



# RM3261 Application Information

## --9V-500mA( $\pm 5\%$ )

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## OUTLINE

- RM3261 Introduction
- Electrical Characteristic Description
- Application Circuit
- BOM List
- Transformer Parameter
- Test Report



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## 一、RM3261 Description

RM3261 is a high performance off-line PWM power switch for low power AC/DC charger and adapter applications, It operates in primary-side sensing and regulation. Consequently, opto-coupler and TL431 could be eliminated, Proprietary constant voltage and constant current control is integrated as shown in the figure below.

In constant current control, the current and output power setting can be adjusted externally by the sense resistor  $R_S$  at CS pin, In constant voltage control, multi-mode operations are utilized to achieve high performance and high efficiency. In addition, good load regulation is achieved by the built-in cable drop compensation. Device operates in PFM in CC mode as well at large load condition and it operates in PWM with frequency reduction at light/medium load.

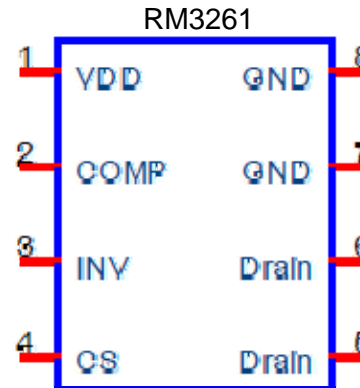


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## Features

- $\pm 5\%$  constant voltage regulation at universal AC input.
- High precision constant current regulation at universal AC input.
- Primary-side sensing and regulation without TL431 and opto-coupler.
- Programmable constant voltage and constant current regulation.
- Adjustable constant current and output power setting.
- Built-in secondary constant current control with primary side feedback.
- Built-in adaptive current peak regulation.
- Built-in primary winding inductance compensation.
- Programmable cable drop compensation.
- Power on soft-start.
- Built-in Leading Edge Blanking.
- Cycle-by-Cycle current limiting.
- VDD under voltage lockout with hysteresis.
- VDD over voltage protect.
- VDD clamp.

# PIN configuration (top view)



Pin Num	Pin name	I/O	Description
1	VDD	P	Power supply
2	COMP	I	Loop compensation for CV stability
3	INV	I	The voltage feedback from auxiliary winding connected to resistor divider from auxiliary winding reflecting output voltage, PWM duty cycle is deteminde by EA output and current sense signal at PIN4 .
4	CS	I	Current sense input
5/6	Drain	O	HV MOSFET drain pin.the drain pin is connected to the primary lead of the transformer.
7/8	GND	P	Ground



## 二、Electronical Characteristics

( $T_A=25^{\circ}\text{C}$ ,  $V_{DD}=V_{DDG}=16\text{V}$ , if not otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
I <sub>DD_ST</sub>	Standby Current	V <sub>DD</sub> =13V		5	20	uA
I <sub>DD_OP</sub>	Operation Current	INV=2V, CS=0 V, V <sub>DD</sub> =V <sub>DDG</sub> =1 8V		2	3	mA
UVLO(ON)	V <sub>DD</sub> Under Voltage Lockout Enter	V <sub>DD</sub> falling	8.2	9.0	10.5	V
UVLO(OFF)	V <sub>DD</sub> Under Voltage Lockout Exit	V <sub>DD</sub> rising	13.5	14.8	16.0	V
V <sub>DD_clamp</sub>	Maximum V <sub>DD</sub> operation voltage	I <sub>DD</sub> =10mA	27	28.5	30	V
OVP	Over voltage protection Threshold	Ramp V <sub>DD</sub> until gate shut down	26	27.5	29	V

