

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

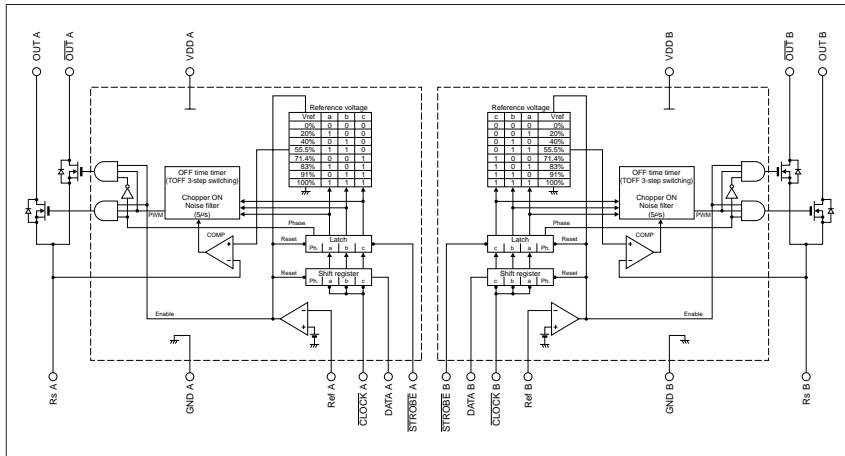
Absolute Maximum Ratings

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

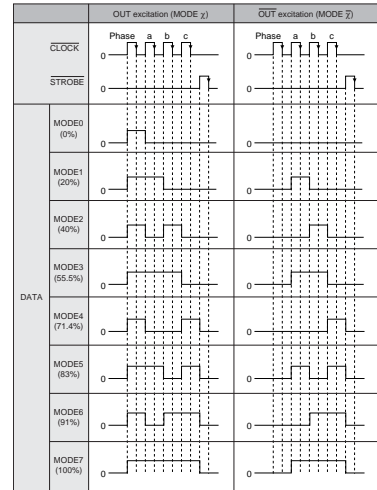
Electrical Characteristics

Parameter	Symbol	Ratings						Unit	
		SLA7042M			SLA7044M				
		min.	typ.	max.	min.	typ.	max.		
Control Supply Current	I _{DD}			7			7	mA	
	Conditions	V _{DD} =5.5V			V _{DD} =5.5V				
Control Supply Voltage	V _{DD}	4.5	5	5.5	4.5	5	5.5	V	
	V _{IH}	3.5		5	3.5		5		
Terminals DATA, CLOCK and STROBE	Input Voltage	V _{IH}	V _{DD} =5V			V _{DD} =5V			V
		V _{IL}	0		1.5	0		1.5	
	Input Hysteresis Voltage	V _H	V _{DD} =5V			V _{DD} =5V			V
		Conditions	V _{DD} =5V			V _{DD} =5V			
Input Current	I _I			±1			±1	µA	
	Conditions	V _{DD} =5V, V _I =0 or 5V			V _{DD} =5V, V _I =0 or 5V				
REF Terminal	Input Voltage	V _{REF}	0.4		2.5	0.4		2.5	V
		Conditions	V _{DD} =5V			V _{DD} =5V			
	Input Current	I _{REF}			±1			±1	µA
		Conditions	V _{DD} =5V, V _I =0 or 5V			V _{DD} =5V, V _I =0 or 5V			
Step Reference Current Ratio	V _{ref}	0			0			%	
	Conditions	MODE 0			MODE 0				
	V _{ref}	20			20				
	Conditions	MODE 1			MODE 1				
	V _{ref}	40			40				
	Conditions	MODE 2			MODE 2				
	V _{ref}	55.5			55.5				
	Conditions	MODE 3			MODE 3				
	V _{ref}	71.4			71.4				
	Conditions	MODE 4			MODE 4				
	V _{ref}	83			83				
	Conditions	MODE 5			MODE 5				
	V _{ref}	91			91				
	Conditions	MODE 6			MODE 6				
V _{ref}	100			100					
Conditions	MODE 7			MODE 7					
FET ON Voltage	V _{DS}			0.8			1.4	V	
	Conditions	I _D =1.2A, V _{DD} =4.75V			I _D =3.0A, V _{DD} =4.75V				
FET Drain-Source Voltage	V _{DSS}	100			100			V	
	Conditions	I _{DSS} =4mA, V _{DD} =5V			I _{DSS} =4mA, V _{DD} =5V				
FET Drain Leakage Current	I _{DSS}			4			4	mA	
	Conditions	V _{DSS} =100V, V _{DD} =5V			V _{DSS} =100V, V _{DD} =5V				
FET Diode Forward Voltage	V _{SD}			1.2			2.3	V	
	Conditions	I _D =1.2A			I _D =3A				
Chopper Off Time	T _{OFF}	7			7			µs	
	Conditions	MODE 1, 2			MODE 1, 2				
	T _{OFF}	9			9				
	Conditions	MODE 3, 4, 5			MODE 3, 4, 5				
Switching Time	T _{OFF}	11			11			µs	
	Conditions	MODE 6, 7			MODE 6, 7				
	T _r	0.5			0.5				
	Conditions	V _{DD} =5V, I _D =1A			V _{DD} =5V, I _D =1A				
Data Setup Time "A"	T _{stg}	0.7			0.7			µs	
	Conditions	V _{DD} =5V, I _D =1A			V _{DD} =5V, I _D =1A				
	T _f	0.1			0.1				
	Conditions	V _{DD} =5V, I _D =1A			V _{DD} =5V, I _D =1A				
Data Setup Time "A"	t _s DAT	75			75			ns	
Conditions	Data active time before clock ↓			Data active time before clock ↓					
Data Hold Time "B"	t _h DAT	75			75			ns	
Conditions	Data active time before clock ↓			Data active time before clock ↓					
Data Pulse Time "C"	t _w DAT	150			150			ns	
Conditions									
Clock Pulse Width "D"	t _{WH} CLK	100			100			ns	
Conditions									
Strobe Stability Time "E"	t _{SS} STB	100			100			ns	
Conditions	Time from clock ↓ to Strobe ↓			Time from clock ↓ to Strobe ↓					
Strobe Pulse H Width "F"	t _{WH} STB	100			100			ns	
Conditions									

