

### APPLICATIONS

- IP Camera
- IP Phone
- Wireless Access Point

### FEATURES

- Wide operating voltage:
  - MQ7800: 36V ~ 57V
- Output Current
  - 12V, 1A
  - 5V, 2A
  - 3.3V, 2A
- Output voltage ripple: 100mV<sub>pp</sub>, (12V@1A)
- High Efficiency 84% (input 48V, Load12V@1A)
- Overcurrent /shortcircuit protection
- High reliability: designed to meet 5 million hour MTBF
- Minimal space on PCB:
  - 56 mm x 14 mm x 16 mm or
  - 2.2 in x 0.55 in x 0.63in
- No derating to +85°C, inside closed box
- UL/IEC/EN60950 compliant
- RoHS Compliant available

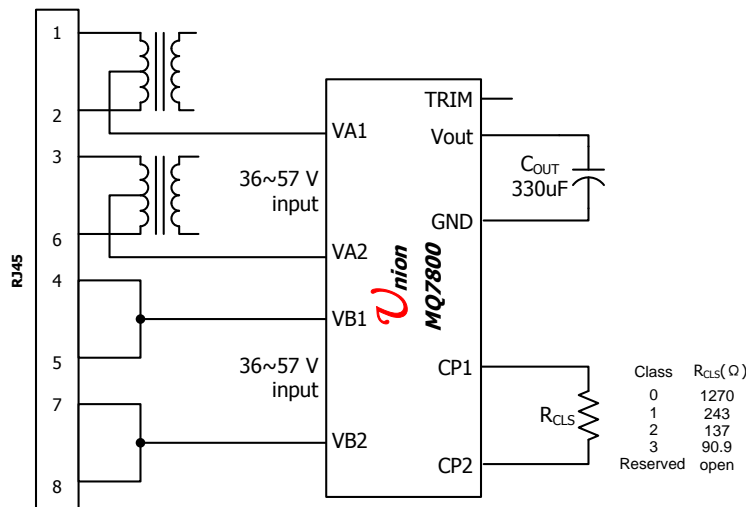
### Description

The **POE MQ7800** series of modules are designed to extract power from a conventional twisted pair Category 5 Ethernet cable, conforming to the IEEE 802.3af/at Power-over-Ethernet (PoE) standard. IEEE 802.3af/at allows for two power options for Category 5 cables and the MQ7800 have two pairs of power inputs pins: - VA1&2 and VB1&2 to accommodate this.

The MQ7800 signature and control circuit provides the PoE compatibility signature and power classification required by the Power Sourcing Equipment (PSE) before applying up to 15W power to the port. The MQ7800 is compatible with Class 0 to Class 3 equipment.

The high efficiency DC/DC converter operates over a wide input voltage range and provides a regulated low ripple and low noise output. The DC/DC converter also has built-in overload and short-circuit output protection.

