

# 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.

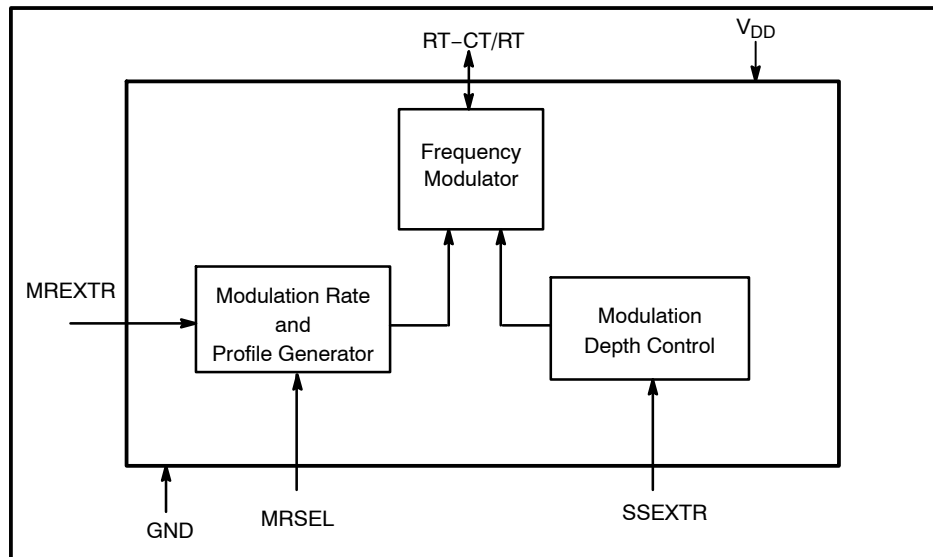
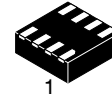


Figure 1. Block Diagram



ON Semiconductor®

<http://onsemi.com>



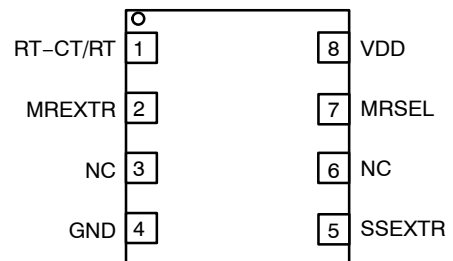
WDFN8  
CASE 511AQ

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.

# 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 <sub>DD</sub>	Voltage on any input pin with respect to Ground	-0.5 to +4.6	V
T <sub>STG</sub>	Storage temperature	-65 to +125	°C
T <sub>s</sub>	Max. Soldering Temperature (10 sec)	260	°C
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>DV</sub>	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**

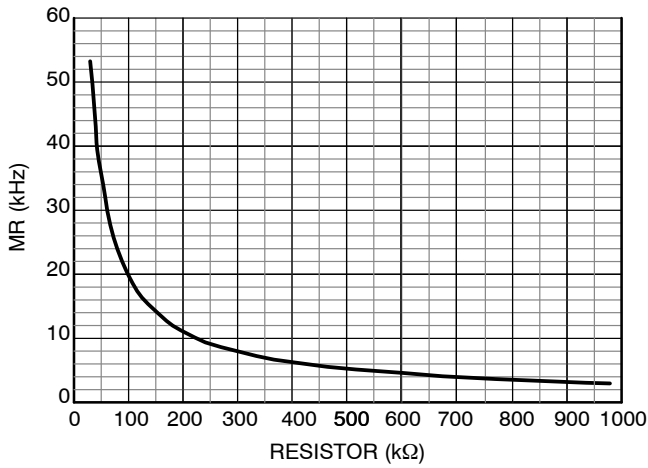
Symbol	Parameter	Min	Max	Unit
V <sub>DD</sub>	Supply Voltage	3	3.6	V
T <sub>A</sub>	Operating Temperature	0	70	°C
F <sub>S</sub>	PWM Switching Frequency		5	MHz
C <sub>IN</sub>	Input Capacitance		7	pF