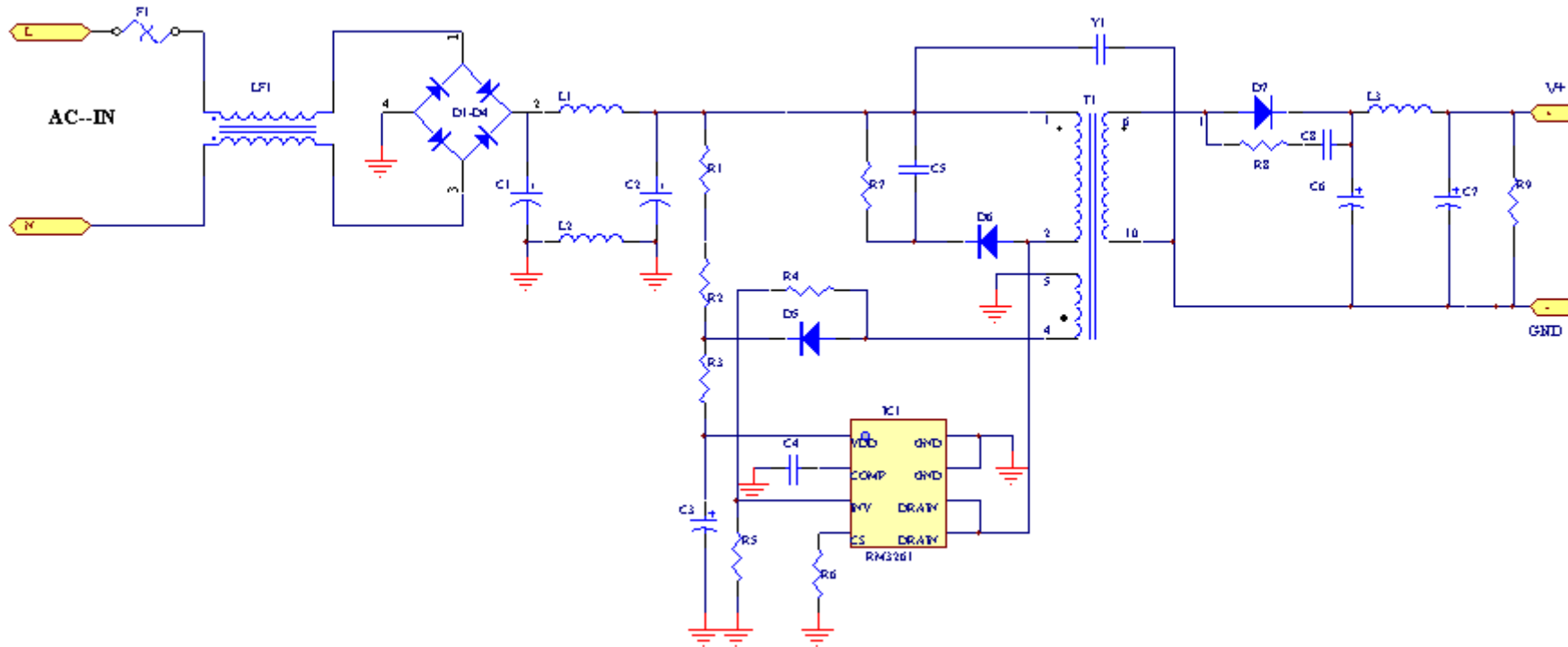


Symbol	Parameter	Conditions	Min	Typ	Max	Units
Freq_Max	IC Maximum frequency		55	60	65	KHz
Freq_Nom	System Nominal switch frequency			50		KHz
Freq_start up		INV=0V,Comp =5V		14		KHz
$\Delta f/\text{Freq}$	Frequency shuffling range			+/-6		%
Vref_EA	Reference voltage for EA		1.97	2	2.03	V
I_COMP_ MAX	Max.Cable compensation current	INV=2V,Comp =0V		37.5		uA
BVdss	MOSFET Drain-Source Breakdown Voltage		600			V

### 三、Application circuit



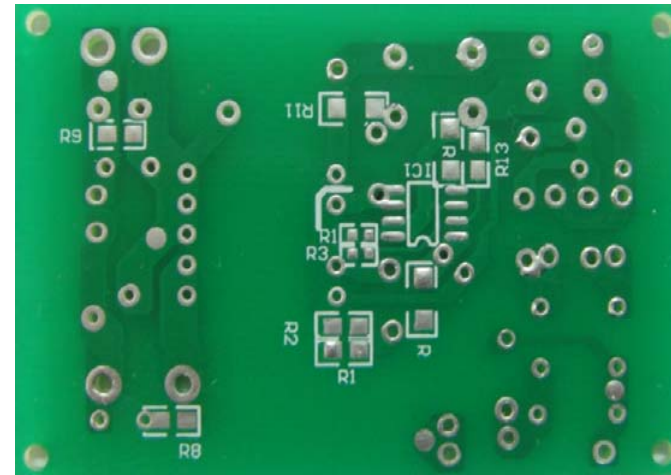
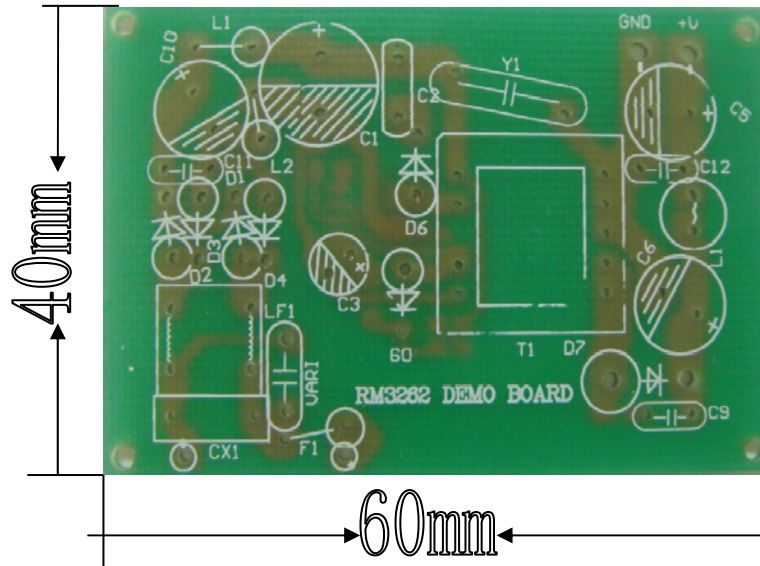
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# PCB