\*\*\*\*\* **Typical Application Circuit** \*\*\*\*\*

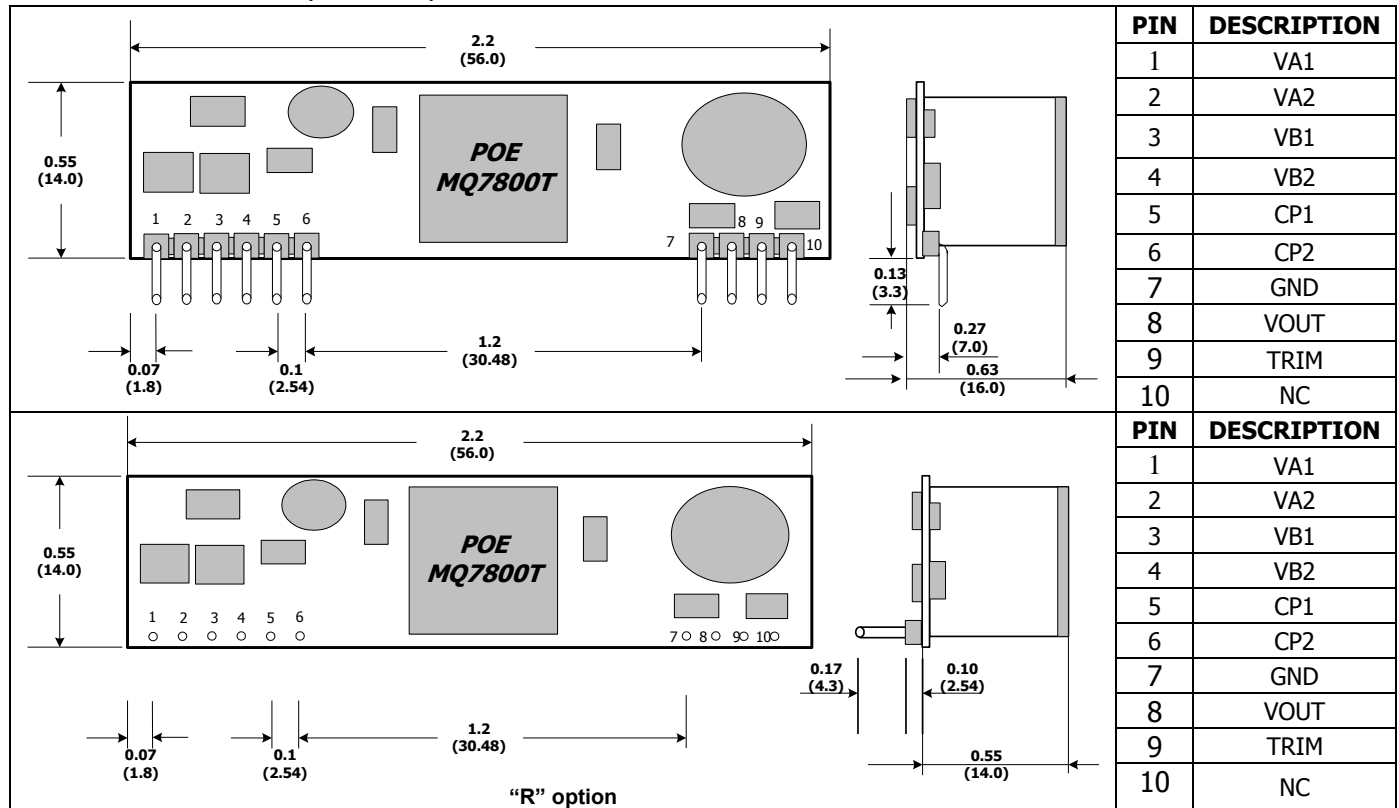


**Performance Specificaons** (at Ta=+25°C)

Model	Input $V_{IN}$ Range (V)	Output				Efficiency (%)
		$I_{OUT}$ (A)	$V_{out}$ (V)	Regulation		
				Line (%)	Load (%)	
MQ7800T033	36~57	2	3.3V	TBD	TBD	TBD
MQ7800T050		2	5V	0.5	1	83%
MQ7800T120		1	12V	0.5	0.5	85%

**Mechanical Specifications**

Dimensions are in inches (millimeters)



**Ordering Information**

**MQ7800T120-R**

**Union Microsystems**  
Power Module P/N  
**SIP Package**

**R(optional): Right Angle**  
**Output Voltage Range:**  
033: 3.3 V  
050: 5 V  
120: 12 V

For examples:  
MQ7800T120 means MQ7800 in SIP package, output voltage is 12V

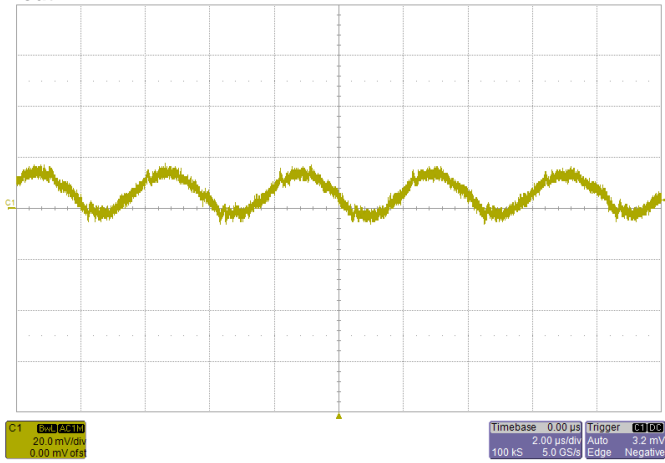
**Class Resistor Selection between CP1/CP2**