**Table 5. DC AND AC ELECTRICAL CHARACTERISTICS**

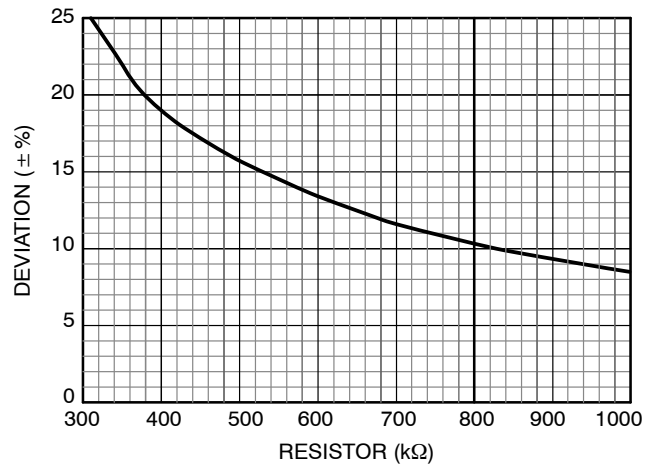
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V <sub>DD</sub>	Supply Voltage		3.0	3.3	3.6	V
V <sub>IH</sub>	Input HIGH Voltage		0.65*V <sub>DD</sub>			V
V <sub>IL</sub>	Input LOW Voltage				0.35*V <sub>DD</sub>	V
I <sub>IH</sub>	Input HIGH Current	V <sub>IN</sub> = V <sub>DD</sub>			50	μA
I <sub>IL</sub>	Input LOW Current	V <sub>IN</sub> = 0 V			50	μA
I <sub>DD</sub>	Dynamic Supply Current	@1 MHz switching frequency		5		mA
FIN	Switching Frequency				5	MHz

