

DC-DC Converter Short Form

MPD6M031S (Low Profile POL)

Features

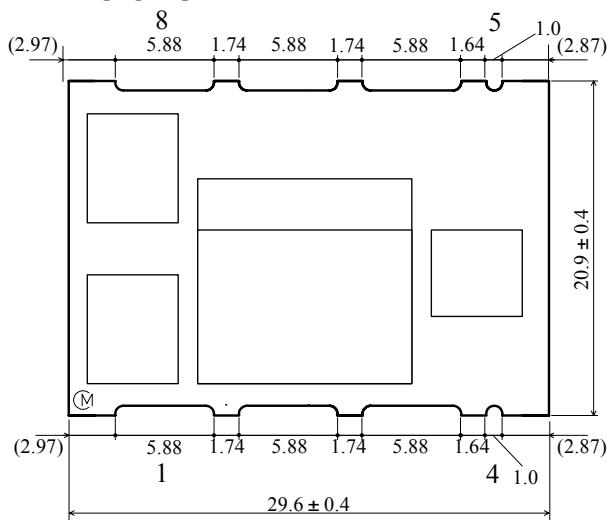
- High power & Low profile (H<7.2mm) surface mount
- Wide output range (1.2V to 5.0V)
- Synchronizing drive with the external clock(500kHz)
- Wide operational temperature
(-40°C to +85°C)
- High efficiency up to 92%
- ON/OFF control function(Negative Logic)
- Short circuit protection



GENERAL SPECIFICATIONS (Ta=25°C, Cout=44μF)

Item	Symbol	Condition	MIN.	TYP.	MAX.	UNIT	
Input Voltage	Vin		10.8	-	13.2	V	
Output Voltage	Vout	Vin=10.8 ~ 13.2V, Fsync=500kHz	VAR=0.22kΩ±1%	4.85	5.00	5.15	V
			VAR=50kΩ±1%	1.164	1.200	1.236	
Output Current	Iout	Vin=10.8 ~ 13.2V, Fsync=500kHz	Vout=1.2V ~ 2.5V	0	-	6	A
			Vout=3.3V ~ 5.0V	0	-	5	
Ripple Voltage	Vrpl	Vin=12V, Vout=2.5V, Iout=6A, Fsync=500kHz, BW=20MHz	-	50	-	mVpp	
Efficiency	EFF	Vin=12V, Vout=2.5V, Io=6A, Fsync=500kHz	-	92	-	%	
Nominal Frequency Range	Fnom	Vin=10.8 ~ 13.2V,	256	320	384	kHz	
Synchronous Frequency Range	Fsync	Vin=10.8 ~ 13.2V,	450	500	550	kHz	

DIMENSIONS



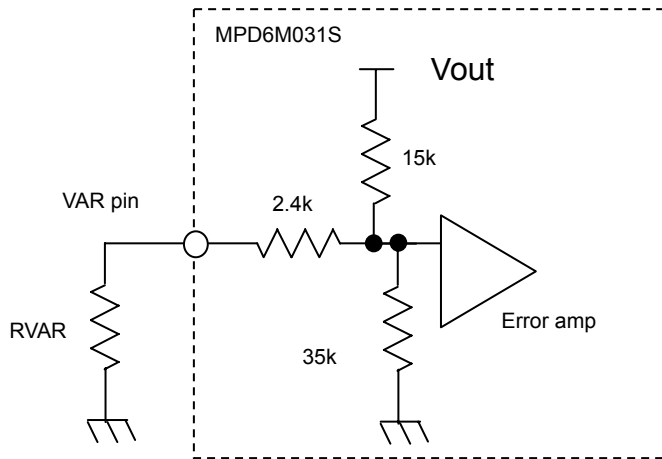
Pin No.	Symbol	Function
1	Vin	Input
2	GND	GND
3	SYNC	Frequency Synchronization
4	VAR	Vout adjust control
5	ON/OFF	Remote ON/OFF
6	Vout	Output
7	GND	GND
8	GND	GND



⚠ 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.

