

# SLA7042M/SLA7044M 2W1-2 Phase Excitation/Micro-step Support

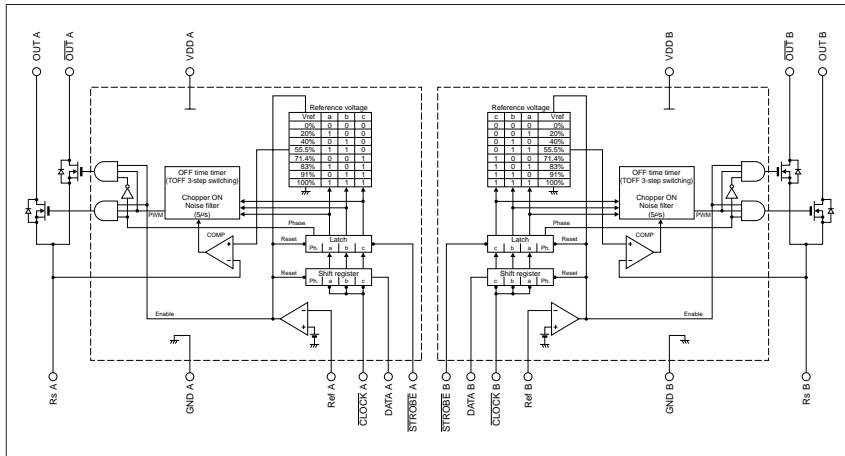
## Absolute Maximum Ratings

Parameter	Symbol	Ratings		Unit
		SLA7042M	SLA7044M	
Motor Supply Voltage	V <sub>CC</sub>	46		V
FET Drain-Source Voltage	V <sub>DSS</sub>	100		V
Control Supply Voltage	V <sub>DD</sub>	7		V
Input Voltage	V <sub>IN</sub>	-0.5 to V <sub>DD</sub> +0.5		V
Output Current	I <sub>O</sub>	1.2	3.0	A
Power Dissipation	P <sub>D</sub>	4.5 (Without Heatsink)		W
Channel Temperature	T <sub>ch</sub>	+150		°C
Storage Temperature	T <sub>stg</sub>	-40 to +150		°C

