

# PG001M Serial Signal Generator ICs for SLA7042M and SLA7044M

## Absolute Maximum Ratings

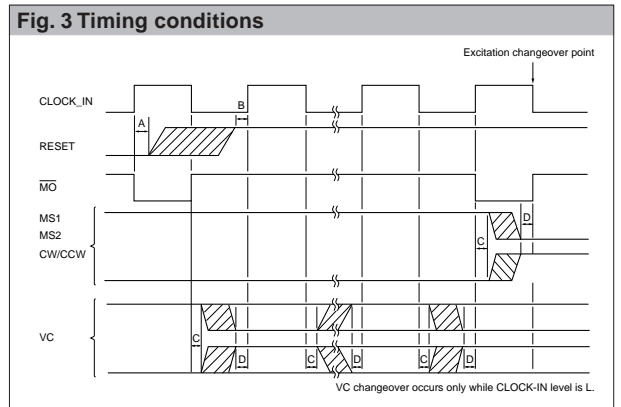
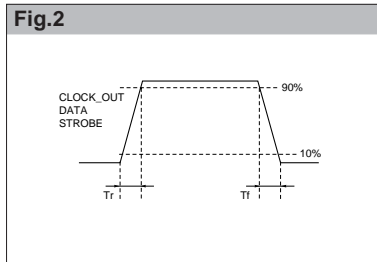
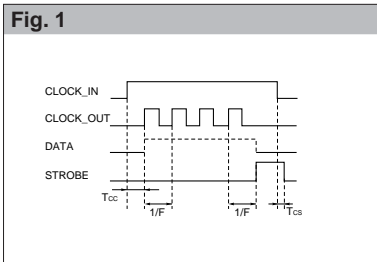
(T<sub>a</sub>=25°C)

Parameter	Symbol	Ratings	Unit
Supply Voltage	V <sub>DD</sub>	-0.5 to 7	V
Input Voltage	V <sub>I</sub>	-0.5 to V <sub>DD</sub> +0.5	V
Input Current	I <sub>I</sub>	±10	mA
Output Voltage	V <sub>O</sub>	-0.5 to V <sub>DD</sub> +0.5	V
Output Current	I <sub>O</sub>	±15	mA
Power Dissipation	P <sub>D</sub>	200	mW
Operating Temperature	T <sub>OP</sub>	-20 to +85	°C
Storage Temperature	T <sub>STG</sub>	-40 to +150	°C

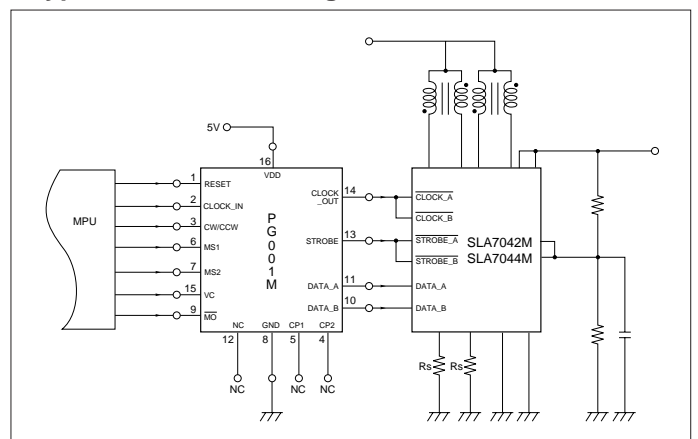
## Electrical Characteristics

(T<sub>a</sub>=25°C)

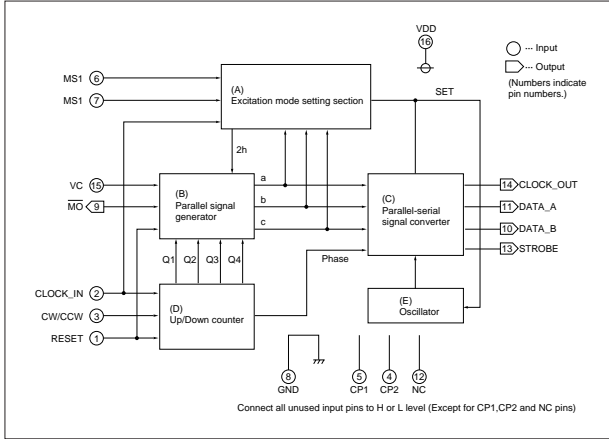
Parameter	Symbol	Conditions	Ratings			Unit	
			min.	typ.	max.		
DC characteristics	Supply Voltage	V <sub>DD</sub>	4.5		5.5	V	
	Supply Current	I <sub>DD</sub>	V <sub>DD</sub> =5.5V	0.35	0.45	mA	
	Output Voltage	V <sub>OH</sub>	V <sub>DD</sub> =5V, I <sub>O</sub> =±3mA	4.5		0.4	V
		V <sub>OL</sub>					
	Input Current	I <sub>I</sub>	V <sub>DD</sub> =5V, V <sub>I</sub> =0 or 5V			±1	µA
	Input Voltage	V <sub>IH</sub>	V <sub>DD</sub> =5V	3.5		5	V
		V <sub>IL</sub>					
Input Hysteresis Voltage	V <sub>H</sub>	V <sub>DD</sub> =5V		1		V	
Input Capacity	C <sub>I</sub>	V <sub>DD</sub> =5V		5	10	pF	
AC characteristics	Internal Oscillation Frequency	F	V <sub>DD</sub> =5V	1.5		MHz	
	Propagation Delay Time	T <sub>CS</sub>	See Fig.1.	50	100		ns
		T <sub>CC</sub>					
	Output Voltage Rise and Fall Time	T <sub>r</sub>	V <sub>DD</sub> =5V, C <sub>L</sub> =15pF See Fig.2.	20			ns
		T <sub>f</sub>					
	CLOCK IN Terminal	V <sub>CIH</sub>	H level time, V <sub>DD</sub> =5V	4.5			µs
	Input Clock Time	V <sub>CIL</sub>	L level time, V <sub>DD</sub> =5V	0.5			
	Reset Setting Time (A)	t <sub>sR</sub>	From/To CLOCK_IN ↑ See Fig.3.	100			ns
	Stabilization Time After Reset Input (B)	t <sub>psR</sub>	See Fig.3.				ns
Signal Setting Time (C)	t <sub>sS</sub>	From/To CLOCK_IN ↑ See Fig.3.	100			ns	
Stabilization Time After Signal Input (D)	t <sub>psS</sub>	See Fig.3.				ns	



