

SLA7080MPR/7081MPR/7082MPR/7083MPR

2-Phase/1-2-Phase Excitation

■Features

- Lineup of built-in current sense resistor and built-in protection circuit-type
- Power supply voltages, VBB: 46 V (max), 10 to 44 V normal operating range
- Logic supply voltages, VDD: 3.0 to 5.5 V
- Maximum output current I_O: 1A, 1.5A, 2A, and 3A
- Self-excitation PWM current control with fixed off time
- Synchronous PWM chopping function prevents motor noise in Hold mode
- Sleep mode for reducing the IC input current in stand-by state
- ZIP type 23-pin molded package (SLA package)

■Absolute Maximum Ratings

(T_a=25°C)

Parameter	Symbol	Ratings	Unit	Conditions
Motor Supply Voltage	V _M	46	V	
Driver Supply Voltage	V _{BB}	46	V	
Logic Supply Voltage	V _{DD}	6	V	
Output Current	I _O	*1	A	
Logic Input Voltage	V _{IN}	-0.3 to V _{DD} +0.3	V	
REF Input Voltage	V _{REF}	-0.3 to V _{DD} +0.3	V	
Sense Voltage	V _{RS}	±2	V	Excluding t _w <1μs
Power Dissipation	P _D	4.7	W	When T _a = 25°C
		17		When T _c = 25°C
Junction Temperature	T _J	+150	°C	
Operating Ambient Temperature	T _a	-20 to +85	°C	
Storage Temperature	T _{stg}	-30 to +150	°C	

*1: Output current value may be limited for the SLA7080MPR(1.0A), SLA7081MPR(1.5A), SLA7082MPR(2.0A), SLA7083MPR(3.0A), depending on the duty ratio, ambient temperature, and heating conditions. Do not exceed junction temperature of T_J under any circumstances.

■Recommended Operating Conditions

Parameter	Symbol	Ratings		Unit	Conditions
		min.	max.		
Motor Supply Voltage	V _M		44	V	
Driver Supply Voltage	V _{BB}	10	44	V	
Logic Supply Voltage	V _{DD}	3.0	5.5	V	The V _{DD} surge voltage should be 0.5V or lower.
REF Input Voltage	V _{REF}	0.04	0.3	V	When controlling the current for SLA7080M
			0.45		When controlling the current for SLA7081M/SLA7083M
			0.4		When controlling the current for SLA7082M
Case Temperature	T _c		90	°C	Rear center (without Fin)

■Electrical Characteristics

(V_{DD}=5V, V_{BB}=24V, T_a=25°C, unless otherwise specified)

Parameter	Symbol	Ratings			Unit	Conditions
		min.	typ.	max.		
Main Supply Current	I _{BB}			15	mA	In operation
	I _{BB} S			100	μA	Sleep Mode
Logic Supply Current	I _{DD}			5	mA	
Output MOSFET Breakdown Voltage	V _{(BR)DSS}	100			V	V _{BB} =44V, I _D =1mA
Output MOSFET ON Resistance	R _{DS(ON)}		0.7	0.85	Ω	SLA7080M, I _D =1.0A
			0.45	0.6		SLA7081M, I _D =1.5A
			0.25	0.4		SLA7082M, I _D =2.0A
			0.18	0.24		SLA7083M, I _D =3.0A
Output MOSFET Diode Forward Voltage	V _F		0.85	1.1	V	SLA7080M, I _D =1.0A
			1.0	1.25		SLA7081M, I _D =1.5A
			0.95	1.2		SLA7082M, I _D =2.0A
			0.95	2.1		SLA7083M, I _D =3.0A
Maximum Clock Frequency	F _{clk}	250			kHz	When Duty = 50%
Logic Input Voltage	V _{IL}			0.25V _{DD}	V	
	V _{IH}	0.75V _{DD}				
Logic Input Current	I _{IL}		±1		μA	
	I _{IH}		±1			
REF Input Voltage	V _{REF}	0.04		0.3	V	SLA7080M
		0.04		0.45		SLA7081M
		0.04		0.4		SLA7082M
		0.04		0.45		SLA7083M
	V _{REFS}	2.0		V _{DD}		Sleep ("I _{BB} S", "output: OFF")
REF Input Current	I _{REF}		±10		μA	
Sense Voltage	V _{SENSE}	V _{REF} -0.03	V _{REF}	V _{REF} +0.03	V	
Sense Resistance	R _S	0.296	0.305	0.314	Ω	Including the resistance due to the product configuration (about 5 mΩ) for SLA7080M
		0.296	0.305	0.314		Including the resistance due to the product configuration (about 5 mΩ) for SLA7081M
		0.199	0.205	0.211		Including the resistance due to the product configuration (about 5 mΩ) for SLA7082M
		0.150	0.155	0.160		Including the resistance due to the product configuration (about 5 mΩ) for SLA7083M
PWM Minimum ON Time (blanking time)	ton(min)		3.2		μs	B_SEL: Low
PWM OFF Time	toff		5.2		μs	B_SEL: High
Sleep-Enable Recovery Time	T _{SE}	100			μs	
Switching Time	t _{con}		1.5		μs	Phase IN → Out ON
	t _{coff}		1.0		μs	Phase IN → Out OFF
Overcurrent Sense Voltage	V _{ocp}	0.65	0.7	0.75	V	When the motor coil shorts out
Overcurrent Sense Current V _{ocp} =R _S	I _{ocp}		2.3		A	SLA7080MPR/7081MPR
			3.5			SLA7082MPR
			4.5			SLA7083MPR
Time Not Sensing Load Disconnection	t _{opp}	1.5	2.0	2.5	μs	
Thermal Protection Temperature	T _{isd}		140		°C	Rear of case (at the saturation temperature)
Flag Output Voltage	V _{FlagL}			1.25	V	I _{FlagL} = 1.25mA
	V _{FlagH}	1.25V _{DD}				I _{FlagH} = -1.25mA
Flag Output Current	I _{FlagL}			1.25	mA	
	I _{FlagH}	-1.25				

*The direction in which current flows out of the device is regarded as negative.