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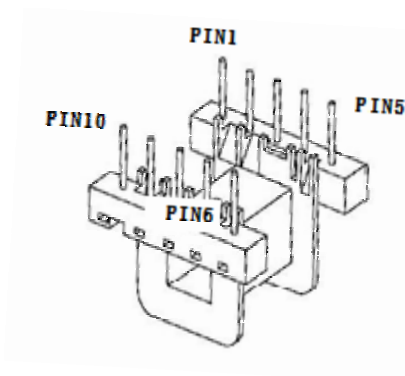
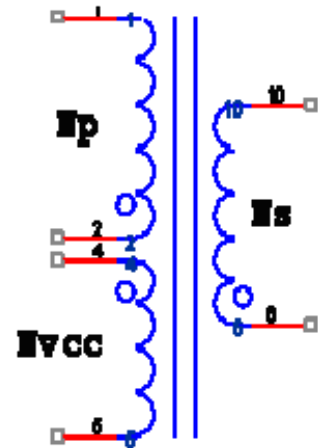
## 四、BOM LIST

P/N	Description	NO.	Package	Notice
CX1				
C1/C2	4.7uF 400V	2	DIP	
C3	1uF 50V	1	DIP	
C4	102_0805	1	SMD	
C5	102_2KV	1	DIP	
C6/C7	470uF_16V	1	DIP	
C8	102_1206	1	SMD	
Y1	222_2KV	1	DIP	
R1/R2	2M_0805	2	SMD	
R3	10R_1206	1	SMD	
R4	30K并68K_0805	1	SMD	
R5	2K_0603	1	SMD	
R6	2R4_0805	1	SMD	
R7	180K_0805	1	SMD	
R8	10R_0805	1	SMD	
R9	1K_0805	1	SMD	
D1-D4	IN4007	4	DIP	
D5、D6	FR107	2	DIP	
D7	SB3100	1	DIP	
LF1	1mH	2	DIP	
L1/L2	1mH	2	DIP	
L3	330	1	DIP	
F1	1A_250V	1	DIP	
T1	transformer	1	DIP	
IC1	LM3261	1	DIP	



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## 五、Transformer



0.9cm宽绝缘胶纸三层

Nvcc PIN4→PIN5 0.21mm 38T 密绕 一层

0.9cm宽绝缘胶纸三层

Ns PIN6→PIN10 0.27mm 16T 居中密绕

0.9cm宽绝缘胶纸三层

Np PIN2 →PIN1 0.21mm 130T 密绕四层

磁芯要求: PC40或者同等材质EE16

- 主感量:  $L_p=2.0\text{mH} \pm 5\%$ , (PIN2→PIN1)
- 测试条件: (1)、测试频率1Khz ;  
(2)、测试电压0.25V ;
- 耐压: PRI-SEC: 3750Vac1MIN 1mA(max)  
PRI-CORE: 1500Vac1MIN 1mA(max)  
SEC-CORE: 1500Vac1MIN 1mA(max)

## 六、 Test Report-Test Condition and Test SPEC.



Description	MIN	TPY	MAX	Test Data	Result
<b>Input</b>					
Voltage Frequency	90V 50hz		265V 60h	85V-265V	PASS
<b>Output</b>					
Voltage	8.55V	9V	9.45V		PASS
Current		500mA			PASS
Load regulation	-5%		5%	0.56%	PASS
Power		4.5W		4.51 W (avg.)	PASS
<b>Efficiency</b>					
Energy Star(5)				72.00%(avg.)	PASS

