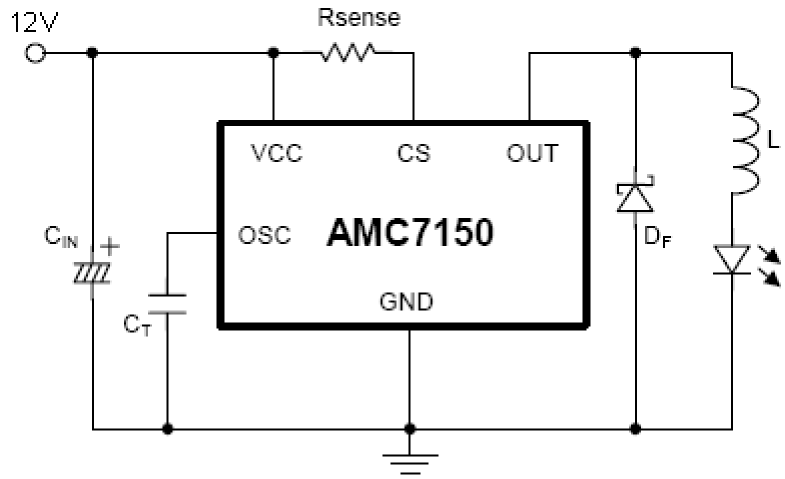
1. Application of AMC7150 @ V_{IN}=12V_{DC}

1.1. V_{IN}=12V_{DC} for 1pcs of Power LED:

A. Circuit Diagram:



B. Bill of Material:

Component	Value	Package
AMC7150	-	TO-252-5L
C_{IN}	47uF / 16V	E. C. Cap.
C_T	680~820pF	DIP / SMD 0603
R_{SENSE}	0.87Ω	DIP / SMD 1206
D_F	1N5819	DO-41 (Axial Lead)
L	220uH	-

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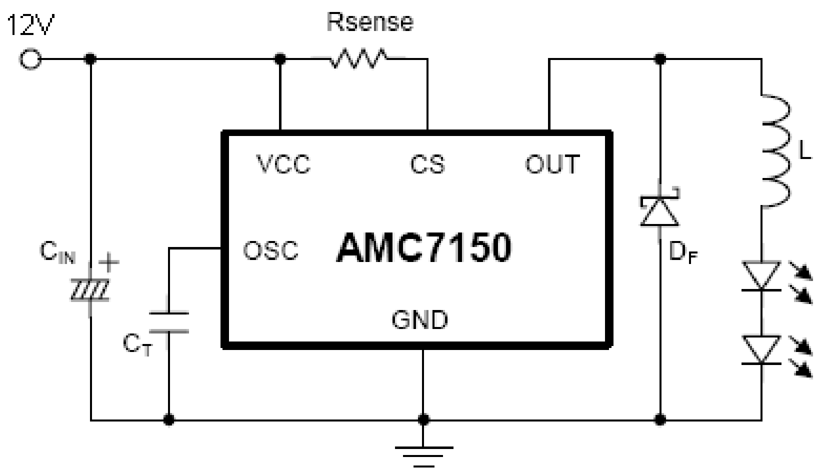
1.2. V_{IN}=12V_{DC} for 2pcs of Power LED in Series:

A. Circuit Diagram:



B. Bill of Material:

Component	Value	Package
AMC7150	-	TO-252-5L
C_{IN}	47uF / 16V	E. C. Cap.
C_T	680~820pF	DIP / SMD 0603
R_{SENSE}	0.83Ω	DIP / SMD 1206
D_F	1N5819	DO-41 (Axial Lead)
L	220μH	-