## Typical Connection Diagram



**Internal Block Diagram**



**Input and Output Function Correlation Table**

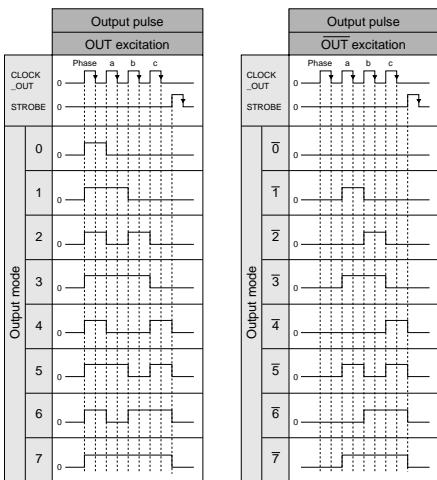
Mode	Input			Output				
	CLOCK_IN	CW/CCW	RESET	MO	CLOCK_OUT	STROBE	DATA_A	DATA_B
CW		L	H				CW	CW
CCW		H	H				CCW	CCW
RESET		x	L				Output Mode 4 or 7 Output Mode	Input Mode 4 or 7 Output Mode

× : Immaterial  
 \* : MO outputs L level while  
 CLOCK\_IN is H level when output mode is 4:4 (7:7), 4:4 (7:7), 4:4 (7:7), or 4:4 (7:7).  
 Modes in brackets ( ) are for 2-2 phase VC:H.

**Excitation Selection Table**

Excitation method	Input		Output current mode of SLA7042M/7044M								Torque vector	
	Excitation mode selection		0	1	2	3	4	5	6	7		
	VC	MS1 MS2	0%	20%	40%	55.5%	71.4%	83%	91%	100%		
2-2 Phase Full Step	H	L L	-	-	-	-	-	-	-	-	O	141%
	L	L L	-	-	-	O	-	-	-	-	O	100%
1-2 Phase Half Step	x	H L	O	-	-	-	O	-	-	O	100%	
W1-2 Phase 1/4 Step	x	L H	O	-	O	-	O	-	O	O	100%	
2W1-2 Phase 1/8 Step	x	H H	O	O	O	O	O	O	O	O	100%	

**Output Mode Vs Output Pulse**



**Output Mode Sequence**

Excitation method	CW/CCW	CLOCK MO	RESET																																		
			L	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L						
2-2 Phase Full Step (1) (VC:H)	CW	DATA_A	7	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	7	
	CCW	DATA_A	7	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	7	
2-2 Phase Full Step (2) (VC:L)	CW	DATA_A	4	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	4	
	CCW	DATA_A	4	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	4	
1-2 Phase Half Step	CW	DATA_A	4	=	=	0	=	=	4	=	=	=	7	=	=	4	=	=	0	=	=	4	=	=	7	=	=	4	=	=	0	=	=	4	=	4	
	CCW	DATA_A	4	=	=	7	=	=	4	=	=	0	=	=	4	=	=	7	=	=	4	=	=	0	=	=	4	=	=	7	=	=	4	=	4	4	
W1-2 Phase 1/4 Step	CW	DATA_A	4	=	6	=	7	=	6	=	4	=	2	=	0	=	2	=	4	=	6	=	7	=	6	=	4	=	2	=	0	=	2	=	4	=	6
	CCW	DATA_A	4	=	6	=	7	=	6	=	4	=	2	=	0	=	2	=	4	=	6	=	7	=	6	=	4	=	2	=	0	=	2	=	4	=	6
2W1-2 Phase 1/8 Step	CW	DATA_A	4	5	6	7	7	7	6	5	4	3	2	1	0	1	2	3	4	5	6	7	7	6	5	4	3	2	1	0	1	2	3	4	5		
	CCW	DATA_A	4	5	6	7	7	6	5	4	3	2	1	0	1	2	3	4	5	6	7	7	6	5	4	3	2	1	0	1	2	3	4	5	6	7	

=: No output

**External Dimensions (DIP16)**

(Unit : mm)

