

SLA7042M/SLA7044M

2W1-2 Phase Excitation/Micro-step Support

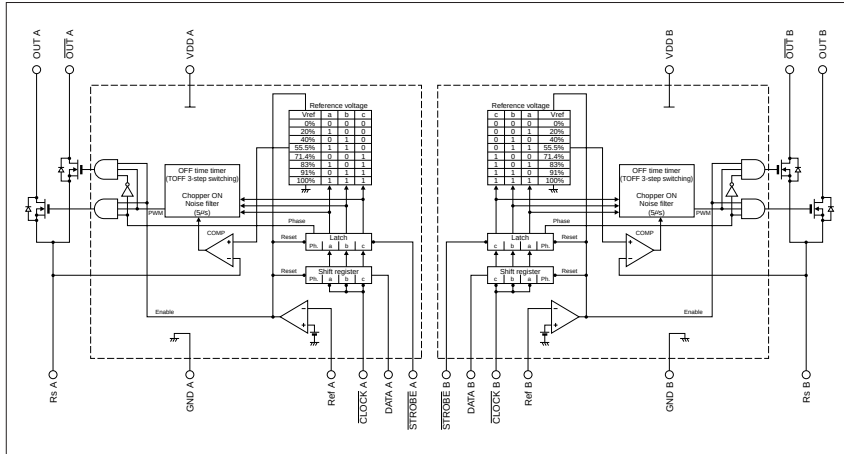
Absolute Maximum Ratings

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

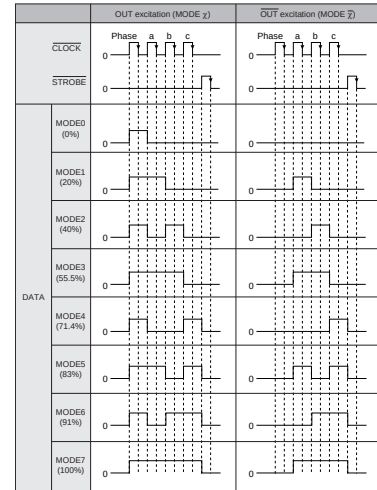
Electrical Characteristics

Parameter		Symbol	Ratings						Unit	
			SLA7042M			SLA7044M				
			min.	typ.	max.	min.	typ.	max.		
DC Characteristics	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
	Terminals DATA, CLOCK and STROBE	Input Voltage	V _{IH}	3.5		5	3.5		5	V
			Conditions	V _{DD} =5V			V _{DD} =5V			
			V _{IL}	0		1.5	0		1.5	
		Input Hysteresis Voltage	V _H		1			1		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			
			V _{DISABLE}	V _{DD} −1		V _{DD}	V _{DD} −1		V _{DD}	
		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				
		T _{OFF}		11			11			
		Conditions	MODE 6, 7			MODE 6, 7				
Switching Time		T _r		0.5			0.5		μs	
		Conditions	V _{DD} =5V, I _O =1A			V _{DD} =5V, I _O =1A				
		T _{stg}		0.7			0.7			
		Conditions	V _{DD} =5V, I _O =1A			V _{DD} =5V, I _O =1A				
		T _f		0.1			0.1			
		Conditions	V _{DD} =5V, I _O =1A			V _{DD} =5V, I _O =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				
		Conditions	Data active time before clock ↓			Data active time before clock ↓				
Data Pulse Time "C"		t _w DAT	150			150				
		Conditions								
Clock Pulse Width "D"		t _{wf} CLK	100			100				
		Conditions								
Strobe Stability Time "E"		t _{stb} STB	100			100				
		Conditions	Time from clock ↓ to Strobe ↓			Time from clock ↓ to Strobe ↓				
Strobe Pulse H Width "F"		t _{wh} STB	100			100				
		Conditions								

Internal Block Diagram

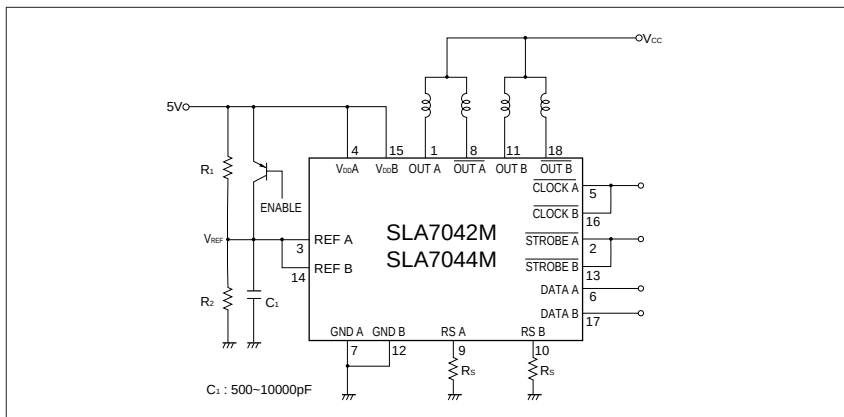


Serial Data Pattern



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



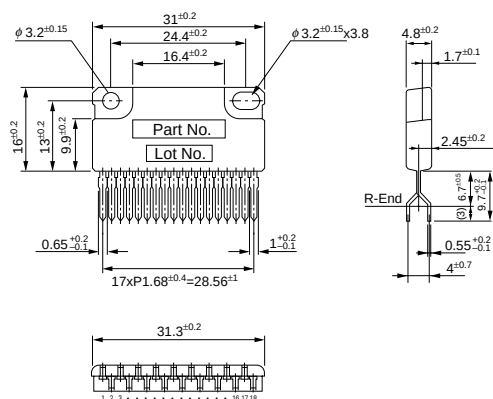
Output Current Formula

$$I_O = \frac{K}{3} \cdot \frac{V_{REF}}{R_S}$$

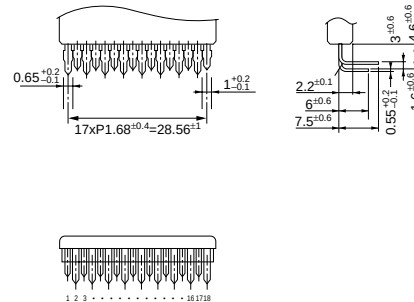
K: Reference voltage setting ratio by serial signal (See the internal block diagram)

External Dimensions (ZIP18 with Fin [SLA18Pin])

(Unit : mm)



Forming No. No.871



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Product Mass : Approx.6g