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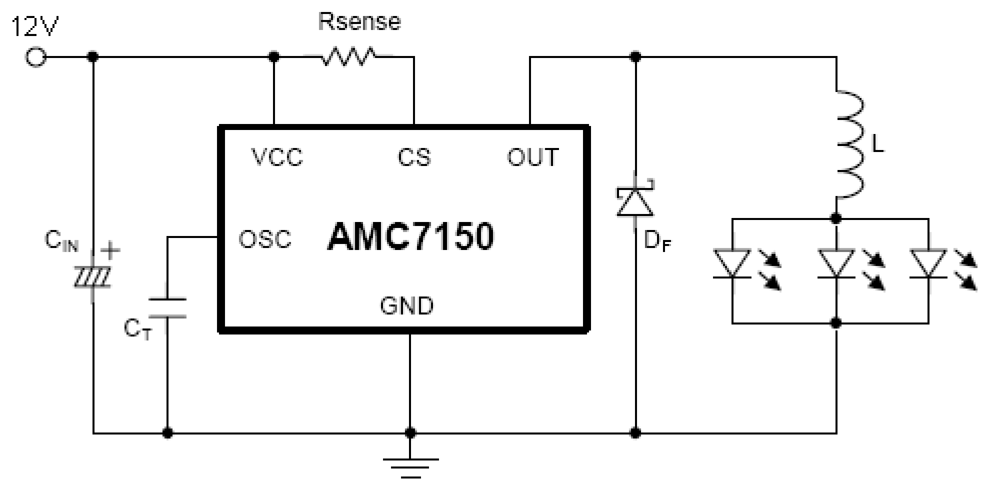
1.3. V_{IN}=12V_{DC} for 3pcs of Power LED in Parallel:

A. Circuit Diagram:



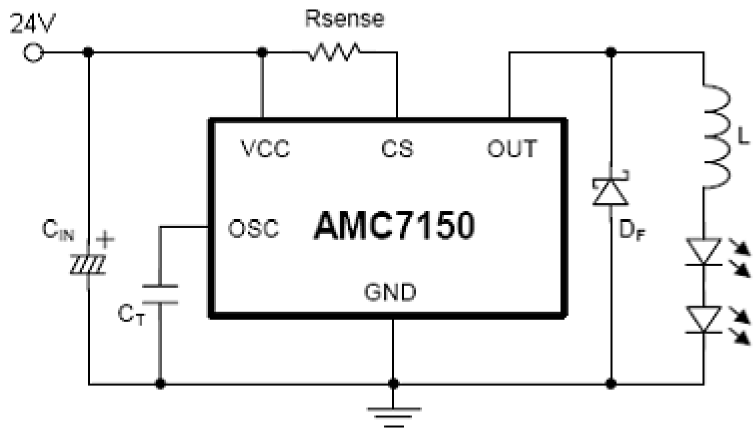
B. Bill of Material:

Component	Value	Package
AMC7150	-	TO-252-5L
C_{IN}	47uF / 16V	E. C. Cap.
C_T	680~820pF	DIP / SMD 0603
R_{SENSE}	0.92Ω	DIP / SMD 1206
D_F	1N5819	DO-41 (Axial Lead)
L	220uH	-

2. Application of AMC7150 @ V_{IN}=24V

2.1. V_{IN}=24V_{DC} for 2pcs of Power LED in Series:

A. Circuit Diagram:



B. Bill of Material:

Component	Value	Package
AMC7150	-	TO-252-5L
C_{IN}	47uF / 35V	E. C. Cap.
C_T	680~820pF	DIP / SMD 0603
R_{SENSE}	0.83Ω	DIP / SMD 1206
D_F	1N5819	DO-41 (Axial Lead)
L	220uH	-

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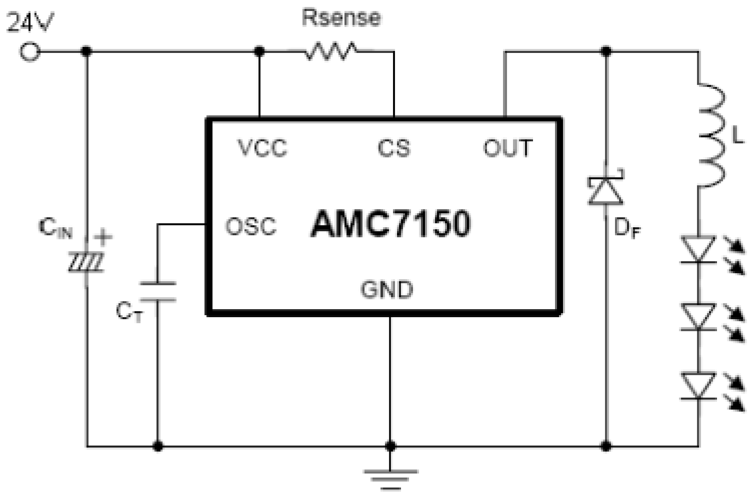
2.2 V_{IN}=24V_{DC} for 3pcs of Power LED in Series:

A. Circuit Diagram:

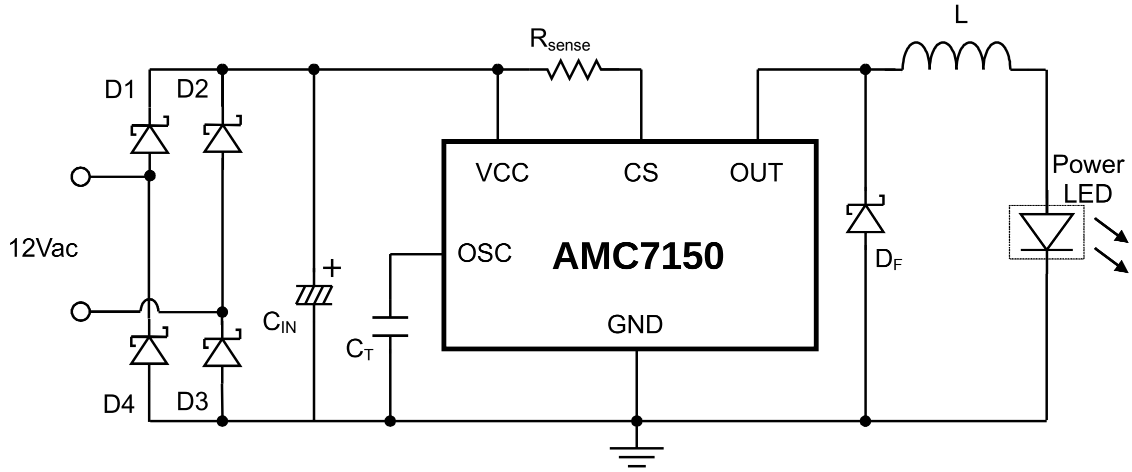


B. Bill of Material:

Component	Value	Package
AMC7150	-	TO-252-5L
C_{IN}	47uF / 35V	E. C. Cap.
C_T	680~820pF	DIP / SMD 0603
R_{SENSE}	0.8Ω	DIP / SMD 1206
D_F	1N5819	DO-41 (Axial Lead)
L	220uH	-

3. Application of AMC7150 for MR16

3.1. Application Circuit of AMC7150 for MR16 (V_{IN}=12V_{AC}):

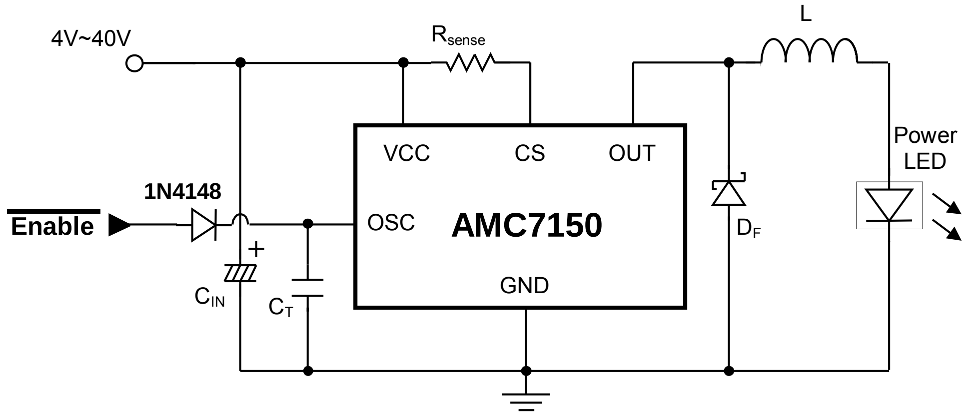


3.2. Bill of Material:

C. R. No.	Q'TY	Value	Description
PCB	1	-	PCB－12V Ballast Solution 7150 for MR-16
IC	1	-	AMC7150
C_{IN}	1	47~100uF	Tantalum Chip Cap.【Gausstek Corp.】(Parts:TN0CX16IM47U)
D1~D4	4	FM140-M	Schottky Diode【HY electronic Corp.】
D_F	1	FM140-M	Schottky Diode【HY electronic Corp.】
R_{SENSE}	1	0.22Ω~3Ω	【Firstohm】（Parts:CP25-E24）
L1	1	220uH	【Gausstek Corp.】(Parts: PI52X451KxxxU)
C_T	1	680~820pF	【Gausstek Corp.】(Parts: MC037504KxxxP)

