

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

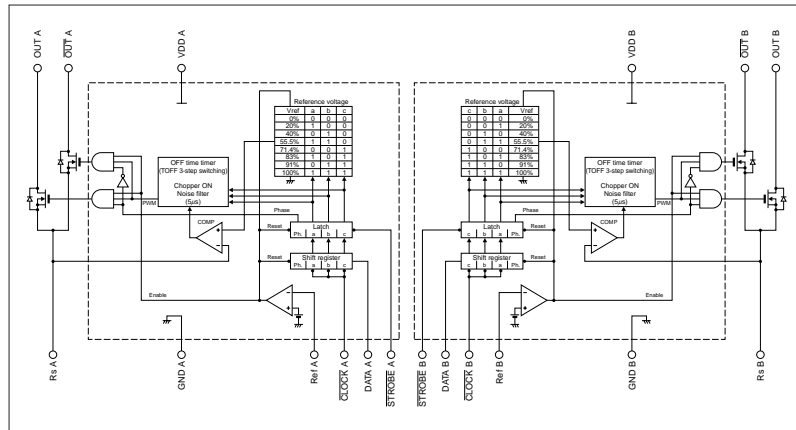
## Absolute Maximum Ratings

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

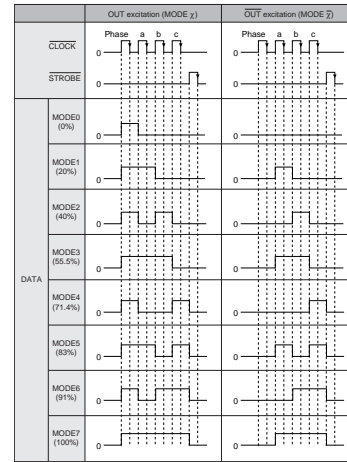
## Electrical Characteristics

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

Internal Block Diagram

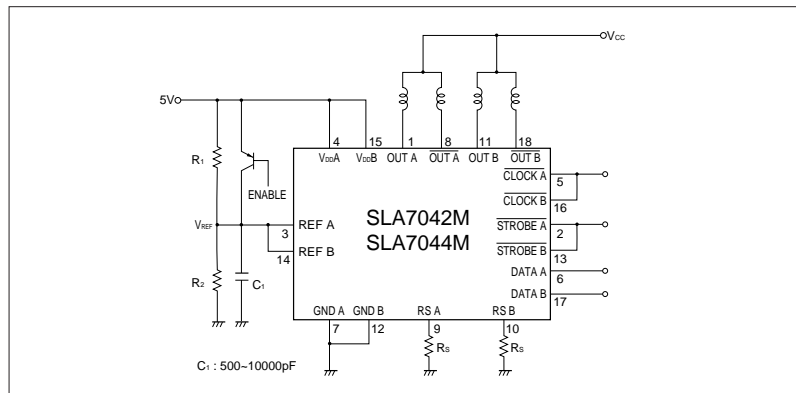


Serial Data Pattern



Successively output this serial data and set any current. Then, determine the step time of the reference voltage Vref with 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)

