

RD74HV1G02

High-Voltage 2-input NOR gate

REJ03D0886-0100 Rev.1.00 Feb 20, 2007

Description

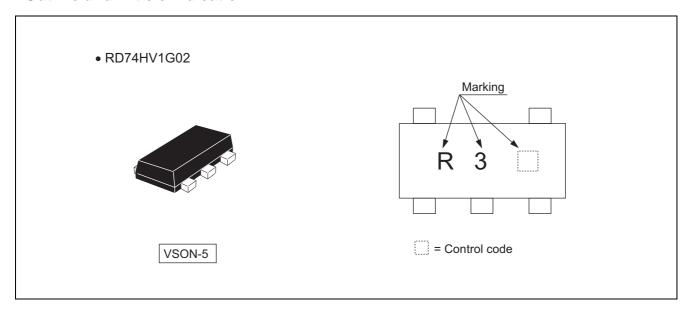
The RD74HV1G02 has two-input NOR gate in a 5 pin package. Supports the wide power supply voltage and can use it for the other use as a general-purpose driver.

Features

- The basic gate function is lined up as Renesas uni logic series.
- Supplied on emboss taping for high-speed automatic mounting.
- Wide supply voltage range: 4.5 to 30 V
- Operating temperature range : -40 to +85°C
- All inputs V_{IH} (Min.) = 3.5 V, V_{IL} (Max.) = 0.8 V (@ V_{CC} = 10 V to 30 V)
- Output current : I_O short (Typ.) = ± 70 mA (@ V_{CC} = 15 V)
- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
RD74HV1G02VSE	VSON-5 pin	PUSN0005KA-A (TNP-5DV)	VS	E (3,000 pcs / Reel)

Outline and Article Indication



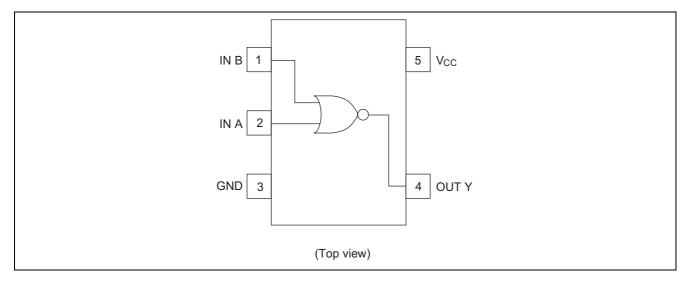
These products designed for general and industrial use. It is not supported for special quality or reliability demanded use such as automotive or life support or something like that.

Function Table

Inp	Output Y			
A	В	Cutput 1		
L	L	Н		
Н	L	L		
L	Н	L		
Н	Н	L		

H : High level L : Low level

Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	Test Conditions
Supply voltage range	V _{CC}	0 to 30	V	
Input voltage range *1	Vı	-0.5 to V _{CC} + 0.5	V	
Output voltage range *1, 2	Vo	-0.5 to V _{CC} + 0.5	V	
Input clamp current	I _{IK}	±50	mA	$V_{I} < 0$ or $V_{I} > V_{CC}$
Output clamp current	I _{OK}	±75	mA	$V_O < 0$ or $V_O > V_{CC}$
Continuous output current	Io	±100	mA	$V_{\rm O}$ = 0 to $V_{\rm CC}$
Continuous current through V _{CC} or GND	I _{CC} or I _{GND}	±100	mA	
Maximum power dissipation at Ta = 25°C (in still air) *3	P _T	200	mW	
Storage temperature	Tstg	-65 to 150	°C	

Notes: The absolute maximum ratings are values which must not individually be exceeded, and furthermore no two of which may be realized at the same time.

- 1. The input and output voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
- 2. This value is limited to 30 V maximum.
- 3. The maximum package power dissipation was calculated using a junction temperature of 150°C.

Recommended Operating Conditions

Item	Symbol	Min	Max	Unit	Conditions
Supply voltage range	V_{CC}	4.5	30	V	
Input voltage range	VI	0	V _{CC}	V	
Input / Output voltage range	V _{I/O}	0	V _{CC}	V	
		_	-2.5		V _{CC} = 10 V
	І _{ОН}	_	– 5		V _{CC} = 15 V
		_	-10		V _{CC} = 25 V
Output current		_	–15	mA	V _{CC} = 30 V
Output current	l _{OL}	_	2.5	IIIA	V _{CC} = 10 V
		_	5		V _{CC} = 15 V
		_	10		V _{CC} = 25 V
		_	15		V _{CC} = 30 V
	Δt / Δν	0	100		V _{CC} < 5 V
Input transition rise or fall rate		0	20	ns / V	15 V > V _{CC} ≥ 5 V
		0	10		30 V ≥ V _{CC} ≥ 15 V
Operating free-air temperature	Ta	-40	85	°C	

Note: Unused or floating inputs must be held high or low.