4. PWM Dimming Function of AMC7150

4.1 Application Circuit：



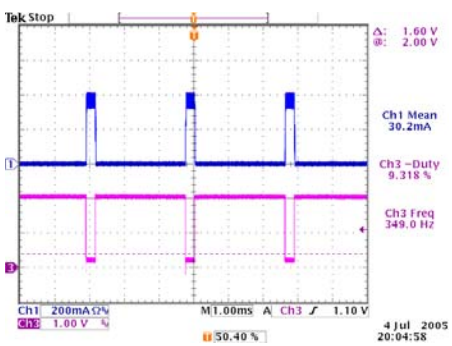
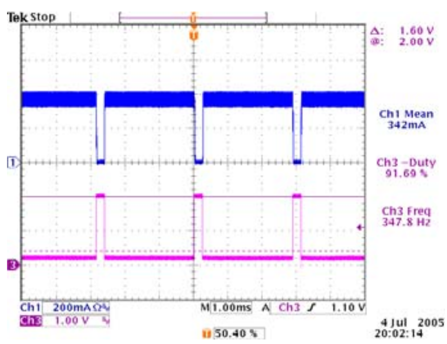
4.2 Description of Enable Control：

One diode (1N4148) is added between the inward PWM control signal and the OSC pin.

Parameter	Description	Symbol	Min	Max	Unit	Apply Pin
Enable voltage "High"	Turn OFF the driver	$V_{\overline{EN},H}$	2	5.5	V	$\overline{Enable}$
Enable voltage "Low"	Turn ON the driver	$V_{\overline{EN},L}$		0.4	V	
Enable voltage sink current	Turn OFF the driver	$I_{\overline{EN}}$		300	uA	

4.3 Measured Waveform：

When ON duty=100%, $i_{LED,Mean}$ =369mA

ON duty = 9.3%, $i_{LED,Mean}$ =30.2mA	ON duty = 91.7%, $i_{LED,Mean}$ =342mA
	
Ch1: i_{LED}, Ch3: $\overline{Enable}$	Ch1: i_{LED}, Ch3: $\overline{Enable}$

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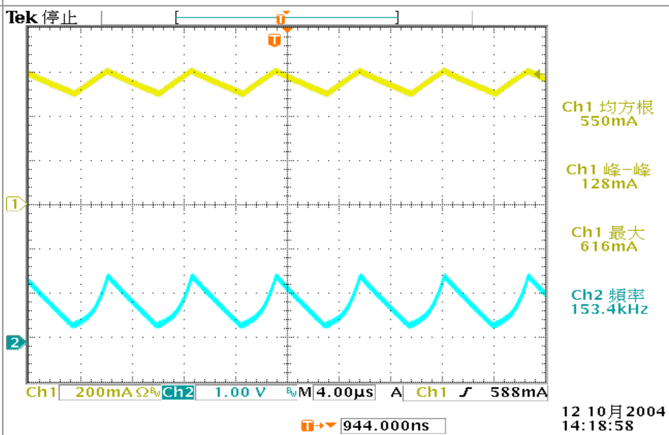
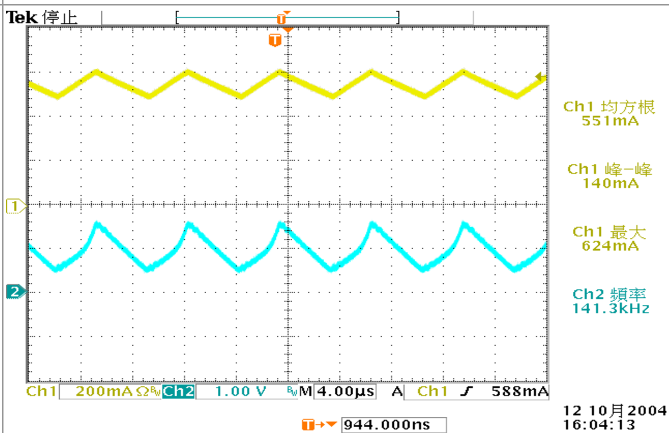
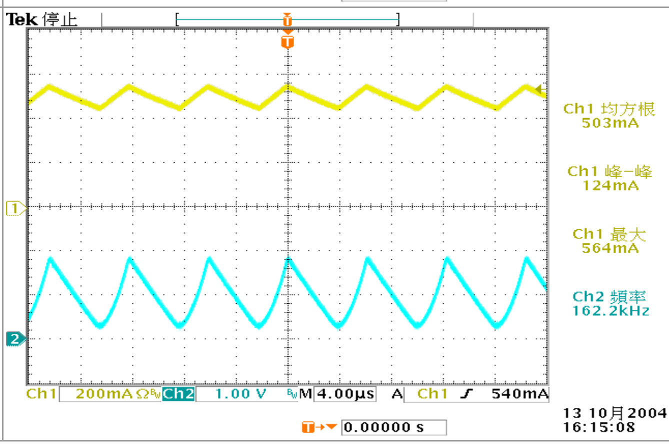
5. Thermal Issue of AMC7150: Temperature vs. Current

