

P6P82PS01A

Peak EMI Reduction Device for Power Systems

Functional Description

P6P82PS01A is a versatile, 3.3 V Peak EMI reduction device. P6P82PS01A can be interfaced/connected to the PWM frequency controlling node (either RT-CT or RT) to modulate the switching frequency of the PWM controller which in turn reduces the Peak EMI of the power system.

P6P82PS01A has an SSEXTR pin to select different frequency deviations depending upon the value of an external resistor connected between SSEXTR and GND.

MRSEL selects an external or an internal analog Modulation Rate clock. When MRSEL is pulled LOW, different modulation rates can be selected depending upon the value of an external resistor connected between MREXTR and GND. When MRSEL pin is pulled HIGH, an external Modulation clock can be fed through MREXTR pin. Refer *Modulation Rate Selection* table.

P6P82PS01A operates from a 3.3 V \pm 0.3 V supply, and is available in an 8 pin WDFN(2 mm x 2 mm) package.

General Features

- Provides Peak EMI Reduction
- Companion IC for RT-CT or a RT based PWM Controllers
- Supports PWM Switching Frequency up to 5 MHz
- Analog Deviation Selection
- External or Internal Analog ModRate Selection Option
- Supply Voltage: 3.3 V \pm 0.3 V
- Dynamic Supply Current less than 5 mA @ 1 MHz
- Operating Temperature Range: 0°C to +70°C
- 8 pin , WDFN(2 mm x 2 mm) Package
- These Devices are Pb-Free and are RoHS Compliant

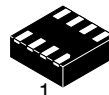
Application

- P6P82PS01A is targeted for AC-DC, and DC-DC power systems.



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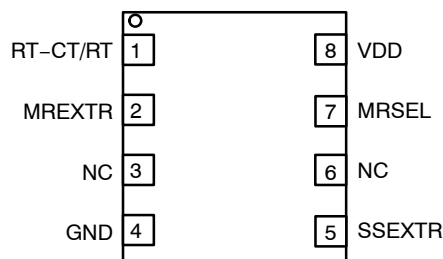
WDFN8
CASE 511AQ

GN = Specific Device Code
M = Date Code
▪ = Pb-Free Device

MARKING DIAGRAM



PIN CONFIGURATION



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

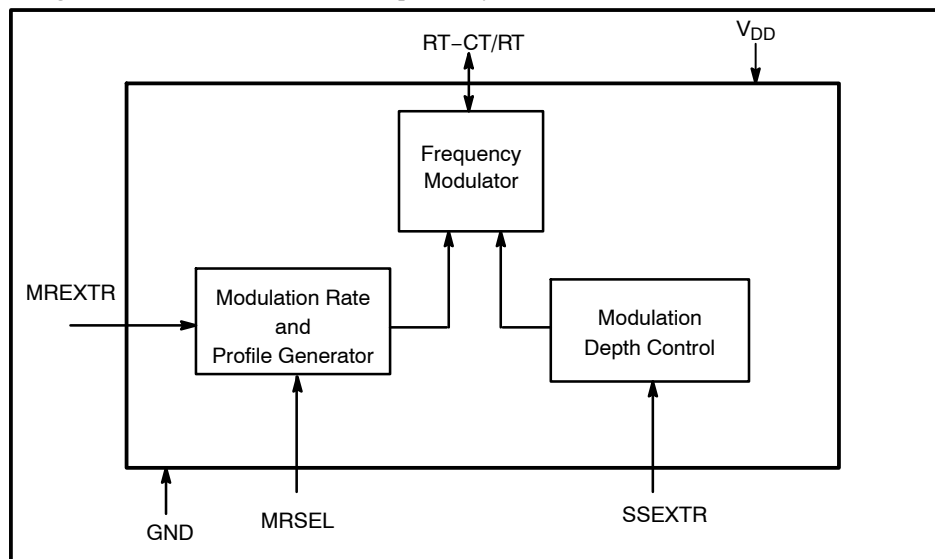


Figure 1. Block Diagram

P6P82PS01A

Table 1. PIN DESCRIPTION

| Pin # | Pin Name | Type | Description |
|-------|----------|--------------|--|
| 1 | RT-CT/RT | Input/Output | Input/Output pin connected to RT-CT / RT pin of PWM controller |
| 2 | MREXTR | Input | Selects Analog Modulation Rate through external resistor to GND when MRSEL pin pulled LOW. When MRSEL pin pulled HIGH, an external Modulation clock can be fed in to this pin. Has NO default state. |
| 3 | NC | – | Not Connect |
| 4 | GND | Power | Ground |
| 5 | SSEXTR | Input | Analog Deviation Selection through external resistor to GND. |
| 6 | NC | – | Not Connect |
| 7 | MRSEL | Input | Modulation Rate Select. Selects Analog modulation clock when pulled LOW. Selects an External Modulation Clock fed through MREXTR pin, When pulled HIGH. Has an internal pull-down resistor. |
| 8 | VDD | Power | 3.3V supply Voltage. |

