UNISONIC TECHNOLOGIES CO., LTD

L8020

LINEAR INTEGRATED CIRCUIT

DUAL POLARISATION SWITCH TWIN LNB MULTIPLEX CONTROLLER

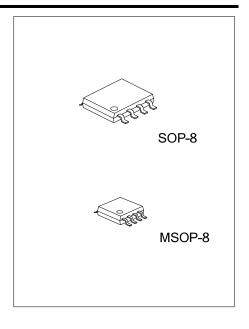
DESCRIPTION

The UTC L8020 dual polarisation switch controller is one of a wide range of satellite receiver LNB support circuits. Its features include completely independent channels, and every channel provides two logic outputs under the voltage sensitive input. The two inputs of the UTC L8020 have a nominal threshold of 14.5V. Their threshold is temperature compensated to minimize drift. In order to achieve the transient protection by adding only a single resistor per channel, each input has a low and stable input current.

Normal and inverted outputs are provided for each input. All outputs can source 15mA and sink 10mA making them suitable to drive TTL and CMOS logic, pin diodes and for IF-amp supply switching.

The UTC L8020 works in a single supply ranging from 5V to12V. The quiescent current of the UTC L8020 is 4mA, and there is no remarkable change with load or logic state. In order to adapt the variation of environmental conditions, the ambient operating temperature is -40°C~+85°C.

The UTC L8020 can be used in applications, such as IF switch box, LNB switch boxes and twin LNBs, replacing many discrete components to save both manufacturing cost and PCB size as well as improving reliability.

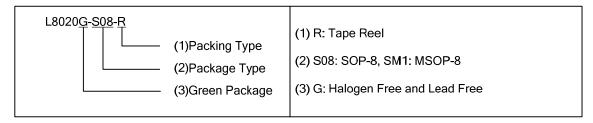


FEATURES

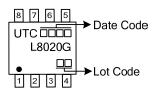
- * Avoid external components
- * Provides polarity detection and control
- * Transient resistant
- * Low input and supply current
- * Temperature compensated input threshold
- Normal and inverted output available while wide supply operating range
- * Dual polarisation switch
- * Simplify the design

ORDERING INFORMATION

Ordering Number	Package	Packing
L8020G-S08-R	SOP-8	Tape Reel
L8020G-SM1-R	MSOP-8	Tape Reel

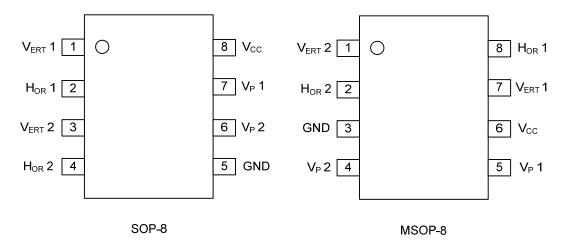


MARKING



www.unisonic.com.tw 1 of 4

■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.			DECODIDATION		
SOP-8	MSOP-8	PIN NAME	DESCRIPTION		
1	7	V _{ERT} 1	Vertical output 1		
2	8	H _{OR} 1	Horizontal output 1		
3	1	V _{ERT} 2	Vertical output 2		
4	2	H _{OR} 2	Horizontal output 2		
5	3	GND	Ground connection pin.		
6	4	V _P 2	Polarity select input 2		
7	5	V _P 1	Polarity select input 1		
8	6	Vcc	Supply voltage		

■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V _{CC}	-0.6~+15	V
Input Voltage (V _{POL1} and V _{POL2})		V_{IN}	25	V
Supply Current		Icc	50	mA
Dower Dissipation (T. =25°C)	MSOP-8	Б	350	mW
Power Dissipation (T _A =25°C)	SOP-8	P_D	500	
Operating Temperature		T _{OPR}	-40~+85	°C
Storage Temperature		T _{STG}	-40~+85	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS

 $(T_A= 25^{\circ}C, V_{CC}=5V, I_D=10mA (R_{CAL1}=33k\Omega), unless otherwise specified)$

