

DIGITAL MONOLITHIC INTEGRATED CIRCUITS (MOS)

MOS IC, LSI

Type No.	Function	Maximum Ratings (Ta=25°C)	Electrical Characteristics (Ta=25°C)							
			Item	Symbol	Condition	min.	typ.	max.	Unit	
MN6205	CMOS Digital Quartz Watch Circuit for LCD Driver	V _{SS1} =+0.2~-3V V _{SS2} =+0.2~-6V Topr=-20~+70°C Tstg=-55~+100°C Operating Condition V _{DD} =0 V _{SS1} =-1.55V V _{SS2} =-3V fosc=32.768kHz	Supply Voltage 1)	V _{SS1}		-1.25	-1.55	-1.8	V	
			Supply Voltage 2)	V _{SS2}	C ₁ Open	-2	-3	-3.6	V	
			Supply Current	I _{SS}	Without load, C ₁ =C ₂ =0.1μF			-2.5	μA	
			Osc. Start Voltage	V _{STA}	t _{osc} =10s			-1.4	V	
			Frequency Variation vs Supply Voltage	Δf ₁ /f ₀	V _{SS1} =-1.45~-1.55V			±2	ppm	
			Osc. Feedback Resistance	R _f				20	MΩ	
Timer										
MN6076	Digital AC Clock Timer with ON/OFF Double Time Setting Function	V _{DD} =+0.3~-16V V _I =+0.3~-V _{DD} -0.3V V _O =+0.3~-26V Topr=-10~+70°C Tstg=-30~+125°C Operating Condition V _{DD} =-12V V _{SS} =0V V _{PF} =-10V	Supply Current	I _{DD}			1.3		mA	
			Input Signal Frequency	f _i		DC	50/60	10k	Hz	
			"H" Level Input Voltage All Input	V _{IH}	V _{SS} =0V	0		-1	V	
			"L" Level Input Voltage All Input	V _{IL}	V _{SS} =0V	V _{DD} +1		V _{DD}	V	
			"H" Level Output Current (PM)	I _{OH1}	V _{TH} =-3V		12.0		mA	
			Output Breakdown Voltage (PM)	BV _{O1}	I _{TL} =-10μA			-22	V	
			"H" Level Output Current (^{d&c} _{a&b})	I _{OH2}	V _{TH} =-3V		6		mA	
			Output Breakdown Voltage (^{d&c} _{a&b})	BV _{O2}	I _{TL} =-10μA			-22	V	
			"H" Level Output Current Others	I _{OH3}	V _{TH} =-3V		3		mA	
			Output Breakdown Voltage Others	BV _{O3}	I _{TL} =-10μA			-22	V	
"H" Level Output Current Others	I _{OH4}	V _{TH} =-2V	500			μA				
Output Breakdown Voltage Others	BV _{O4}	I _{TL} =-10μA			-22	V				
BBD's for Audio Signal Delays										
MN3001	Dual 512-stage BBD for Audio Signal Delays	V _{TE} =-20~+0.3V V _{BB} =-0.3~+10V P _D =50mW Topr=-20~+60°C Tstg=-55~+125°C Operating Condition V _{DD} =-15V V _{GG} =-14V V _{BB} =+5V V _{Bias} =-3.3~-4.9V	Signal Delay Time	t _D	f _{cp} =10kHz~800kHz 512+512stages	0.32		51.2	ms	
			Input Signal Frequency	f _i	3dB down from value at f _i =1kHz f _{cp} =40kHz, V _i =2V _{rms}	0		0.3f _{cp}	kHz	
			Input Signal Swing	V _i	f _{cp} =40kHz, f _i =1kHz THD≤2.5%		0.32	1.8	V _{rms}	
			Insertion Loss	L _i	f _{cp} =40kHz, f _i =1kHz V _i =2V _{rms}		8.5	11	dB	
			Total Harmonic Distortion	THD	f _{cp} =40kHz, f _i =1kHz V _i =0.78V _{rms}		0.4	2.5	%	
			Noise Voltage	V _{no}	f _{cp} =80kHz		0.25		mV _{rms}	
			Signal to Ratio	S/N	Weighted "A" curve		70		dB	
MN3002	512-Stage BBD for Audio Signal Delays	V _{TE} =-20~+0.3V V _{BB} =-0.3~+10V P _D =50mW Topr=-20~+60°C Tstg=-55~+125°C Operating Condition V _{DD} =-15V V _{GG} =-14V V _{BB} =+5V V _{Bias} =-3.3~-4.9V	Signal Delay Time	t _D	f _{cp} =10kHz~800kHz	0.32		25.6	ms	
			Input Signal Frequency	f _i	3dB down from value at f _i =1kHz f _{cp} =40kHz, V _i =2V _{rms}	0		0.3f _{cp}	kHz	
			Input Signal Swing	V _i	f _{cp} =40kHz, f _i =1kHz THD≤2.5%			1.8	V _{rms}	
			Insertion Loss	L _i	f _{cp} =40kHz, f _i =1kHz V _i =2V _{rms}		8.5	11	dB	
			Total Harmonic Distortion	THD	f _{cp} =40kHz, f _i =1kHz V _i =0.78V _{rms}		0.4	2.5	%	
			Output Noise Voltage	V _{no}	f _{cp} =80kHz		0.25		mV _{rms}	
			Signal to Noise Ratio	S/N	Weighted "A" curve		70		dB	