Class	Resistor( $\Omega$ )
0	1270
1	243
2	137
3	90.9
Reserved	open

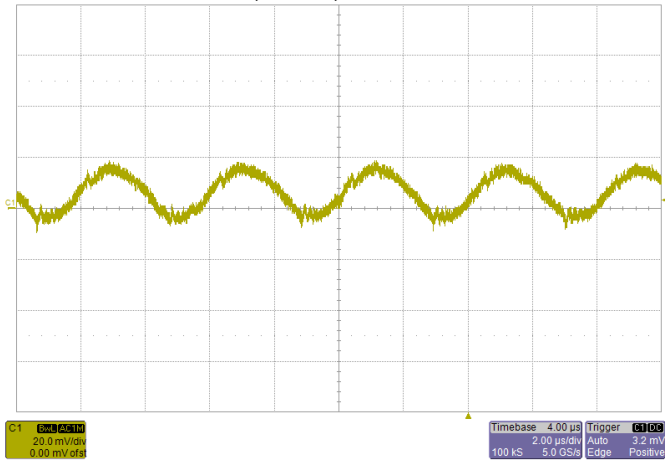
Typical Characteristics

General conditions: Output filter: 330µF AL-CAP

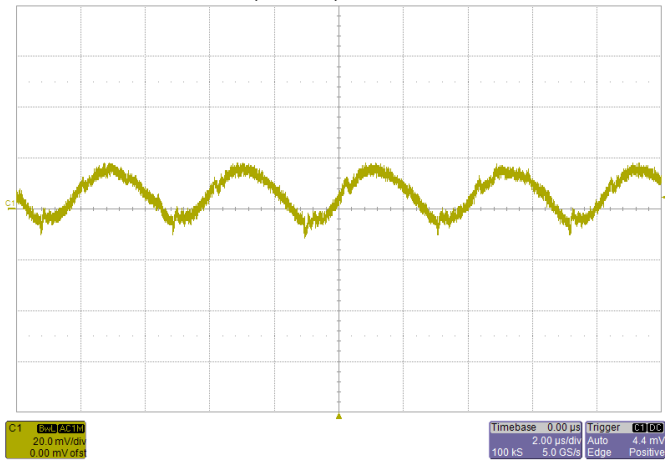
V<sub>out</sub>=5V



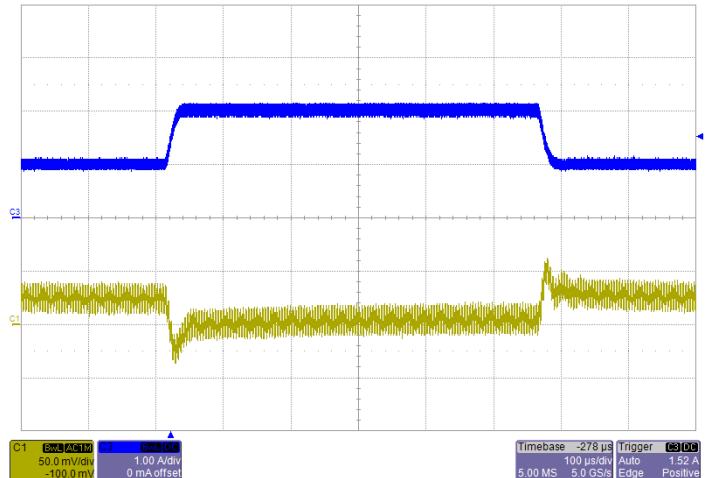
Noise V<sub>IN</sub>=40V, I<sub>o</sub>=2A, 5~20MHz Bandwidth



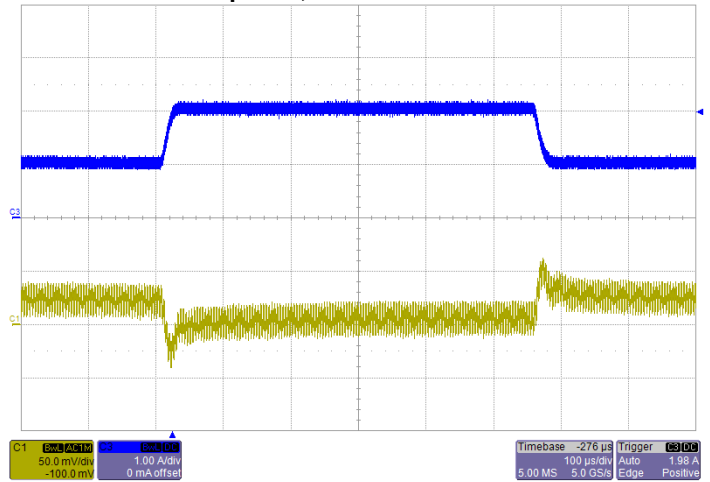
Noise V<sub>IN</sub>=48V, I<sub>o</sub>=2A, 5~20MHz Bandwidth



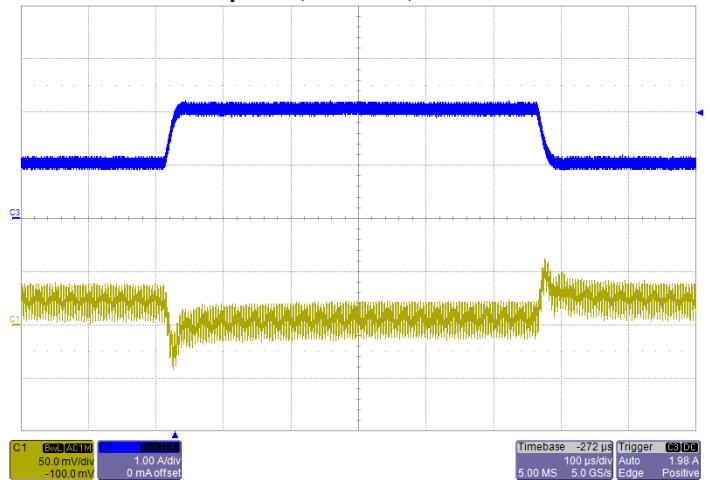
Noise V<sub>IN</sub>=58V, I<sub>o</sub>=2A, 5~20MHz Bandwidth