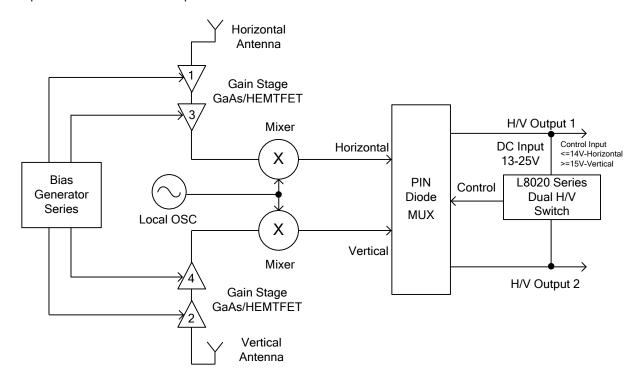
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SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
V _{CC}		5		12	V	
	All inputs and outputs open circuit			10	mA	
Icc	$I_{VERT1} = I_{VERT2} = 10$ mA, $V_{POL1} = V_{POL2} = 14$ V			30	mA	
	I _{HOR1} =I _{HOR2} =10mA, V _{POL1} =V _{POL2} =15.0V			30	mA	
V _{POL1} and V _{POL2} Inputs						
I _{POL}	V _{POL1} =V _{POL2} =25V (Note 1)	10	20	40	μΑ	
V_{TPOL}	(Note 1) (Note 2)	14.0	14.5	15.0		
T _{SPOL}				100	μs	
V _{VH}	$I_{VERT1} = I_{VERT2} = 10$ mA, $V_{POL1} = V_{POL2} = 14$ V	V _{CC} -1.0	V _{CC} -0.8	V_{CC}	V	
	I _{VERT1} =I _{VERT2} =15mA, V _{POL1} =V _{POL2} =14V	V _{CC} -1.2	V _{CC} -0.9	V_{CC}	V	
	$I_{VERT1} = I_{VERT2} = 10 \mu A, V_{POL1} = V_{POL2} = 14 V$	V _{CC} -0.2	V _{CC} -0.1	V_{CC}	V	
V_{VL}	$I_{VERT1} = I_{VERT2} = -10 \text{mA}, V_{POL1} = V_{POL2} = 15.0 \text{V}$	0	0.25	0.5	V	
V _{VH}	$I_{HOR1} = I_{HOR2} = 10 \text{mA}, V_{POL1} = V_{POL2} = 15.0 \text{V}$	V _{CC} -1.0	V _{CC} -0.8	V_{CC}	V	
	$I_{HOR1} = I_{HOR2} = 15 \text{mA}, V_{POL1} = V_{POL2} = 15.0 \text{V}$	V _{CC} -1.2	V _{CC} -0.9	V_{CC}	V	
	$I_{HOR1} = I_{HOR2} = 10 \mu A, V_{POL1} = V_{POL2} = 15.0 V$	V _{CC} -0.2	V _{CC} -0.1	V_{CC}	V	
V_{VLOW}	$I_{HOR1} = I_{HOR2} = -10 \text{mA}, V_{POL1} = V_{POL2} = 14 \text{V}$	0	0.25	0.5	V	
	SYMBOL V _{CC} ICC IPOL VTPOL T _{SPOL} V _{VH} V _{VH}	V _{CC} All inputs and outputs open circuit V _{ERT1} = V _{ERT2} = 10mA, V _{POL1} = V _{POL2} = 14V H _{OR1} = H _{OR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{POL1} = V _{POL2} = 25V (Note 1) V _{TPOL} (Note 1) (Note 2) T _{SPOL} V _{VH} V _{ERT1} = V _{ERT2} = 10mA, V _{POL1} = V _{POL2} = 14V V _{VH} V _{ERT1} = V _{ERT2} = 15mA, V _{POL1} = V _{POL2} = 14V V _{VL} V _{ERT1} = V _{ERT2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{VH} V _{ERT1} = V _{ERT2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{VH} V _H = V _H =	SYMBOL TEST CONDITIONS MIN Vcc 5	SYMBOL TEST CONDITIONS MIN TYP V _{CC} 5 5 All inputs and outputs open circuit I _{VERT1} = I _{VERT2} = 10mA, V _{POL1} = V _{POL2} = 14V I _{POL} V _{POL1} = V _{POL2} = 15.0V I _{POL} V _{POL1} = V _{POL2} = 15.0V I _{POL} V _{POL1} = V _{POL2} = 14V V _{CC} -1.0 V _{CC} -0.8 V _{VH} I _{VERT1} = I _{VERT2} = 10mA, V _{POL1} = V _{POL2} = 14V V _{CC} -0.9 I _{VERT1} = I _{VERT2} = 10µA, V _{POL1} = V _{POL2} = 14V V _{CC} -0.2 V _{CC} -0.1 V _{VL} I _{VERT1} = I _{VERT2} = -10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -0.2 V _{CC} -0.1 V _{VH} I _{IHOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -1.2 V _{CC} -0.9 I _{HOR1} = I _{HOR2} = 15mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -1.2 V _{CC} -0.9 I _{HOR1} = I _{HOR2} = 10µA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -0.2 V _{CC} -0.9	SYMBOL TEST CONDITIONS MIN TYP MAX V _{CC} 5 12 All inputs and outputs open circuit 10 I _{CC} I _{VERT1} = I _{VERT2} = 10mA, V _{POL1} = V _{POL2} = 14V 30 I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V 30 I _{POL} V _{POL1} = V _{POL2} = 25V (Note 1) 10 20 40 V _{TPOL} (Note 1) (Note 2) 14.0 14.5 15.0 T _{SPOL} 100 I _{VERT1} = I _{VERT2} = 10mA, V _{POL1} = V _{POL2} = 14V V _{CC} -1.0 V _{CC} -0.8 V _{CC} I _{VERT1} = I _{VERT2} = 10mA, V _{POL1} = V _{POL2} = 14V V _{CC} -0.2 V _{CC} -0.1 V _{CC} I _{VERT1} = I _{VERT2} = 10mA, V _{POL1} = V _{POL2} = 15.0V 0 0.25 0.5 V _{VL} I _{VERT1} = I _{VERT2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -1.0 V _{CC} -0.8 V _{CC} I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -1.2 V _{CC} -0.9 V _{CC} I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -1.2 V _{CC} -0.9 V _{CC} I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -0.2 V _{CC} -0.1 V _{CC} I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -0.2 V _{CC} -0.1 V _{CC} I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -0.2 V _{CC} -0.1 V _{CC} -0.1 V _{CC} I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -0.2 V _{CC} -0.1 V _{CC} -0.1 V _{CC} I _{HOR1} = I _{HOR2} = 10mA, V _{POL1} = V _{POL2} = 15.0V V _{CC} -0.2 V _{CC} -0.1 V _{CC} -0.1 V _{CC} -0.1 V _{CC} -0.1 V _{CC} -0.2 V _{CC} -0.1 V _{CC} -	

Notes: 1. V_{POL1} and V_{POL2} switching thresholds apply over the whole operating temperature range specified above.

^{2.} Applied via 10k resistors.

■ TYPICAL APPLICATION CIRCUIT

A twin LNB design is as followed. In this block diagram, the UTC **L8020** provides the two polarity switches required to decode the two independent receiver feeds.



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