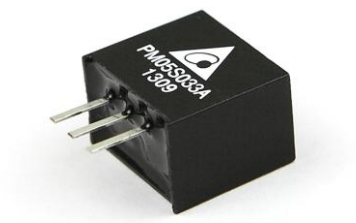
PM05S Series

SIP3, Single Output, Switching Regulator 0.5A, Package



FEATURES

- Efficiency up to 97%, Non-isolated
- SIP Package 11.5x7.5x10.2 mm
- Excellent Line/Loads Regulation
- Short Circuit Protection, Thermal Shutdown
- Low Ripple and Noise
- Operating Temperature range -40°C to +80°C
- Low Stand-by Current
- Wideinputrange (4.75V~32V)
- 3 Years Product Warranty

The PM05S series provides high efficiency switching regulators The high efficiency of these step-down converters allow an operating temperature up to 80°C at full-load without heatsink. The regulators come in a package which fits in the standard TO-220 footprint of linear regulators.
The high efficiency of up to 97% and low stand-by power consumption of these switching regulators offer a cost-efficient solution for different applications
These high efficiency DC/DC converters are the latest offering from a world leader in power systems technology and manufacturing — Delta Electronics, Inc..

Model List

Model Number	Input Voltage (Range)	Output Voltage	Output Current Max.	Max. capacitive Load	Efficiency (typ.) @Min. Vin	Efficiency (typ.) @Max. Vin
	VDC	VDC	mA	µF	%	%
PM05S015A	4.75 ~ 32	1.5	500	220	73	63
PM05S018A		1.8	500	220	82	71
PM05S025A		2.5	500	220	87	77
PM05S033A		3.3	500	220	91	81
PM05S050A	6.5 ~ 32	5	500	220	94	86
PM05S065A	8 ~ 32	6.5	500	220	95	88
PM05S090A	11 ~ 32	9	500	220	96	92
PM05S120A	15 ~ 32	12	500	220	97	94
PM05S150A	18 ~ 32	15	500	220	97	95

Input Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)		-0.3	---	34	VDC
Internal Filter Type		Capacitor			
Internal Power Dissipation		---	---	0.4	W
Short Circuit Input Power		---	---	1.5	W
Input Current	@No Load	---	5	7	mA

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Output Characteristics

Parameter	Conditions		Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy			---	±2.0	±3.0	%Vnom.
Line Regulation	Vin=Min. to Max.	1.5V to 6.5V	---	±0.2	±0.4	%
		9V to 15V	---	±0.1	±0.2	%
Load Regulation	Io=10% to 100%	1.5V to 6.5V	---	±0.4	±0.6	%
		9V to 15V	---	±0.25	±0.4	%
Min.Load	No minimum Load Requirement					
Ripple & Noise (20MHz)	1.5V to 6.5V		---	20	30	mV_{P-P}
	9V to 15V		---	30	40	mV_{P-P}
Transient Recovery Time	50% Load Step Change		---	100	---	μsec
Transient Response Deviation			---	±2	---	%
Temperature Coefficient			---	---	±0.015	%/℃
Output Current Limit			---	---	1	A
Short Circuit Protection	Continuous					

General Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	none				
Switching Frequency		280	330	380	KHz
MTBF(calculated)	MIL-HDBK-217F@25℃, Ground Benign	2,000,000	---	---	Hours

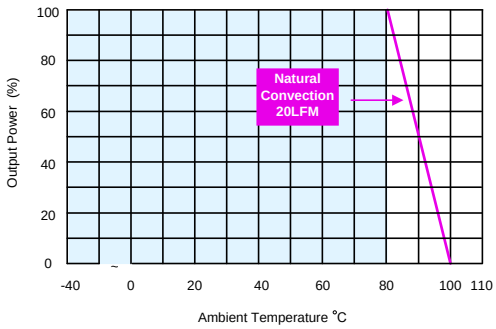
Environmental Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating Ambient Temperature Range (See Power Derating Curve)	Natural Convection	-40	---	+90	℃
Case Temperature		---	---	+100	℃
Storage Temperature		-55	---	+125	℃
Thermal Shutdown	Internal IC junction	---	160	---	℃
Humidity (non condensing)		---	---	95	% rel. H
Lead Temperature (1.5mm from case for 10Sec.)		---	---	260	℃