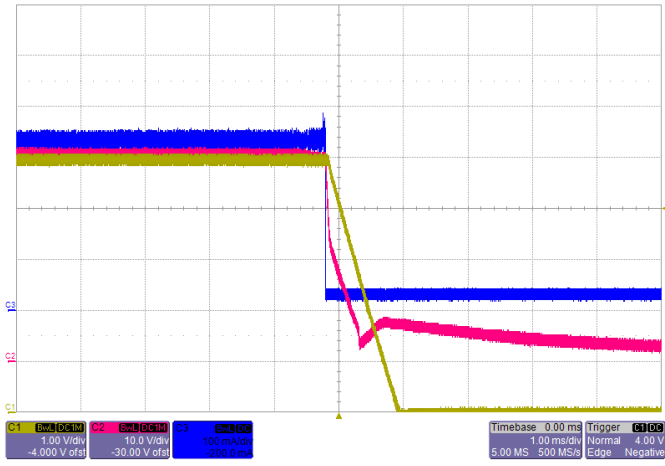
Transient Response, V<sub>in</sub>=40V I<sub>o</sub>=50%~100%~50%



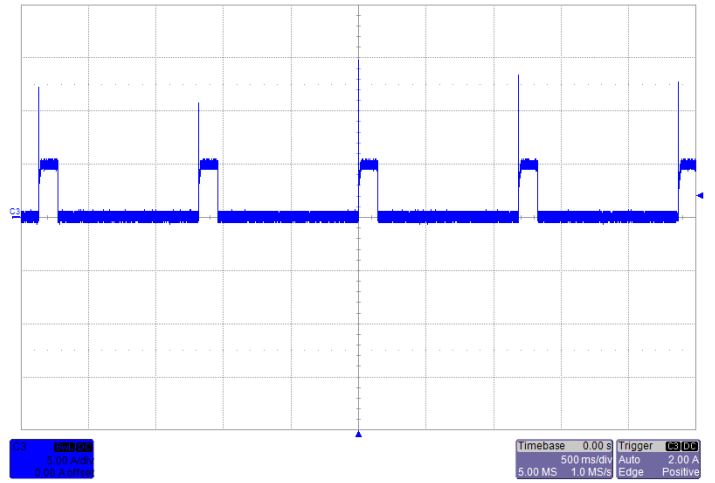
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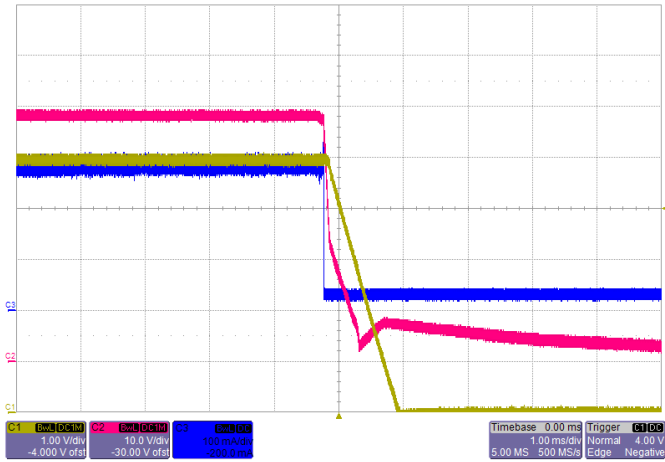
Transient Response V<sub>IN</sub>=58V, I<sub>o</sub>=50%~100%~50%