Internal Block Diagram

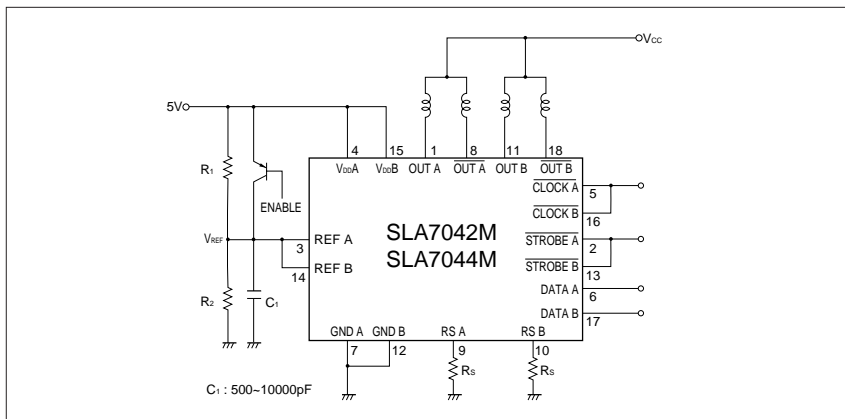


Serial Data Pattern



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



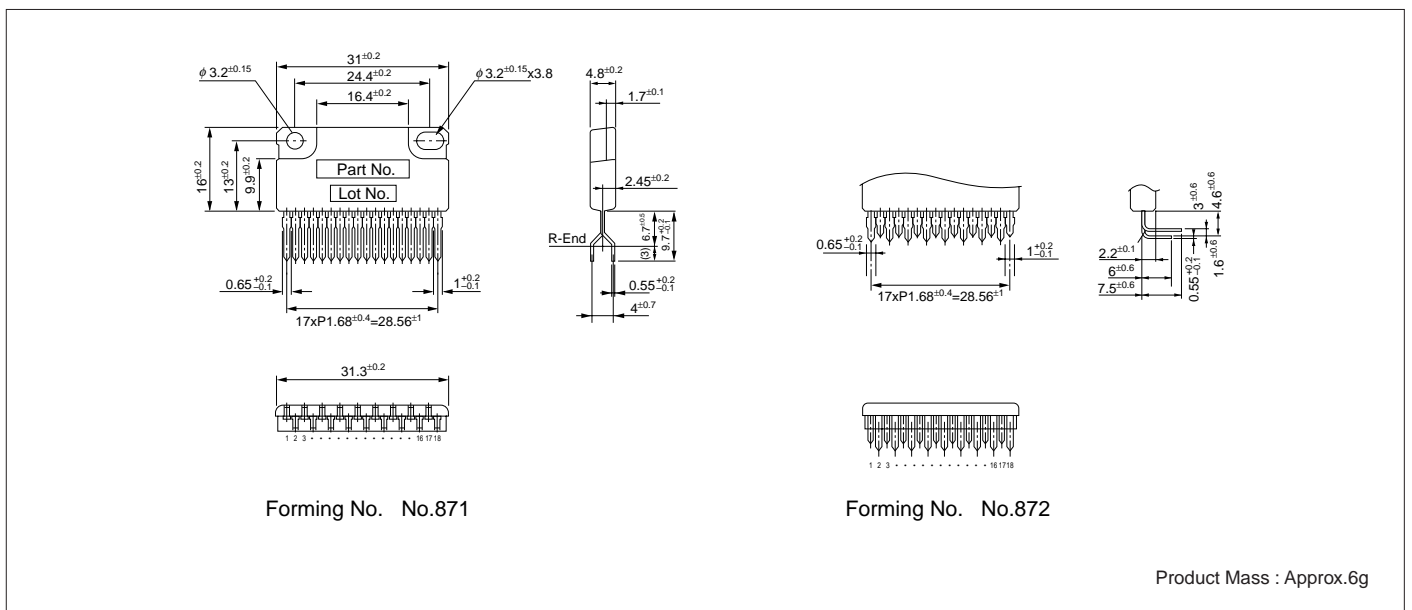
Output Current Formula

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

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

External Dimensions (ZIP18 with Fin [SLA18Pin])

(Unit : mm)



Product Mass : Approx.6g