

SLA7031M/SLA7032M/SLA7033M

2-Phase/1-2 Phase Excitation

■Absolute Maximum Ratings

(T_a=25°C)

Parameter	Symbol	Ratings			Unit
		SLA7031M	SLA7032M	SLA7033M	
Motor Supply Voltage	V _{CC}	46			V
Control Supply Voltage	V _S	46			V
FET Drain-Source Voltage	V _{DSS}	100			V
Input Voltage	V _{IN}	-0.3 to +7			V
	V _{SYNC}	-0.3 to +7			
Reference Voltage	V _{REF}	-0.3 to +7			V
Sense Voltage	V _{RS}	-5 to +7			V
Output Current	I _O	1	1.5	3	A
Power Dissipation	P _{D1}	4.5(Without Heatsink)			W
	P _{D2}	35(T _c =25°C)			W
Channel Temperature	T _{ch}	+150			°C
Operating Ambient Temperature	T _a	-20 to+85			°C
Storage Temperature	T _{stg}	-40 to +150			°C

■Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit	Remarks
		min.	max.		
Motor Supply Voltage	V _M		44	V	
Control Supply Voltage	V _S	10	44	V	
REF Input Voltage	V _{REF}	0.1	1.0	V	The control current precision is degraded at 0.1V or lower.
	V _{REF(dis)}	4.0	5.5	V	Output MOS FET OFF
Case Temperature	T _C		100	°C	Temperature of 4(15)-Pin Lead(without heatsink)

■Electrical Characteristics

Parameter		Symbol	Ratings									Unit	
			SLA7031M			SLA7032M			SLA7033M				
			min.	typ.	max.	min.	typ.	max.	min.	typ.	max.		
DC characteristics	Control Supply Current	I _S		10	15		10	15		10	15	mA	
		Condition	V _S =44V			V _S =44V			V _S =44V				
	Control Supply Voltage	V _S	10	24	44	10	24	44	10	24	44	V	
	FET Drain-Source Voltage	V _{DSS}	100			100			100			V	
		Condition	V _S =44V, I _{DSS} =250μA			V _S =44V, I _{DSS} =250μA			V _S =44V, I _{DSS} =250μA				
	FET ON Voltage	V _{DS}			0.85			0.6			0.85	V	
		Condition	I _D =1A, V _S =10V			I _D =1A, V _S =14V			I _D =3A, V _S =14V				
	FET Diode Forward Voltage	V _{SD}			1.2			1.1			2.3	V	
		Condition	I _{SD} =1A			I _{SD} =1A			I _{SD} =3A				
	FET Drain Leakage Current	I _{DSS}			250			250			250	μA	
		Condition	V _{DSS} =100V, V _S =44V			V _{DSS} =100V, V _S =44V			V _{DSS} =100V, V _S =44V				
	IN Terminal	Input Voltage (Active High)	V _{IH}	2.0			2.0			2.0			V
			Condition	I _D =1A			I _D =1A			I _D =3A			
			V _{IL}			0.8			0.8			0.8	
			Condition	V _{DSS} =100V			V _{DSS} =100V			V _{DSS} =100V			
		Input Voltage (Active Low)	V _{IH}	2.0			2.0			2.0			V
			Condition	V _{DSS} =100V			V _{DSS} =100V			V _{DSS} =100V			
			V _{IL}			0.8			0.8			0.8	
		Input Current	Condition	I _D =1A			I _D =1A			I _D =3A			
			I _I			±1			±1			±1	μA
	SYNC Terminal	Input Voltage	V _S =44V, V _I =0 or 5V			V _S =44V, V _I =0 or 5V			V _S =44V, V _I =0 or 5V			V	
			V _{SYNC}	4.0			4.0			4.0			
			Condition	Synchronous chopping mode			Synchronous chopping mode			Synchronous chopping mode			
			V _{SYNC}			0.8			0.8				0.8
		Input Current	Asynchronous chopping mode			Asynchronous chopping mode			Asynchronous chopping mode			mA	
			I _{SYNC}			0.1			0.1				0.1
			Condition	V _S =44V, V _{SYNC} =5V			V _S =44V, V _{SYNC} =5V			V _S =44V, V _{SYNC} =5V			
			I _{SYNC}			−0.1			−0.1				−0.1
	REF Terminal	Input Current	V _S =44V, V _{SYNC} =0V			V _S =44V, V _{SYNC} =0V			V _S =44V, V _{SYNC} =0V			V	
			V _{REF}	0		2.0	0		2.0	0			2.0
			Condition	Reference Voltage input			Reference Voltage input			Reference Voltage input			
			V _{REF}	4.0		5.5	4.0		5.5	4.0			5.5
		Input Current	Output FET OFF			Output FET OFF			Output FET OFF			μA	
			I _{REF}			±1			±1				±1
		Internal Resistance	Condition	No synchronous trigger			No synchronous trigger			No synchronous trigger			
			R _{REF}		40			40			40		Ω
	AC characteristics	Sense Voltage	Condition	Resistance between GND and REF terminal at synchronous trigger			Resistance between GND and REF terminal at synchronous trigger			Resistance between GND and REF terminal at synchronous trigger			
			V _{RS}		V _{REF}			V _{REF}			V _{REF}	V	
		Switching Time	T _r		0.5			0.5			0.5	μs	
			T _{stg}		0.7			0.7			0.7		
			T _f		0.1			0.1			0.1		
		Chopping OFF Time	Condition	V _S =24V, I _D =0.8A			V _S =24V, I _D =1A			V _S =24V, I _D =1A			
			T _{OFF}		12			12			12	μs	
			Condition	V _S =24V			V _S =24V			V _S =24V			