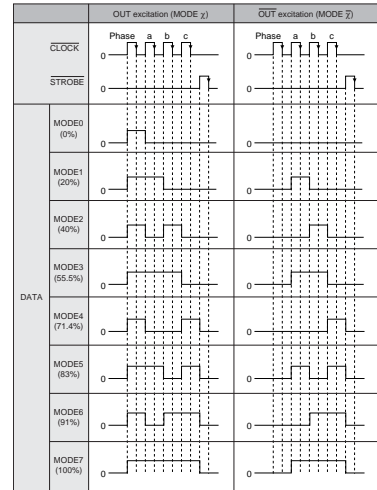
## Electrical Characteristics

Parameter	Symbol	Ratings						Unit
		SLA7042M			SLA7044M			
		min.	typ.	max.	min.	typ.	max.	
Control Supply Current	I <sub>DD</sub>	V <sub>DD</sub> =5.5V			V <sub>DD</sub> =5.5V			mA
Control Supply Voltage	V <sub>DD</sub>	4.5	5	5.5	4.5	5	5.5	V
Terminals DATA, CLOCK and STROBE	Input Voltage	V <sub>IH</sub>	3.5	5	3.5	5	5	V
		V <sub>IL</sub>	0	1.5	0	1.5	1.5	
	Input Hysteresis Voltage	V <sub>H</sub>	1	1	1	1	1	V
		I <sub>I</sub>	±1	±1	±1	±1	±1	
REF Terminal	Input Voltage	V <sub>REF</sub>	0.4	2.5	0.4	2.5	2.5	V
		V <sub>DISABLE</sub>	V <sub>DD</sub> -1	V <sub>DD</sub>	V <sub>DD</sub> -1	V <sub>DD</sub>	V <sub>DD</sub>	
	Input Current	I <sub>REF</sub>	±1	±1	±1	±1	±1	μA
DC Characteristics	Step Reference Current Ratio	V <sub>ref</sub>	0	0	0	0	0	%
		Conditions	MODE 0	MODE 0	MODE 0	MODE 0	MODE 0	
		V <sub>ref</sub>	20	20	20	20	20	
		Conditions	MODE 1	MODE 1	MODE 1	MODE 1	MODE 1	
		V <sub>ref</sub>	40	40	40	40	40	
		Conditions	MODE 2	MODE 2	MODE 2	MODE 2	MODE 2	
		V <sub>ref</sub>	55.5	55.5	55.5	55.5	55.5	
		Conditions	MODE 3	MODE 3	MODE 3	MODE 3	MODE 3	
		V <sub>ref</sub>	71.4	71.4	71.4	71.4	71.4	
		Conditions	MODE 4	MODE 4	MODE 4	MODE 4	MODE 4	
		V <sub>ref</sub>	83	83	83	83	83	
		Conditions	MODE 5	MODE 5	MODE 5	MODE 5	MODE 5	
		V <sub>ref</sub>	91	91	91	91	91	
		Conditions	MODE 6	MODE 6	MODE 6	MODE 6	MODE 6	
V <sub>ref</sub>	100	100	100	100	100			
Conditions	MODE 7	MODE 7	MODE 7	MODE 7	MODE 7			
FET ON Voltage	V <sub>DS</sub>	100	0.8	1.4	100	1.4	V	
Conditions	I <sub>D</sub> =1.2A, V <sub>DD</sub> =4.75V	I <sub>D</sub> =3.0A, V <sub>DD</sub> =4.75V						
FET Drain-Source Voltage	V <sub>DSS</sub>	100	4	4	100	4	V	
Conditions	I <sub>DSS</sub> =4mA, V <sub>DD</sub> =5V	I <sub>DSS</sub> =4mA, V <sub>DD</sub> =5V						
FET Drain Leakage Current	I <sub>DSS</sub>	V <sub>DSS</sub> =100V, V <sub>DD</sub> =5V			V <sub>DSS</sub> =100V, V <sub>DD</sub> =5V			mA
FET Diode Forward Voltage	V <sub>SD</sub>	1.2	2.3	2.3	1.2	2.3	V	
Conditions	I <sub>D</sub> =1.2A	I <sub>D</sub> =3A						
Chopper Off Time	T <sub>OFF</sub>	7	7	7	7	7	μs	
	Conditions	MODE 1, 2	MODE 1, 2	MODE 1, 2	MODE 1, 2	MODE 1, 2		
	T <sub>OFF</sub>	9	9	9	9	9		
	Conditions	MODE 3, 4, 5	MODE 3, 4, 5	MODE 3, 4, 5	MODE 3, 4, 5	MODE 3, 4, 5		
Switching Time	T <sub>OFF</sub>	11	11	11	11	11	μs	
	Conditions	MODE 6, 7	MODE 6, 7	MODE 6, 7	MODE 6, 7	MODE 6, 7		
	T <sub>r</sub>	0.5	0.5	0.5	0.5	0.5		
	Conditions	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A		
Data Setup Time "A"	T <sub>stg</sub>	0.7	0.7	0.7	0.7	0.7	μs	
	Conditions	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A		
	T <sub>f</sub>	0.1	0.1	0.1	0.1	0.1		
	Conditions	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A	V <sub>DD</sub> =5V, I <sub>D</sub> =1A		
Data Setup Time "A"	t <sub>SDAT</sub>	75			75		ns	
Conditions	Data active time before clock ↓	Data active time before clock ↓		Data active time before clock ↓	Data active time before clock ↓			
Data Hold Time "B"	t <sub>HDAT</sub>	75			75		ns	
Conditions	Data active time before clock ↓	Data active time before clock ↓		Data active time before clock ↓	Data active time before clock ↓			
Data Pulse Time "C"	t <sub>WDAT</sub>	150			150		ns	
Conditions								
Clock Pulse Width "D"	t <sub>WHCLK</sub>	100			100		ns	
Conditions								
Strobe Stability Time "E"	t <sub>SSSTB</sub>	100			100		ns	
Conditions	Time from clock ↓ to Strobe ↓	Time from clock ↓ to Strobe ↓		Time from clock ↓ to Strobe ↓	Time from clock ↓ to Strobe ↓			
Strobe Pulse H Width "F"	t <sub>WHSTB</sub>	100			100		ns	
Conditions								

Internal Block Diagram

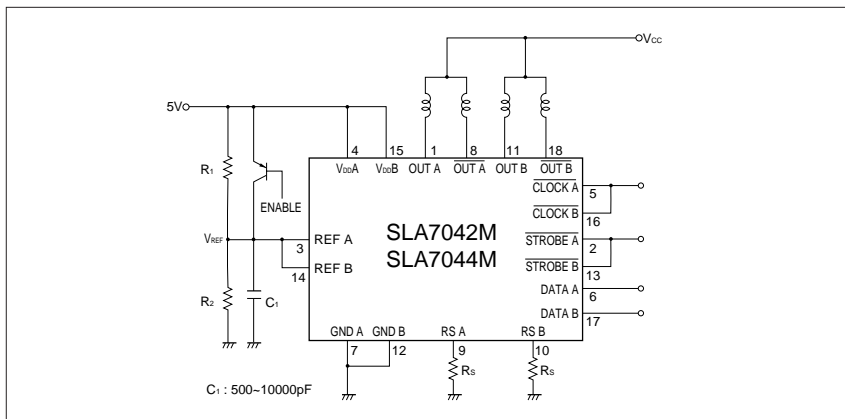


Serial Data Pattern



Successively output this serial data and set any current. Then, determine the step time of the reference voltage  $V_{ref}$  with  $\overline{STROBE}$  signal intervals.

Diagram of Standard External Circuit



Output Current Formula

$$I_o = \frac{K}{3} \cdot \frac{V_{REF}}{R_s}$$

K: Reference voltage setting ratio by serial signal (See the internal block diagram)

External Dimensions (ZIP18 with Fin [SLA18Pin])

(Unit : mm)