EMC Characteristics

Parameter	Standards & Level	Performance
Conducted EMI	Compliance to EN55022 and FCC part 15	Class B (See Page 3)
Radiated Emissions	EN55022	Class B
ESD	EN61000-4-2	Class A
Radiated immunity	EN61000-4-3	Class A
Fast transient (See Note 5)	EN61000-4-4	Class A
Conducted immunity	EN61000-4-6	Class A
Magnetic Field Immunity	EN61000-4-8	Class A

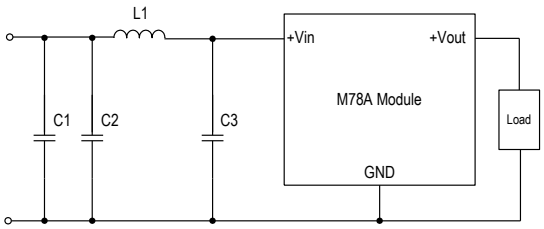
Power Derating Curve



Notes

1 Specifications typical at Ta=+25℃, resistive load, nominal input voltage, rated output current unless otherwise noted.
2 Ripple & Noise measurement bandwidth is 0-20 MHz.
3 All DC/DC converters should be externally fused at the front end for protection.
4 Other input and output voltage may be available, please contact factory.
5 The PM05S series can meet EN61000-4-4 by adding a capacitor across the input pins. Suggested capacitor CHEMI-CON KY 330μF/100V.
6 That “natural convection” is about 20LFM but is not equal to still air (0 LFM).
7 It needs to increase 1V for Vin(min) under high and low temperature.
8 Specifications are subject to change without notice.

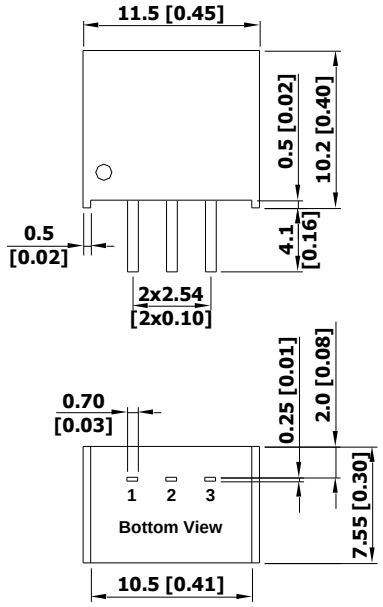
EMI-Filter to meet EN 55022, class A, class B; FCC part 15 ,level A



Class	Model	C1	C2	C3	L1
Class A	PM05S series	---	4.7μF/50V 1206 MLCC	4.7μF/50V 1206 MLCC	Wurth Elektronik NO. 744774033
Class B	PM05S series	4.7μF/50V 1206 MLCC	4.7μF/50V 1206 MLCC	4.7μF/50V 1206 MLCC	Wurth Elektronik NO. 74477410

Mechanical Drawing

Mechanical Dimensions



Pin Connections

Pin	Function
1	+Vin
2	GND
3	+Vout

- All dimensions in mm (inches)
- Tolerance: X.X±0.5 (X.XX±0.02)
  X.XX±0.25 (X.XXX±0.01)
- Pins ±0.05(±0.002)

Physical Characteristics

Case Size	:	11.5x7.55x10.2mm (0.45x0.30x0.40 inches)
Case Material	:	Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Pin Material	:	Alloy 42
Weight	:	1.95g

Part Numbering System

P	M	05	S	033	A
Form factor	Family series	Watt	Number of Outputs	Output Voltage	Option Code
P-SIP	M-Regulator	05:0.5AMP	S - Single	033:3.3VDC	A - Std. Functions

WARRANTY

Delta offers a three(3) years limited warranty. Complete warranty information is listed on our web site or is available upon request from Delta.

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