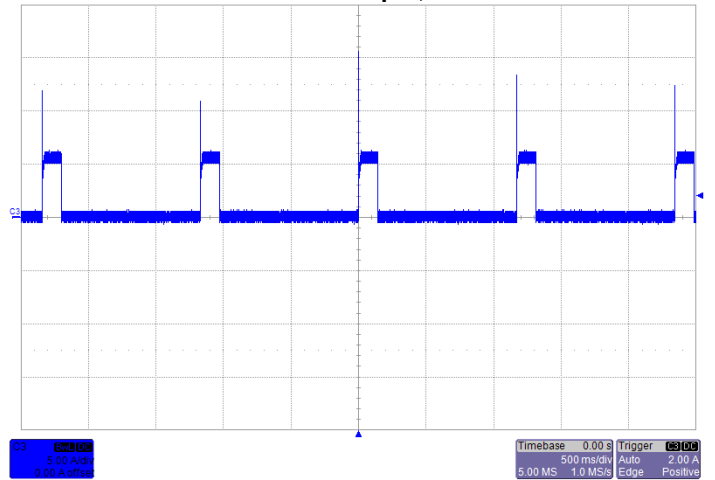
Power Down Vin=40V



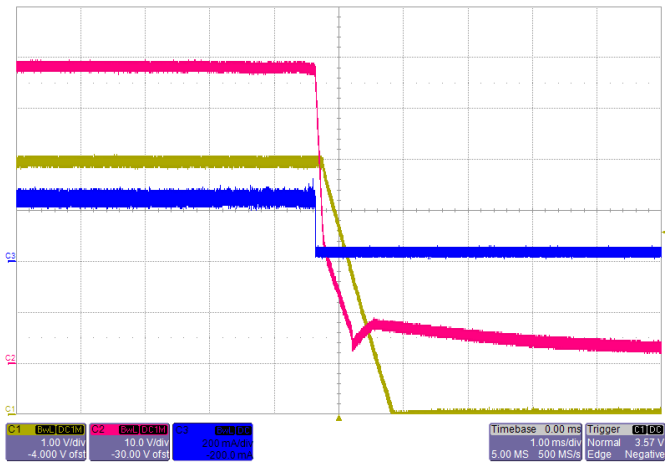
Short-Circuit Output, Vin=40V



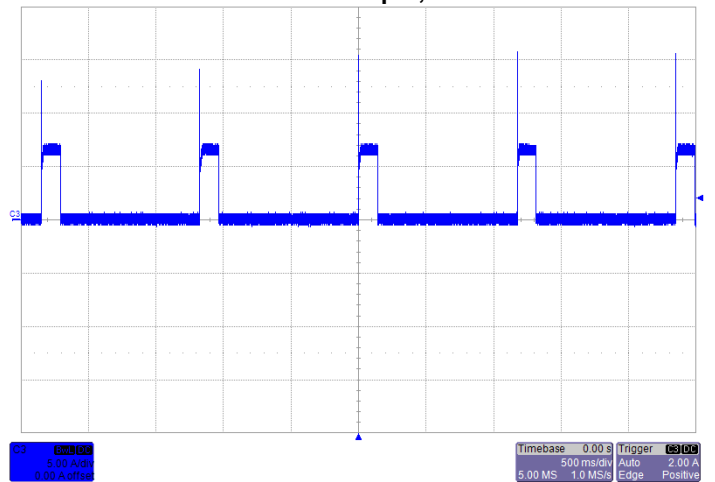
Power Down Vin=48V



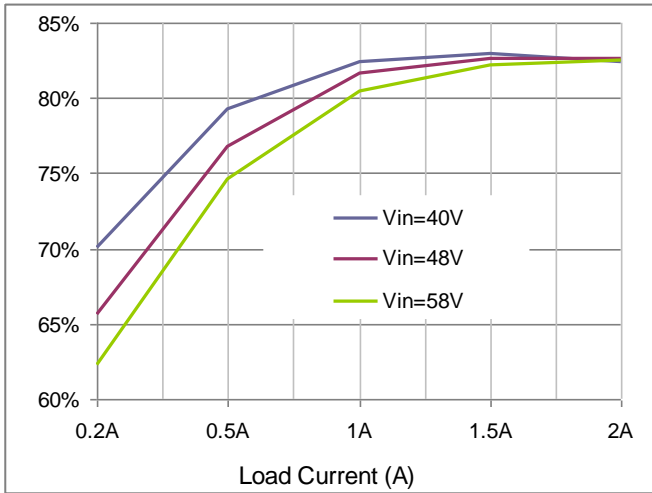
Short-Circuit Output, Vin=48V



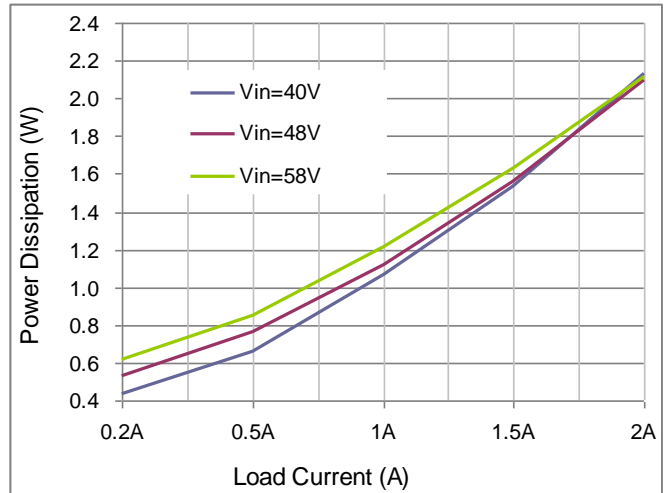
Power Down, Vin=58V



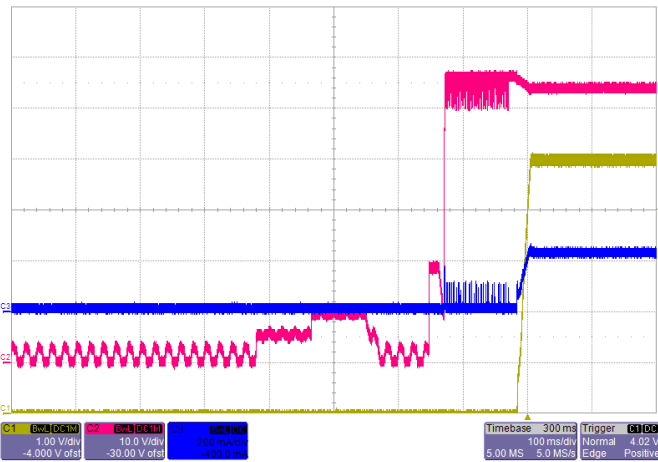