Table 2. MODULATION RATE SELECTION TABLE

| MRSEL | MREXTR | Modulation Rate |
|-------|--|------------------------|
| 1 | External MR Clock | External MR Clock / 96 |
| 0 | Connect a Resistor from MREXTR to GND* | Analog |

*Refer to Figure 2. MREXTR vs. MR graph for different Analog Modulation Rate(MR).

Table 3. ABSOLUTE MAXIMUM RATING

| Symbol | Parameter | Rating | Unit |
|------------------|---|--------------|------|
| V _{DD} | Voltage on any input pin with respect to Ground | –0.5 to +4.6 | V |
| T _{STG} | Storage temperature | –65 to +125 | °C |
| T _s | Max. Soldering Temperature (10 sec) | 260 | °C |
| T _J | Junction Temperature | 150 | °C |
| T _{DV} | Static Discharge Voltage (As per JEDEC STD22– A114–B) | 2 | KV |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 4. OPERATING CONDITIONS

| Symbol | Parameter | Min | Max | Unit |
|-----------------|-------------------------|-----|-----|------|
| V _{DD} | Supply Voltage | 3 | 3.6 | V |
| T _A | Operating Temperature | 0 | 70 | °C |
| F _S | PWM Switching Frequency | | 5 | MHz |
| C _{IN} | Input Capacitance | | 7 | pF |

Table 5. DC AND AC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|-----------------|------------------------|-----------------------------------|----------------------|-----|----------------------|------|
| V _{DD} | Supply Voltage | | 3.0 | 3.3 | 3.6 | V |
| V _{IH} | Input HIGH Voltage | | 0.65*V _{DD} | | | V |
| V _{IL} | Input LOW Voltage | | | | 0.35*V _{DD} | V |
| I _{IH} | Input HIGH Current | V _{IN} = V _{DD} | | | 50 | μA |
| I _{IL} | Input LOW Current | V _{IN} = 0 V | | | 50 | μA |
| I _{DD} | Dynamic Supply Current | @1 MHz switching frequency | | 5 | | mA |
| F _{IN} | Switching Frequency | | | | 5 | MHz |

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CHARTS

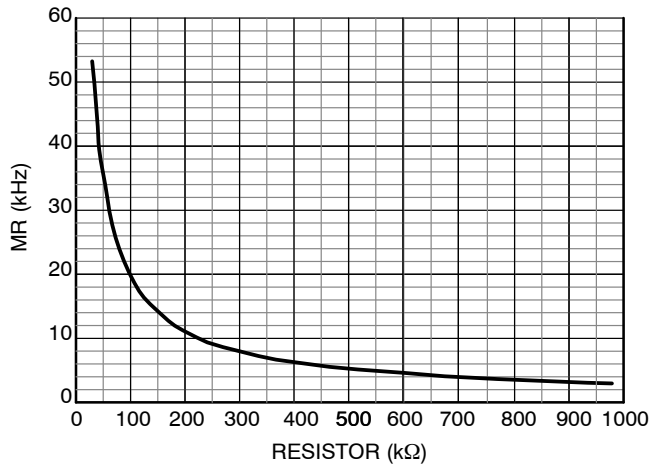


Figure 2. MREXTR vs. MR

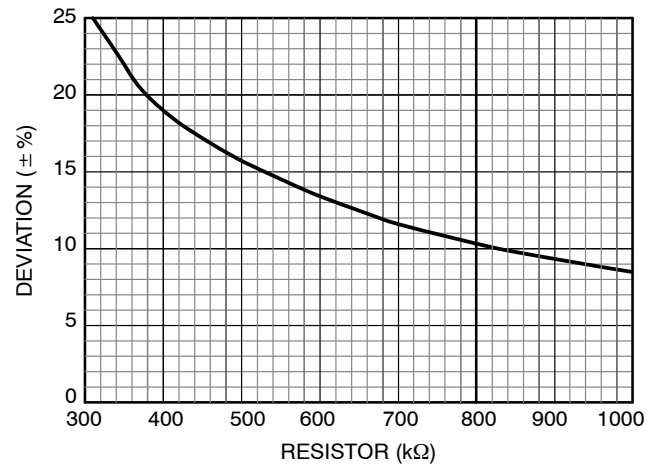


Figure 3. Deviation vs. SSEXTR
 (@ Switching Frequency = 280 kHz,
 MR = 25 kHz)

