DC-DC Converter Short Form

MPDRX312S (Ultra High Speed Response POL)

Ultra High Speed Response
Wide input range (3.0V to 5.5V),Output range (0.8V to 1.8V)
16A Output Current
Wide operational temperature (-40ºC to +85ºC)
ON/OFF / Output voltage sense / Over current function /
P-good function / Variable Start-up Speed function
(by external capacitor)

GENERAL SPECIFICATIONS (Ta=25ºC)

Item	Symbol	Condition		MIN.	TYP.	MAX.	UNIT
Input Voltage	Vin			3.0	-	5.5	V
Output Voltage Adjustable Range	Vout	F.T. pin = open		0.8	-	0.9	V
		F.T. pin = short to GND		0.9	-	1.8	
Output Voltage tolerance	Vo tol	Over Io, Temperature range Vin=3.0~5.5V	Vo=0.8 0.9V	-3.0	-	+3.0	%
			Vo=0.9 1.8V	-2.5	-	+2.5	
Output Current	Iout			0	-	16	A
Ripple Voltage	Vrpl	Vin=3.3V, BW=20MHz, Cout=100µF		-	20	-	mVpp
Efficiency	EFF	Vin=3.3V, Vout=1.8V, Iout=16A		-	86.5	-	%

DIMENSIONS

15.4± 0.2

12   11

S Z

27.8± 0.2

22   1

4.2max.
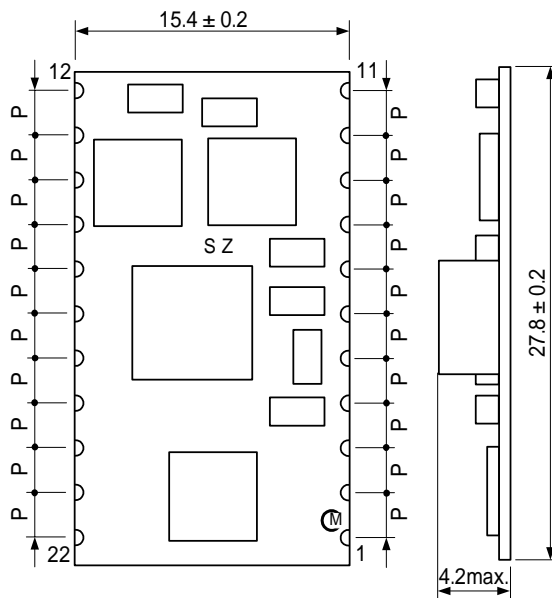
[unit   mm]

( )…reference value
P=2.54± 0.2mm
Tolerance is not accumulated

Pin No.	Symbol	Function
2	SENSE	Output voltage sense
3,4,5	Vout	Output
6,7,8,9, 16,17,18	GND	GND
10	FT	Output trim
11	VAR	Output voltage adjustment
12,13,14, 15	Vin	Input
1	OVPOUT	Output Over-voltage Alarm
19	SS	Soft start
20	N.C.	Non connection
21	PWRGOOD	Power Good
22	ON/OFF	Remote ON/OFF

⚠ **Note:**

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.

2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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OUTPUT VOLTAGE ADJUSTMENT

Internal Circuit

MPDRX312S

Vout

6.8 kΩ

VAR pin

1.8 kΩ

RVAR

FT pin

Error amp
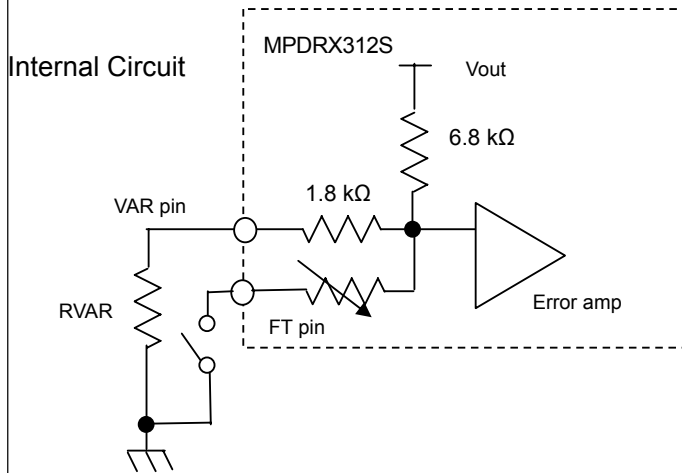
(a) 0.8V ≦ Vout ≦ 0.9V (F.T. : open)

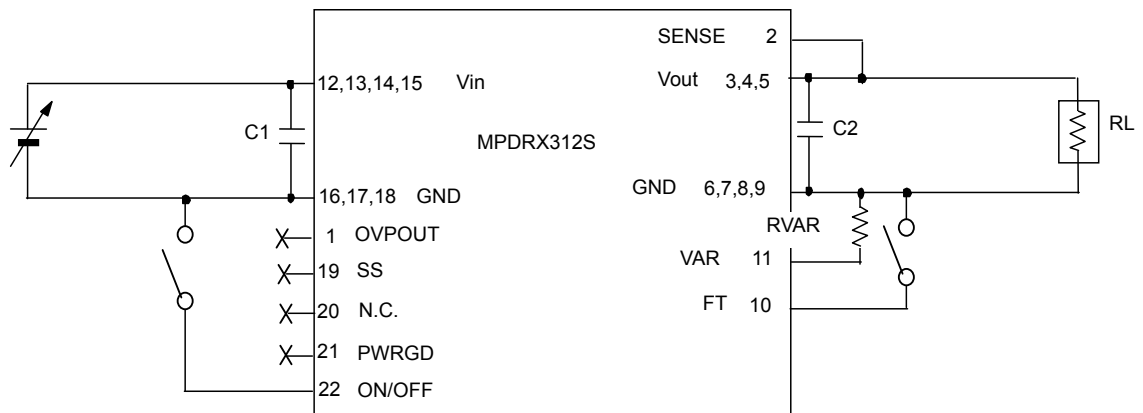$$RVAR = \frac{5440}{Voadj[V] - 0.8[V]} - 1800\,[Ω]$$