Short-Circuit Output Vin=58V



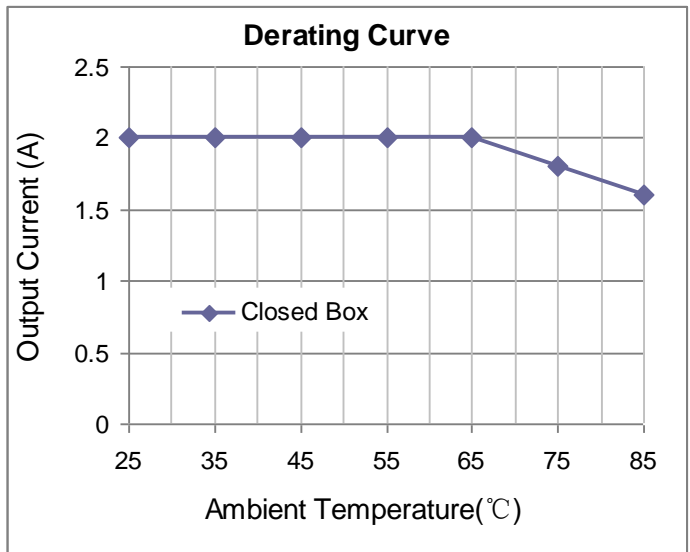
Efficiency



Power Dissipation



Startup from 56V PSE  
 C1: Output Voltage, C2: PSE Out, C3: Input Current  
 ILoad=100%Io,max

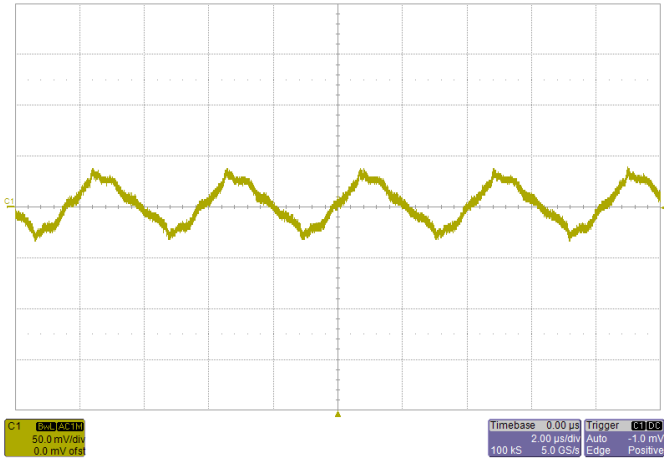


Derating

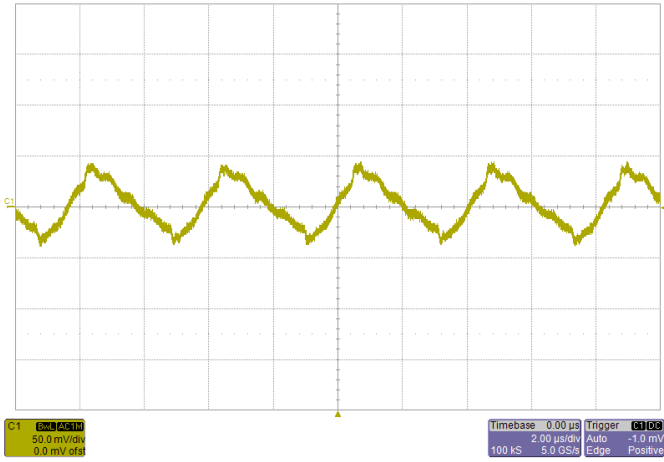
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General conditions: Output filter: 330µF AL-CAP

