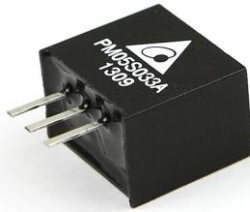


FEATURES

- 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) VDC | Output Voltage VDC | Output Current | Max. capacitive Load μF | Efficiency (typ.) @Min. Vin | Efficiency (typ.) @Max. Vin |
|--------------|------------------------------|-----------------------|----------------|----------------------------|--------------------------------|--------------------------------|
| | | | Max. mA | | % | % |
| 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 |



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 | %/°C |
| 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°C, Ground Benign | 2,000,000 | --- | --- | Hours |

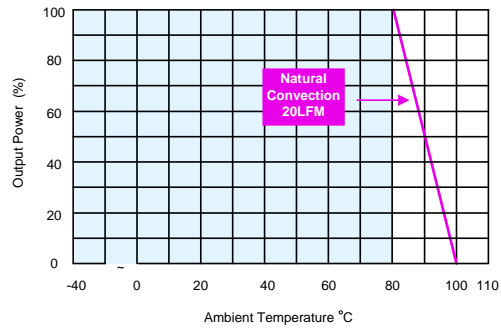
Environmental Characteristics

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

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 |

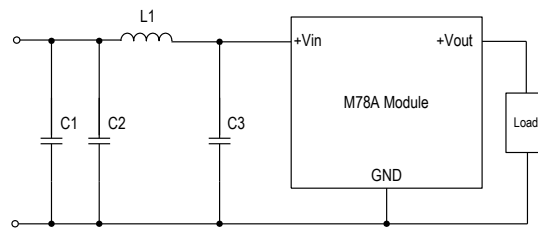
Power Derating Curve



Notes

- 1 Specifications typical at $T_a=+25^{\circ}\text{C}$, 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 330 $\mu\text{F}/100\text{V}$.
- 6 That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
- 7 It needs to increase 1V for $V_{in}(\text{min})$ under high and low temperature.
- 8 Specifications are subject to change without notice.

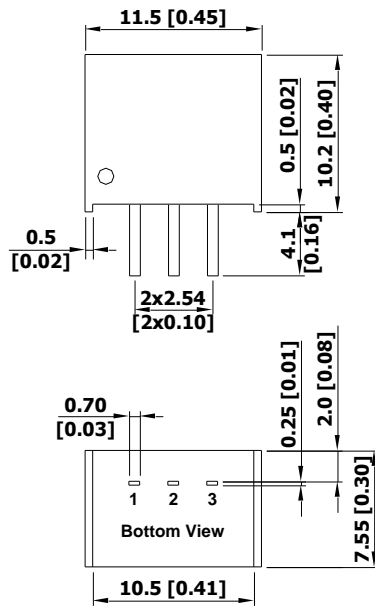
EMI-Filter to meet EN 55022, class A, class B; FCC part 15 ,level A



| Class | Model | C1 | C2 | C3 | L1 |
|---------|--------------|--|--|--|--------------------------------|
| Class A | PM05S series | --- | 4.7 $\mu\text{F}/50\text{V}$ 1206 MLCC | 4.7 $\mu\text{F}/50\text{V}$ 1206 MLCC | Würth Elektronik NO. 744774033 |
| Class B | PM05S series | 4.7 $\mu\text{F}/50\text{V}$ 1206 MLCC | 4.7 $\mu\text{F}/50\text{V}$ 1206 MLCC | 4.7 $\mu\text{F}/50\text{V}$ 1206 MLCC | Würth 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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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
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- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

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«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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