AMC7150 can work well under ambient temperature from -40℃ to +125℃. Put the AMC7150 EKM board into the programmable chamber to simulate the extreme temperature environment, the AMC7150 EKM board can work well, as the measured waveforms of LED current and the oscillating waveform of C_T shown in the following table:

Table AMC7150 EKM can work well under ambient temperature from -40℃ to +125℃.

Ambient Temperature	Measured waveforms	Test condition
Room Temperature		CH1：i_L CH2：C_T Vcc=12V Rsen=0.5Ω L=180uH LED=1pcs C_T=820pF $V_{f,LED}$=3.34V
Low Temperature -40℃		CH1：i_L CH2：C_T Vcc=12V Rsen=0.5Ω L=180uH LED=1pcs C_T=820pF $V_{f,LED}$=3.626V
High Temperature +125℃		CH1：i_L CH2：C_T Vcc=12V Rsen=0.5Ω L=180uH LED=1pcs C_T=820pF $V_{f,LED}$ =3.2V

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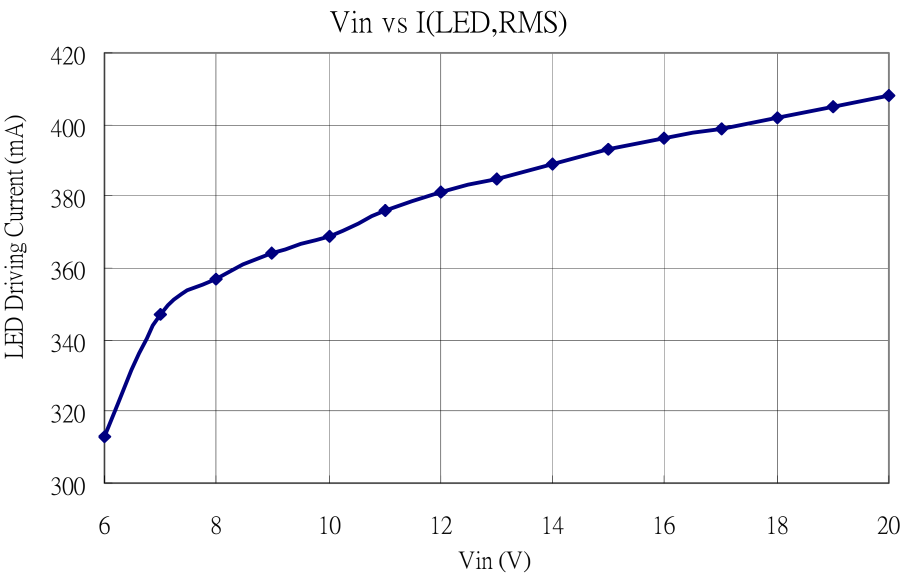
6. Relationship between V_{IN} and the LED Driving Current

When V_{IN} changes, the RMS value of LED driving current will change slightly.



V_{IN}=8~12V	$\frac{di}{dv} = \frac{381\,mA - 357\,mA}{12V - 8V} = 6\ ^{mA}/_{V}$ $^{\%}/_{V} = \frac{6\ ^{mA}/_{V}}{381mA} = 1.57\ ^{\%}/_{V}$
V_{IN}=12~16V	$\frac{di}{dv} = \frac{396\,mA - 381\,mA}{16V - 12V} = 3.75\ ^{mA}/_{V}$ $^{\%}/_{V} = \frac{3.75\ ^{mA}/_{V}}{381\ mA} = 0.98\ ^{\%}/_{V}$

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