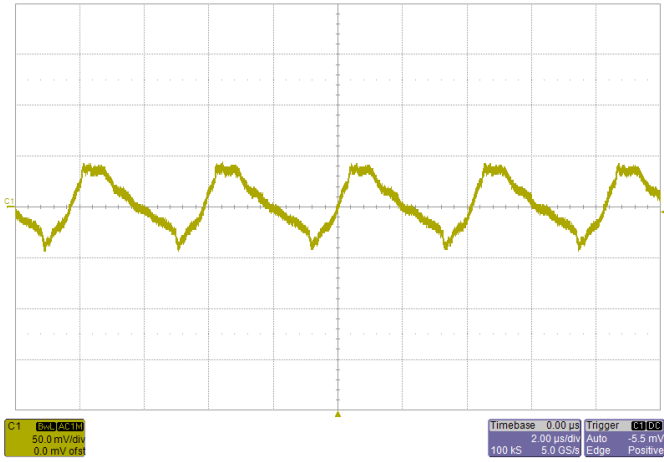
V<sub>out</sub>=12V



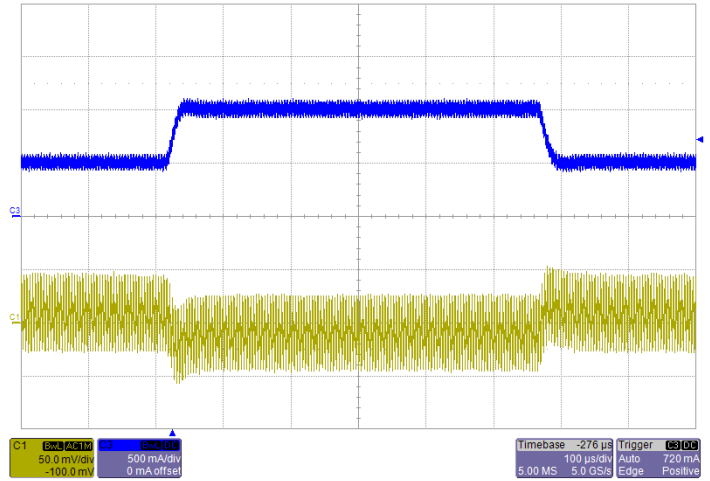
Noise V<sub>IN</sub>=40V, I<sub>o</sub>=1A, 5~20MHz Bandwidth



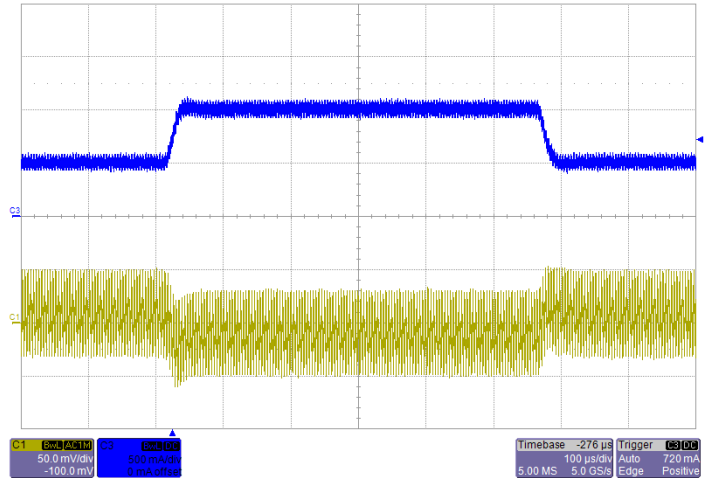
Noise V<sub>IN</sub>=48V, I<sub>o</sub>=1A, 5~20MHz Bandwidth



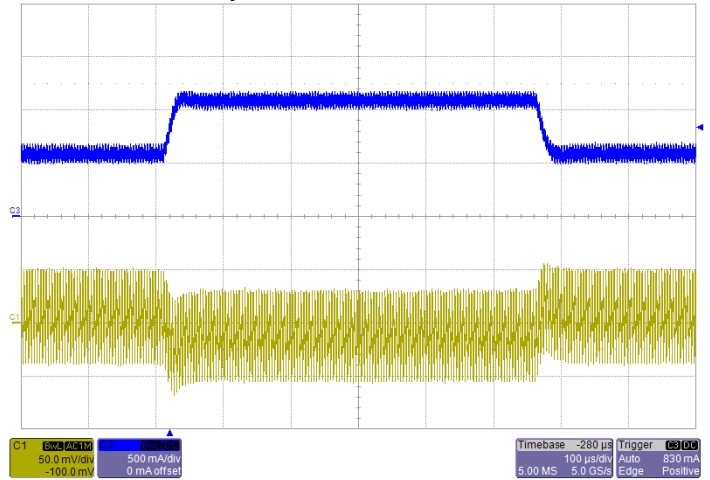
Noise V<sub>IN</sub>=58V, I<sub>o</sub>=1A, 5~20MHz Bandwidth