# P6P82PS01A

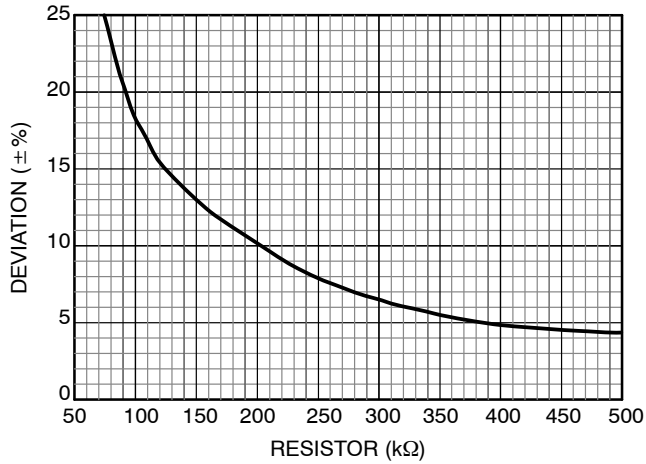
## CHARTS



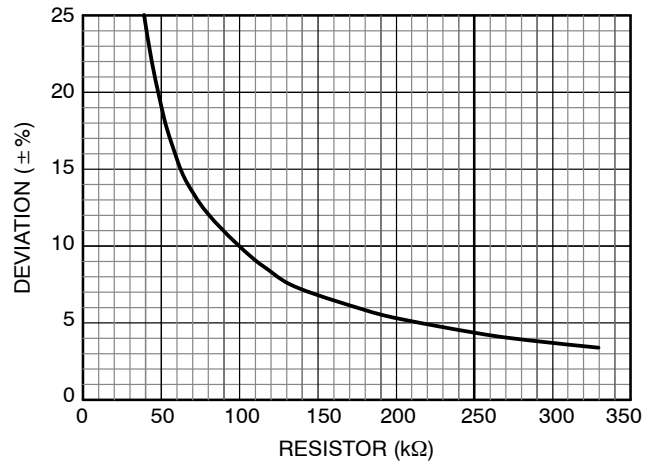
**Figure 2. MREXTR vs. MR**



**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  $\pm 10\%$

# P6P82PS01A

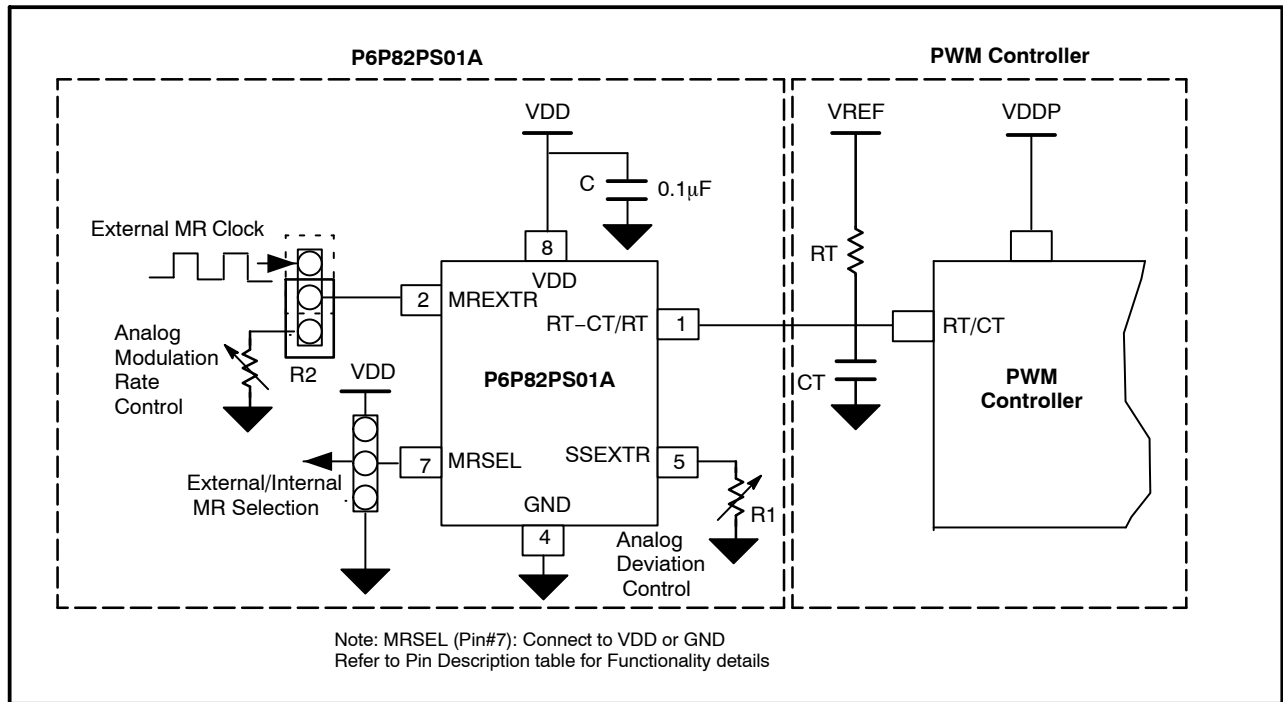


Figure 6. Typical Application Schematic

## ORDERING INFORMATION

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

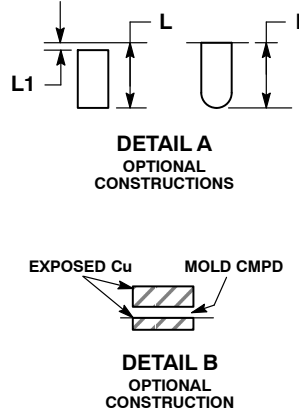
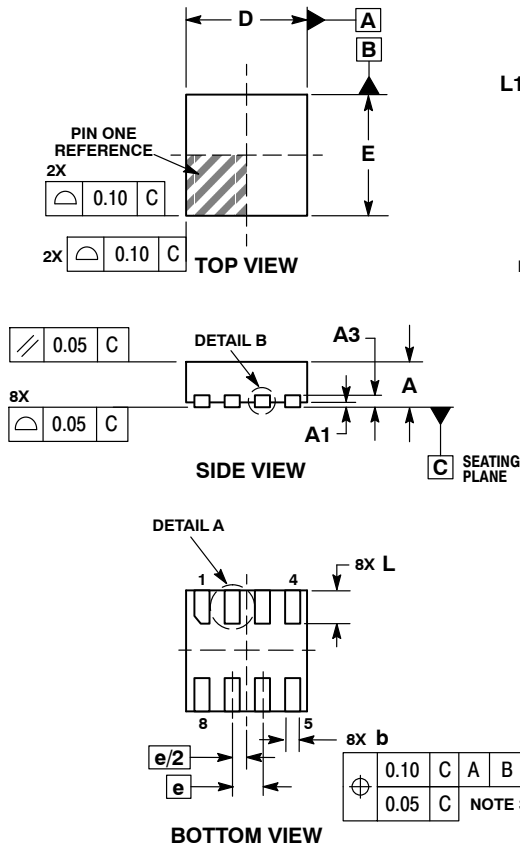
<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*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.

# P6P82PS01A

## PACKAGE DIMENSIONS

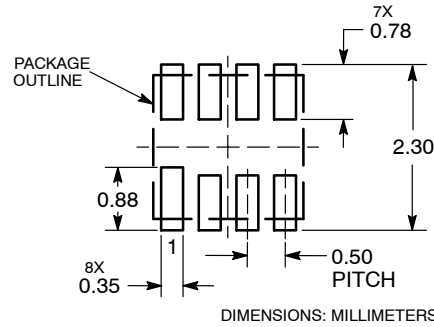
WDFN8 2x2, 0.5P  
CASE 511AQ-01  
ISSUE A



- 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.

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT:**  
Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: orderlit@onsemi.com

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5773-3850

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local Sales Representative