Electrical Characteristic

 $(Ta = -40 \text{ to } 85^{\circ}C)$

Item	Symbol	V _{CC} (V) *	Min	Тур	Max	Unit	Test condition
	.,	10	3.5	_	_		
		15	3.5	_	_		
	V _{IH}	25	3.5	_	_		
Input voltage		30	3.5	_	_	V	
Input voltage		105	_	_	0.8	V	
	\/	15	_	_	0.8		
	V _{IL}	25	_	_	0.8		
		30	_	_	0.8		
		10	9.0	_	_		$I_{OH} = -2.5 \text{ mA}$
	V _{OH}	15	13.5	_	_		$I_{OH} = -5 \text{ mA}$
	VOH	25	22.5	_	_	V	$I_{OH} = -10 \text{ mA}$
Output voltage		30	27.0	_	_		$I_{OH} = -15 \text{ mA}$
Output voltage	V _{OL}	10	_	_	1.0		$I_{OL} = 2.5 \text{ mA}$
		15	_	_	1.5		$I_{OL} = 5 \text{ mA}$
		25	_	_	2.5		I _{OL} = 10 mA
		30	_	_	3.0		I _{OL} = 15 mA
Output current	I _{OH} short	15	-46	– 70	-95	mA	$V_O = 0V$
Output current	I _{OL} short	15	46	70	95	IIIA	$V_O = V_{CC}$
Input current	I _{IN}	V _{CC}	_	_	±1	μΑ	$V_{IN} = V_{CC}$ or GND
		10	_	_	0.5		
Quiescent supply current	Las	15	_	_	1.0	μΑ	$V_{IN} = V_{CC}$ or GND
Quiescent supply current	I _{CC}	25	_	_	2.0	μΑ	VIN - VCC OF GIAD
		30	_		2.0		
Supply current	I _{SUPP}	10	_	_	2	mA	V _{CC} = 10 V , VIN = 4.5 V
Supply current		30	_	_	10	111/-	V _{CC} = 30 V , VIN = 4.5 V
Input capacitance	C _{IN}	V _{CC}	_	2.5	_	pF	$V_{IN} = V_{CC}$ or GND

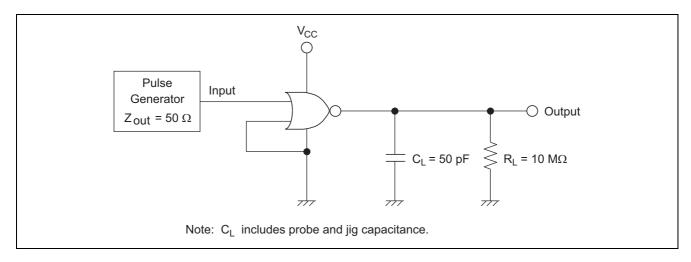
Note: For conditions shown as Min or Max, use the appropriate values under recommended operating conditions.

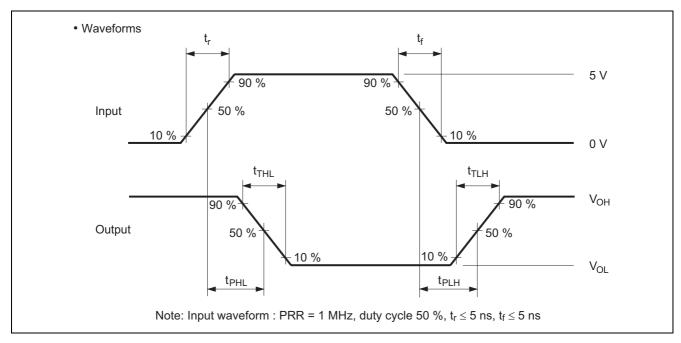
Switching Characteristics

. ~		_			_	
(Cr	= 50	pF.	$t_r =$	$t_f =$	5	ns)

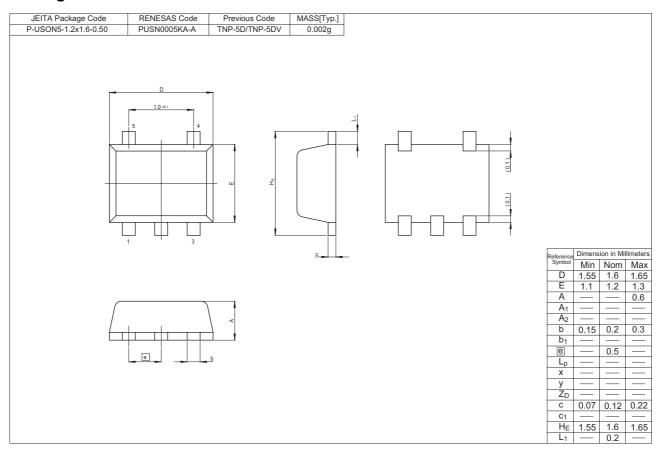
Item	Symbol	Vcc (V)	Ta = −40 to 85°C			Unit	FROM	ТО
item	Syllibol	VCC (V)	Min	Тур	Max	Onic	(Input)	(Output)
	t _{PLH} t _{PHL}	10	15	_	75	ns	A or B	Y
		15	10	_	55			
Propagation delay time		20	10	_	45			
		25	10	_	35			
		30	10	_	35			
		10	8	_	30		A or B	
		15	7	_	25			Y
Output rise / fall time	t _{TLH} t _{THL}	20	6	_	20	ns		
		25	5	_	17			
		30	5	_	15			

Test Circuit





Package Dimensions



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