OUTPUT VOLTAGE ADJUSTMENT



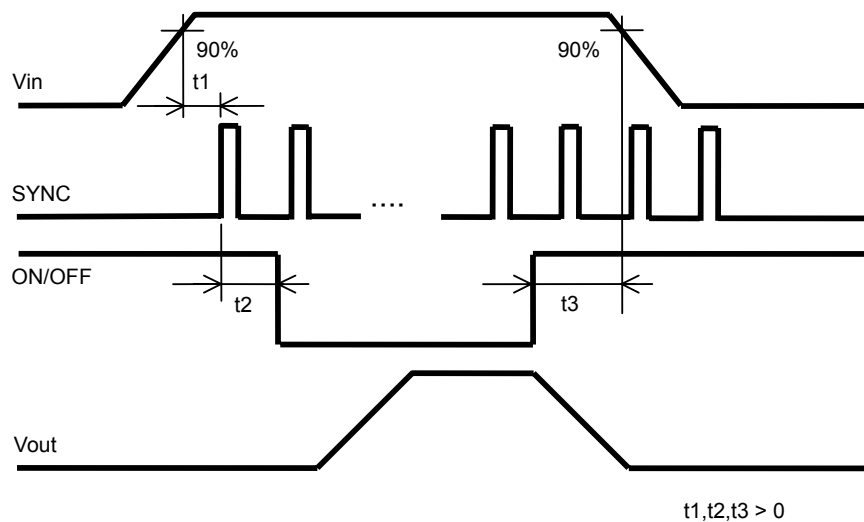
$$RVAR = \frac{367.5}{35 \cdot (V_{o-adj} - 0.7) - 10.5} - 2.4 \quad [k \Omega]$$

<RVAR CALCULATION EXAMPLE>

Vo-adj(V)	Calculated RVAR(kΩ)	RVAR Example(kΩ)
5.0	0.225	0.22 + 0
3.3	2.165	2.00 + 0.16
2.5	4.600	3.60 + 1.00
1.8	10.725	10.00 + 0.75
1.2	50.100	47.00 + 3.00

Start, Stop Sequence

It is necessary to satisfy the following sequences when this product is started, and stopped. If these sequences are not adhered to production and/or damage may result.



(Start sequence) : Vin → SYNC → ON/OFF

(Stop sequence) : ON/OFF → Vin

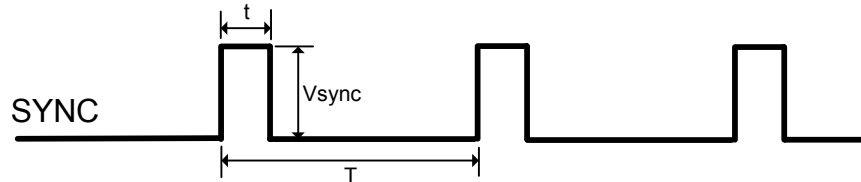
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Synchronous switching frequency

The switching frequency can be synchronized with the external clock signal by impressing it to SYNC-pin (3pin).

Synchronous clock signals must satisfy the following conditions.



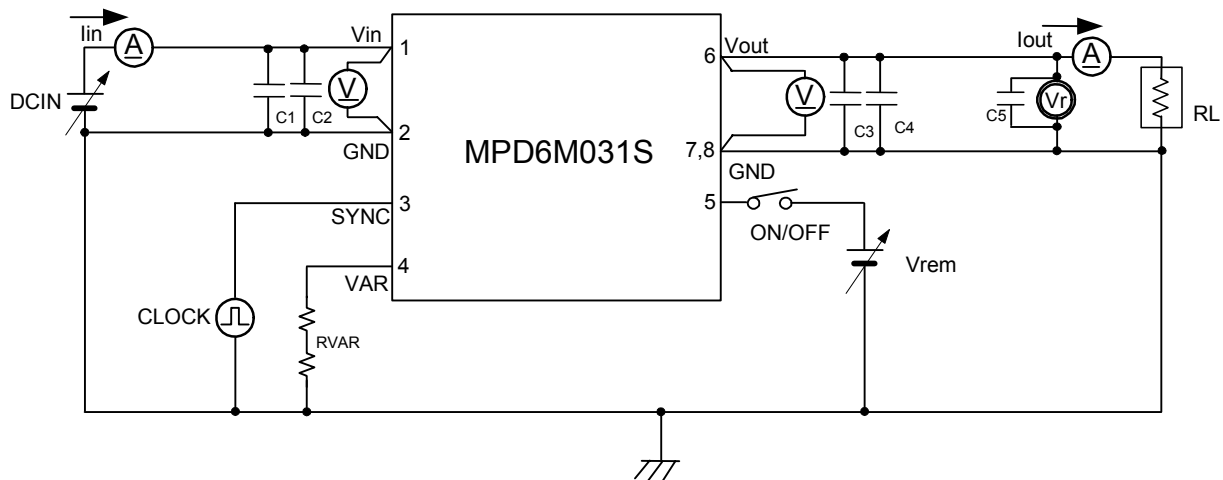
$$F_{\text{sync}} = 1/T = 500\text{kHz} \pm 10\%$$

$$V_{\text{sync}} = 3.3\text{V or } 5.0\text{V}$$

$$t = 100\text{ns}$$

$$t/T = 0.5$$

TEST CIRCUIT



C1,C2 : 10 μ F/16V Ceramic capacitor
 C3,C4 : 47 μ F/6.3V Ceramic capacitor
 C5 : 0.1 μ F
 RVAR : $\pm 1\%$, 1/16W Chip Resistor