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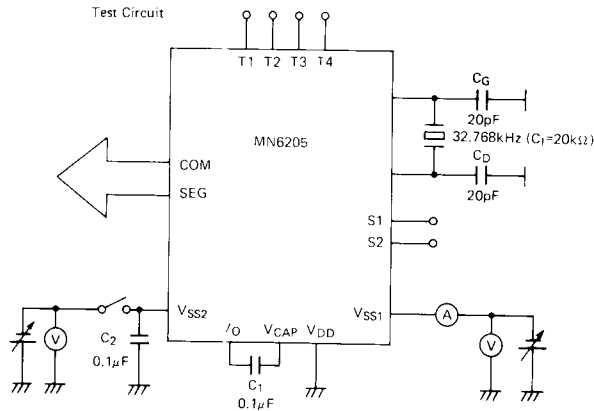
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Block Diagram

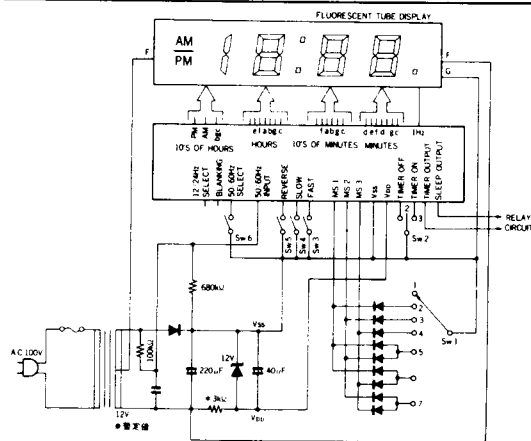
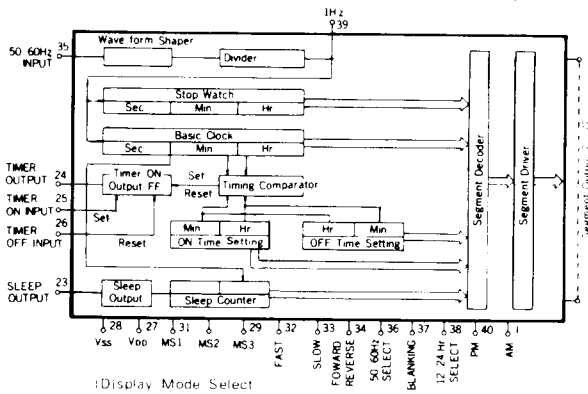
Application Circuit

MN6205 (Chip)

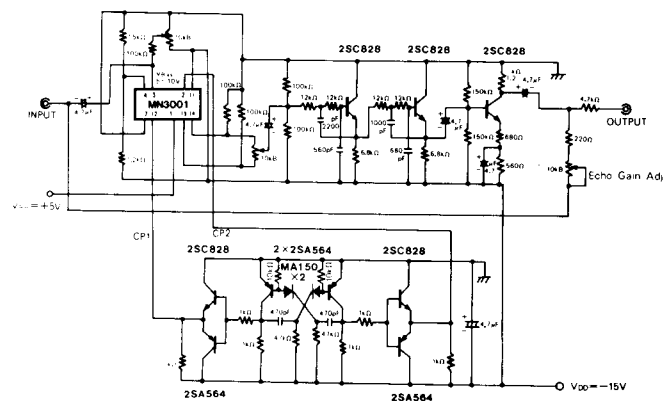
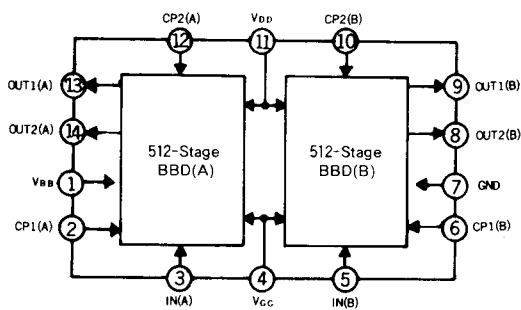
Test Circuit



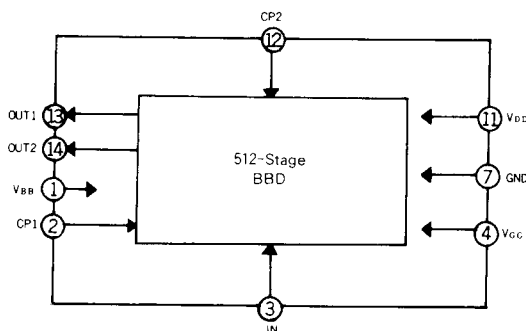
MN6076 (Package I.—19, 40—Lead Plastic DIL)



MN3001 (Package I.—12, 14—Lead Plastic DIL)



MN3002 (Package I.—12, 14—Lead Plastic DIL)



Echo Effect (Signal delay over 10ms)