(b) 0.9 ≦ Vout ≦ 1.8V (FT-pin SHORT to GND)

$$RVAR = \frac{5440}{Voadj[V] - 0.9[V]} - 1800\,[Ω]$$

<RVAR CALCULATION EXAMPLE>

Voadj [V]	Calculated RVAR [ ]	RVAR Example [ ]	F.T. pin
1.8	4240	3.9k+330	Short to GND
1.5	7270	6.8k+470	Short to GND
1.2	16330	16k+330	Short to GND
1.0	52600	47k+5.6k	Short to GND
0.9		Open	Short to GND
0.8		Open	Open

TEST CIRCUIT

SENSE 2

Vout 3,4,5

C2

RL

12,13,14,15 Vin

C1

MPDRX312S

16,17,18 GND

GND 6,7,8,9

RVAR

VAR 11

FT 10

1 OVPOUT

19 SS

20 N.C.

21 PWRGD

22 ON/OFF

C1 100μF 10V Ceramic Capacitor
C2 100μF 6.3V Ceramic Capacitor
Please make sure to place C1 and C2 nearby input and output terminal of DC-DC converter.
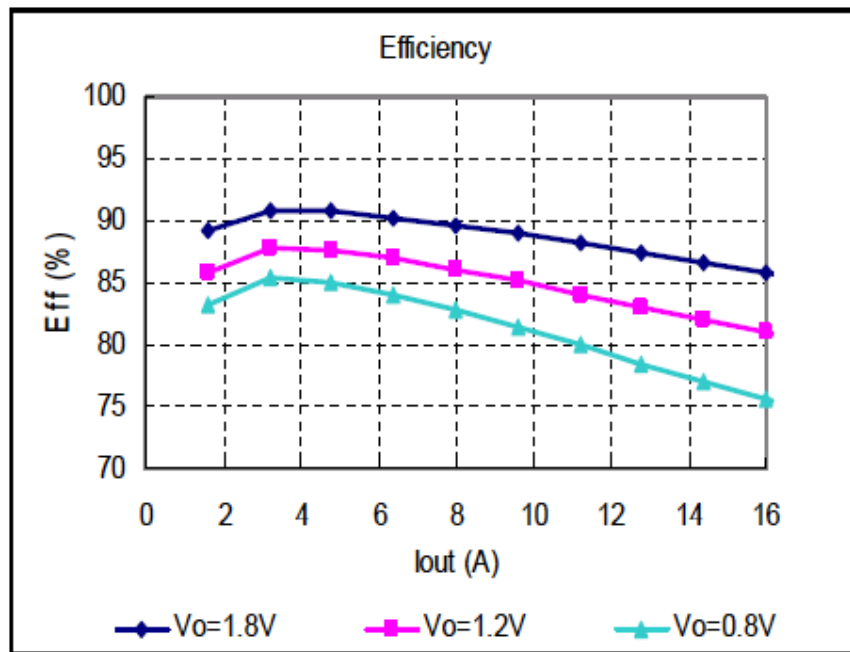
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THERMAL DERATING

Thermal Derating Curve

2.0m/s
1.5m/s
1.0m/s
0.5m/s
0m/s
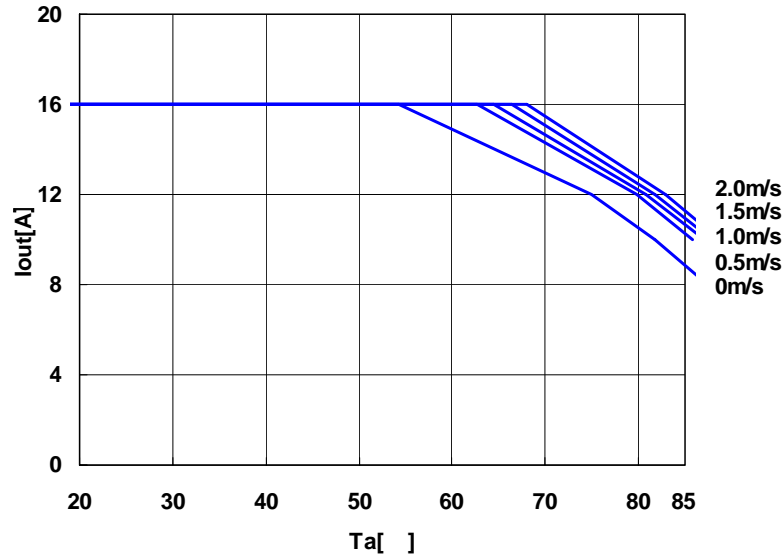
EFFICIENCY

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