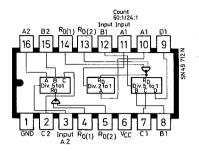
SN49712N DIVIDER 80 TO 1 WITH BCD OUTPUTS AND GATED RESET

A SERIES SN74N TTL SPECIAL COUNTER

description

The SN49712N is especially suitable to count seconds, minutes and hours without external gating. The two BCD outputs may be connected to decoders for driving cold-cathode indicator tubes (SN74141N, SN49714P) or to decoders for driving seven segment displays (SN7446N, SN7447N, SN7448N).

As all TTL counters the SN49712N should be driven from pulses with transition times smaller 50 ns per volt. During the count operation transfer of information to the outputs occurs on the negative-going edge of the clock pulse. Each of the two counters has a reset gate. When both reset inputs are taken high all outputs of the clock inputs. By proper interconnecting the outputs and reset inputs of the divide by 80 counter the count cycle can be reduced to ratios such as 60 to 1 or 24 to 1.



Note (for each counter):

To reset all outputs to the low state both RO(1) and RO(2) inputs must be at the high state. For counting at least one of the two reset inputs must be at the low state.

Counter 60 to 1				
External connections:	pins 4 - 14 - 15 pins 2 - 5 - 13 pins 10 - 12 pins 3 - 9			
Count input:	pin 11			
Outputs, BCD 09	A ₁ , B ₁ , C ₁ D ₁			
Outputs, BCD 05	A ₂ , B ₂ , C ₂			

Counter 24 to 1				
External connections:	pins 4 - 14 - 15 pins 5 - 7 - 13 pins 10 - 12 pins 3 - 9			
Count input:	pin 11			
Outputs, BCD 09	A ₁ , B ₁ , C ₁ D ₁			
Outputs BCD 0 2	A ₂ , B ₂			

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absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

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Supply voltage	·/ V
Input voltage (see note 1)	5.5 V
Operating free-air temperature range	0º C to 70º C
Storage temperature range	_65º C to 150º C

Note: voltage values are with respect to network ground terminal.

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage V _{CC} (see note 1)	4.75	5	5,25	V
Fan-out from any output			10	
Count frequency, input B_1 and A_2 input A_1	0		12,5 25	MHz MHz
Pulse width at input B ₁ at inputs A ₁ , A ₂ , R ₀	30 15			ns ns
Rise and fall time of input pulse			50	ns/V
Operating free-air temperature range	0		70	0 C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PAR	AMETER	TEST CONDITIONS	MIN	TYP⁺	MAX	UNIT
VIH	High-level input voltage		2			V
VIL	Low-level input voltage				8.0	٧
VI	Input clamp voltage ·	$V_{CC} = 5.25 \text{ V}, I_1 =12 \text{ m/s}$	4		-1.5	V
Voн	High-level output voltage	$V_{CC} = 4.75 \text{ V}$, $I_{OH} = 400 \mu$	A 2.4			V
Vol	Low-level output voltage	$V_{CC} = 4.75 \text{ V}$ $I_{OL} = 16 \text{ m/s}$	Α		0.4	V
ΙĮ	Input current at maximum input voltage	$V_{CC} = 5.25 \text{ V}$ $V_{I} = 5.5 \text{ V}$			1	mΑ
ΙίΗ	High level input current Inputs A ₁ , A ₂ , B ₁ Inputs R ₀	V _{CC} = 5.25 V V ₁ = 2.4 V			120 40	μΑ
IIL	Low level input current Inputs A ₁ , A ₂ , B ₁ Inputs R ₀	V _{CC} = 5.25 V V ₁ = 0.4 V	;		-4.8 -1.6	mA
Icc	Supply current	V _{CC} = 5.25 V		58	95	mA

⁺ All typical values are at V_{CC} = 5 V, T_A = 25° C

switching characteristics, VCC = 5 V, T_A = 250 C, N = 10 (CL = 15 pF, R_L = 400 Ω)

PARAMETER ⁺	FROM (INPUT)	TO (OUTPUT)	MIN	TYP	MAX	UNIT
tPHL, tPLH	Input A ₁	A ₁		12	20	
	Input B ₁	B ₂ , C ₁ , D ₁			50	ns
	Input A ₂	A ₂ , B ₂ , C ₂			70	
†PHL	Input R ₀	any		30	60	ns

tpHL = Propagation delay time, high-level output to low-level output tp₁ H = Propagation delay time, low-level output to high-level output