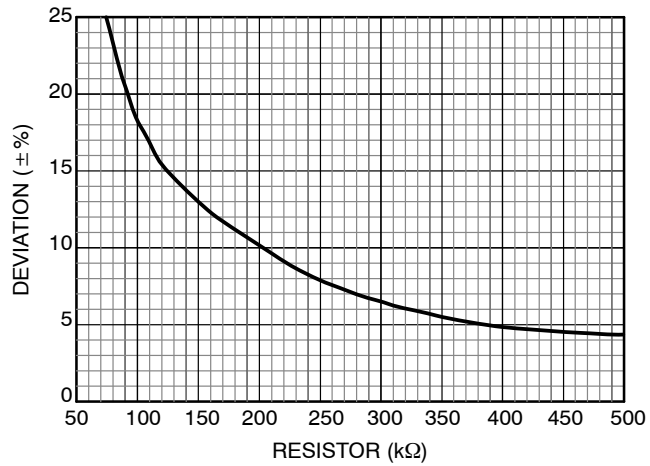


Figure 4. Deviation vs. SSEXTR
 (@ Switching Frequency = 1 MHz,
 MR = 25 kHz)

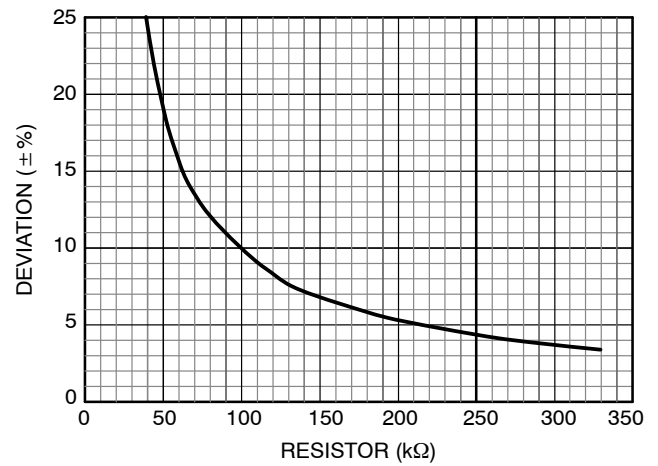


Figure 5. Deviation vs. SSEXTR
 (@ Switching Frequency = 1.6 MHz,
 MR = 25 kHz)

NOTE: Device-to-Device variation of Deviation is $\pm 10\%$

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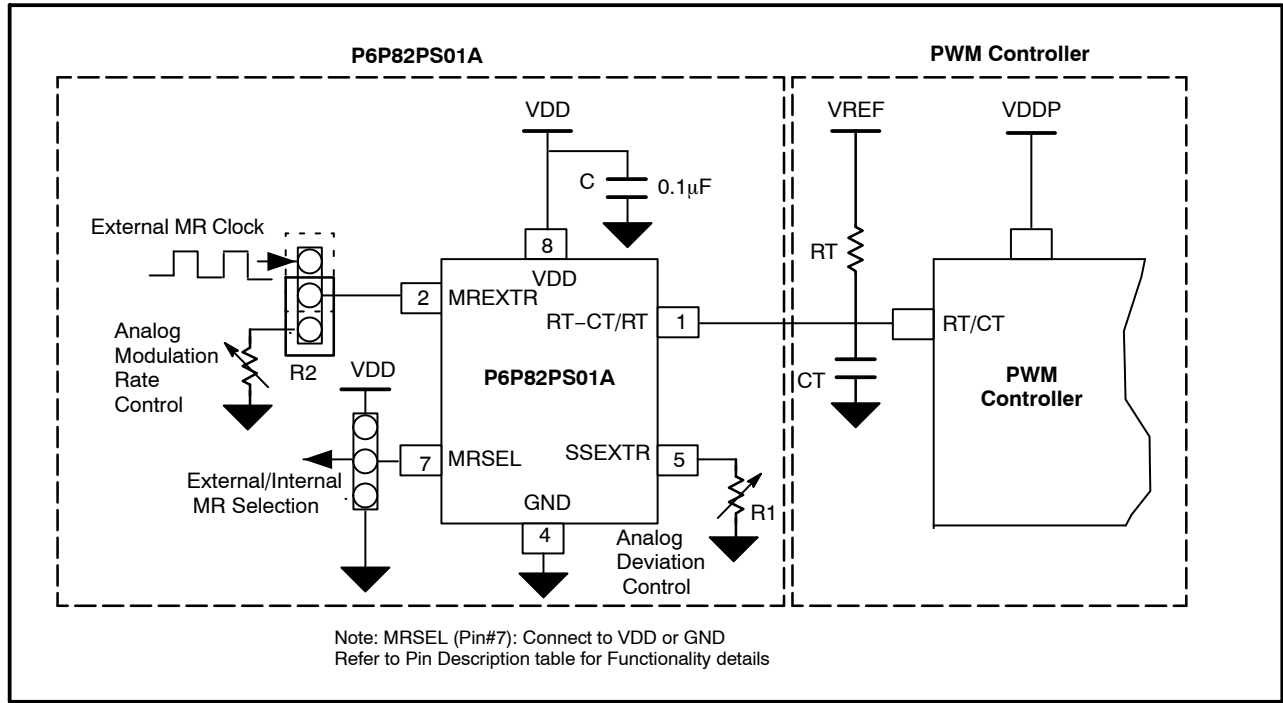