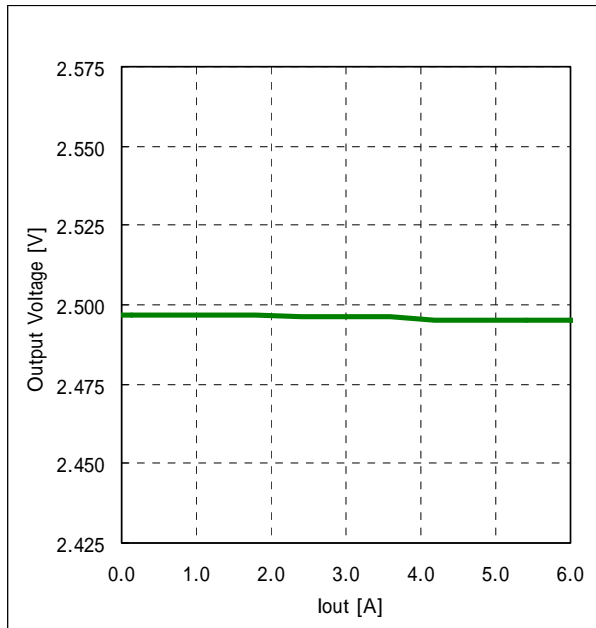
Please make sure to place C1,C2,C3 and C4 nearby input and output terminal of DC-DC converter.

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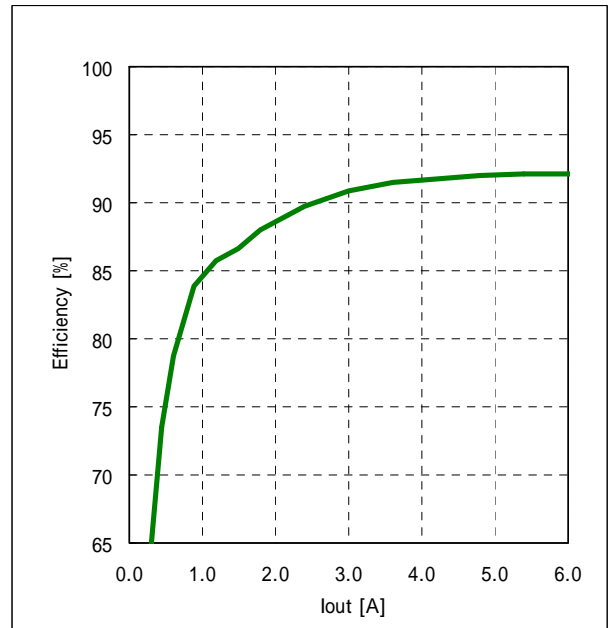
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TYPICAL ELECTRIC CHARACTERISTICS (Ta=25°C)

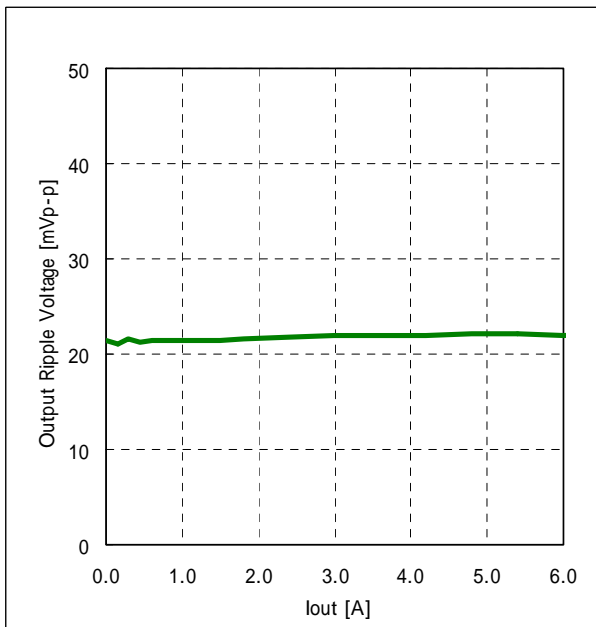
Vout=2.5V, Iomax=6A



Output Voltage v.s. Output Current



Efficiency v.s. Output Current



Ripple Voltage v.s. Output Current

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