# Test Data



## Line Regulation

Test Condition:  $V_{in}=90V-265V$ ,  $I_{load}=0A$

$V_{in}(V)$	90	115	185	220	235	265
$V_{out}(V)$	9.04	9.04	9.03	9.03	9.03	9.03

Line regulation: 0.11%; Test Result: **PASS**

Test Condition:  $V_{in}=90V-265V$ ,  $I_{load}=0.5A(max)$

$V_{in}(V)$	90	115	185	220	235	265
$V_{out}(V)$	9.02	9.02	9.03	9.03	9.03	9.03

Line regulation: 0.11%; Test Result: **PASS**

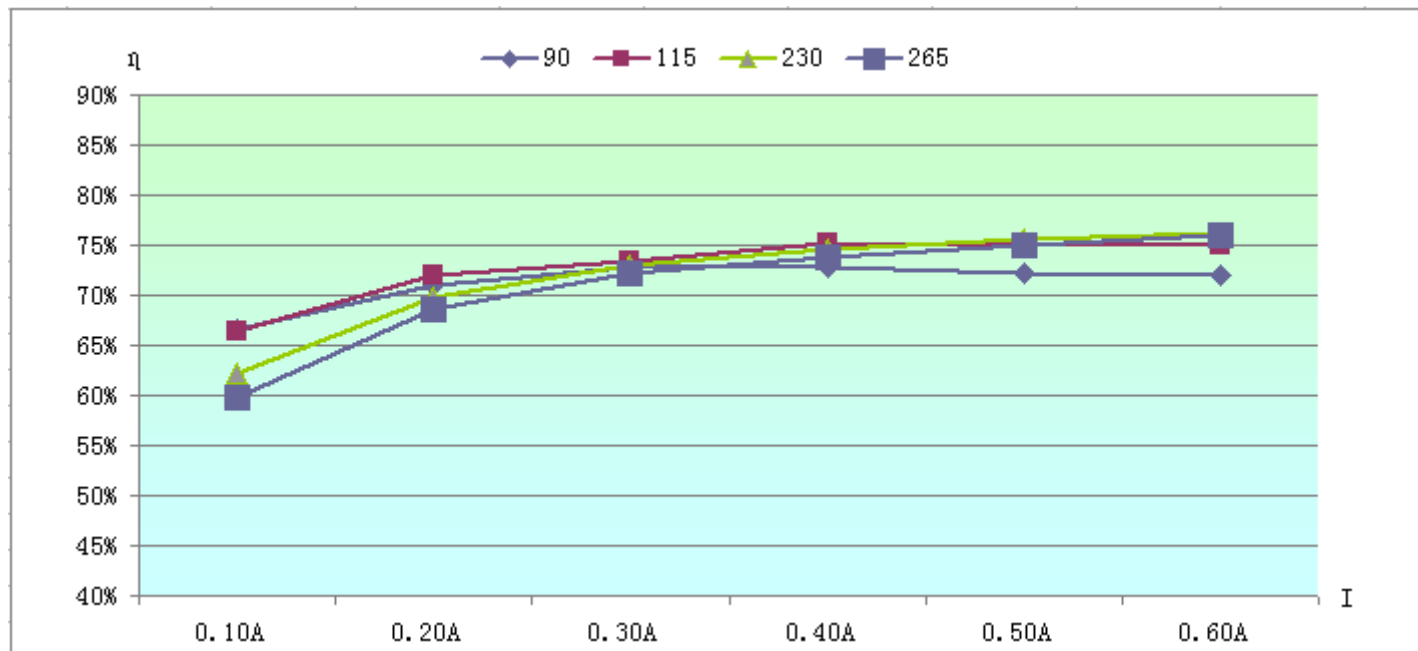
## OCP

$V_{in}(V)$	90	115	185	220	265
OCP (A)	0.853	0.834	0.869	0.870	0.780
Result	PASS	PASS	PASS	PASS	PASS

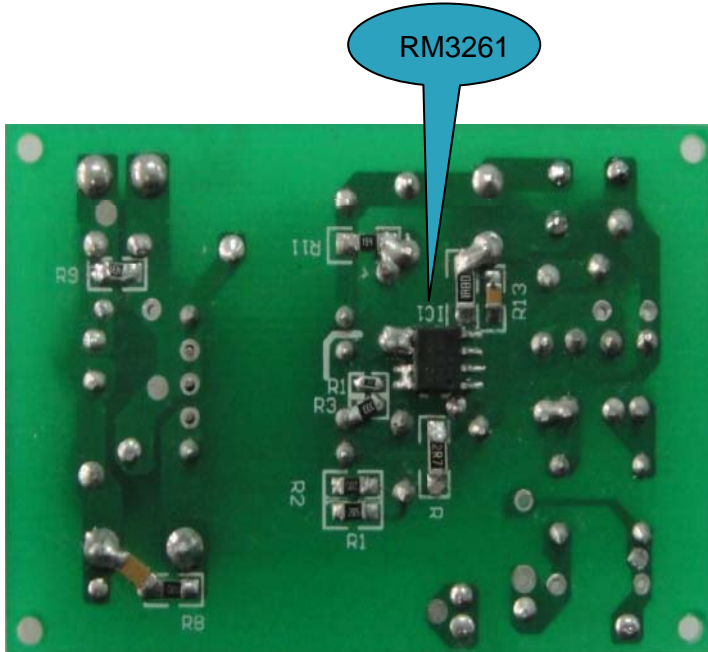
Notice:  $I_{ocp}=(1.3-1.8) I_{out(max)}$

# Test Data

## Efficiency



# DEMO Photo





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THE END