Figure 6. Typical Application Schematic

ORDERING INFORMATION

| Ordering Code | Marking | Temperature | Package Type | Shipping [†] |
|------------------|---------|--------------|------------------------------------|-----------------------|
| P6P82PS01AG-08CR | GN | 0°C to +70°C | 8-pin (2 mm x 2 mm) WDFN (Pb-Free) | Tape & Reel |

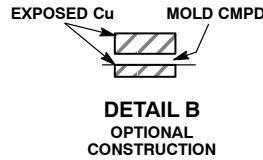
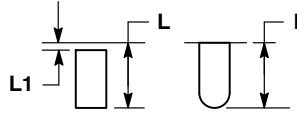
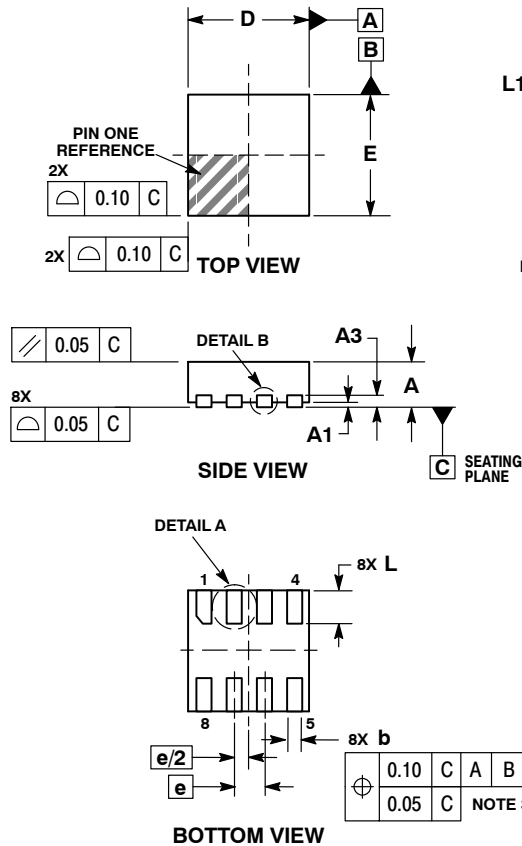
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*A "microdot" placed at the end of last row of marking or just below the last row toward the center of package indicates Pb-Free.

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PACKAGE DIMENSIONS

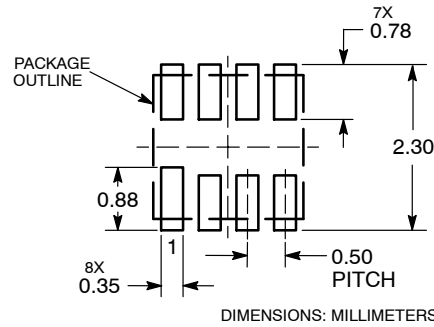
WDFN8 2x2, 0.5P
CASE 511AQ-01
ISSUE A



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: MILLIMETERS.
 3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM TERMINAL.

| DIM | MILLIMETERS | |
|-----|-------------|------|
| | MIN | MAX |
| A | 0.70 | 0.80 |
| A1 | 0.00 | 0.05 |
| A3 | 0.20 | REF |
| b | 0.20 | 0.30 |
| D | 2.00 | BSC |
| E | 2.00 | BSC |
| e | 0.50 | BSC |
| L | 0.50 | 0.60 |
| L1 | --- | 0.15 |

RECOMMENDED SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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