_{ins3}	$f = 2.0\text{ to } 2.5\text{ GHz}$	–	0.95	1.2	dB
Isolation 1	$ISL1$	$f = \text{DC to } 1.0\text{ GHz}$	30	32.5	–	dB
Isolation 2	$ISL2$	$f = 1.0\text{ to } 2.0\text{ GHz}$	22	25	–	dB
Isolation 3	$ISL3$	$f = 2.0\text{ to } 2.5\text{ GHz}$	-	22.5	–	dB
Input Return Loss	RL_{in}	$f = \text{DC to } 2.5\text{ GHz}$	15	20	–	dB
Output Return Loss	RL_{out}	$f = \text{DC to } 2.5\text{ GHz}$	15	20	–	dB
0.1 dB Loss Compression Input Power ^{Note}	$P_{\text{in (0.1 dB)}}$	$f = 1.0\text{ GHz}$	+13.5	+17.0	–	dBm
1 dB Loss Compression Input Power ^{Note}	$P_{\text{in (1 dB)}}$	$f = 1.0\text{ GHz}$	–	+21.0	–	dBm
Intermodulation Intercept Point	IIP_3	2 tone, 1.000/1.001GHz, 1 MHz spacing	–	+33	–	dBm
Supply Voltage	I_{DD}	No RF	–	0.01	1.0	μA
Switch Control Current	I_{cont}	No RF	-	0.01	1.0	μA
Switch Control Speed	t_{sw}		–	30	500	ns

Notes . $P_{\text{in (0.1 dB)}}$ or $P_{\text{in (1 dB)}}$ are the measured input power level when the insertion loss increases 0.1 dB more or 1dB than that of linear range.

PACKAGE DIMENSIONS

6-PIN LEAD-LESS MINIMOLD (1511) (UNIT:mm)



Remark () : Reference value

RECOMMENDED SOLDERING CONDITIONS

This product should be soldered and mounted under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

Soldering Method	Soldering Conditions		Condition Symbol
Infrared Reflow	Peak temperature (package surface temperature)	: 260°C or below	IR260
	Time at peak temperature	: 10 seconds or less	
	Time at temperature of 220°C or higher	: 60 seconds or less	
	Preheating time at 120 to 180°C	: 120±30 seconds	
	Maximum number of reflow processes	: 3 times	
	Maximum chlorine content of rosin flux (% mass)	: 0.2%(Wt.) or below	
VPS	Peak temperature (package surface temperature)	: 215°C or below	VP215
	Time at temperature of 200°C or higher	: 25 to 40 seconds	
	Preheating time at 120 to 150°C	: 30 to 60 seconds	
	Maximum number of reflow processes	: 3 times	
	Maximum chlorine content of rosin flux (% mass)	: 0.2%(Wt.) or below	
Wave Soldering	Peak temperature (molten solder temperature)	: 260°C or below	WS260
	Time at peak temperature	: 10 seconds or less	
	Preheating temperature (package surface temperature)	: 120°C or below	
	Maximum number of flow processes	: 1 time	
	Maximum chlorine content of rosin flux (% mass)	: 0.2%(Wt.) or below	
Partial Heating	Peak temperature (pin temperature)	: 350°C or below	HS350
	Soldering time (per side of device)	: 3 seconds or less	
	Maximum chlorine content of rosin flux (% mass)	: 0.2%(Wt.) or below	

Caution Do not use different soldering methods together (except for partial heating).

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.

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05/18/2004

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