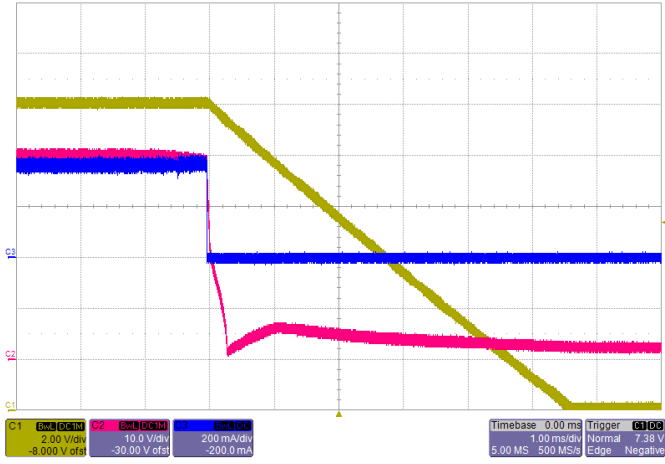
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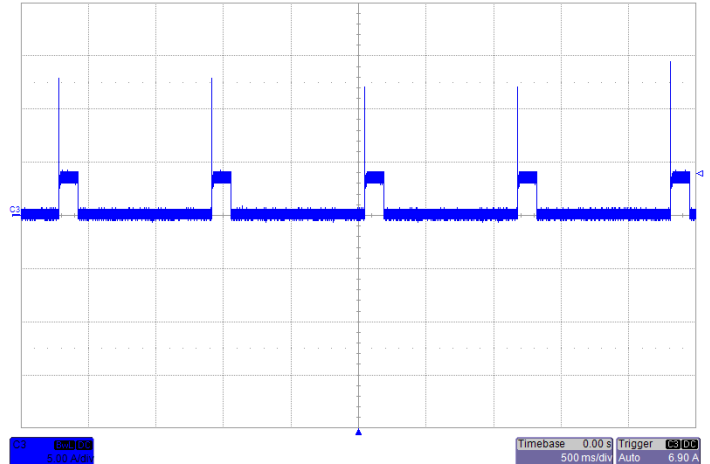
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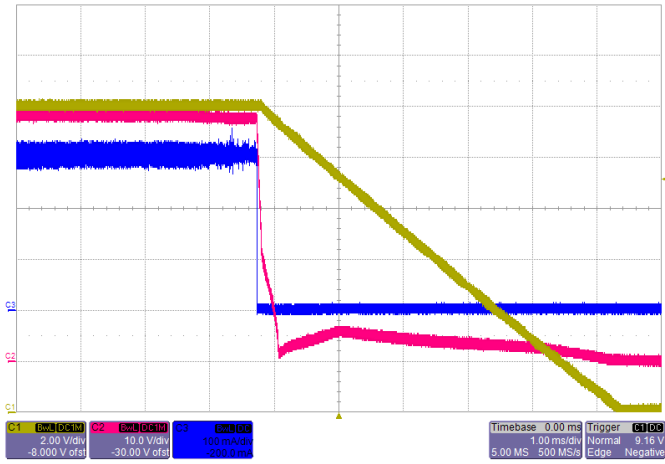
Transient Response V<sub>IN</sub>=58V, I<sub>o</sub>=50%~100%~50%



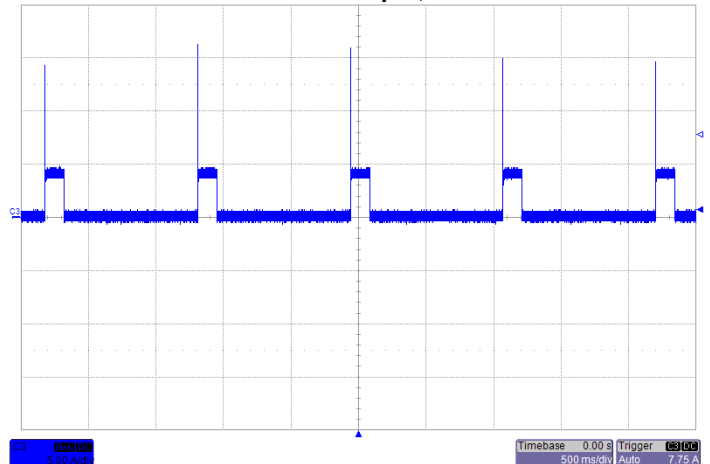
Power Down Vin=40V



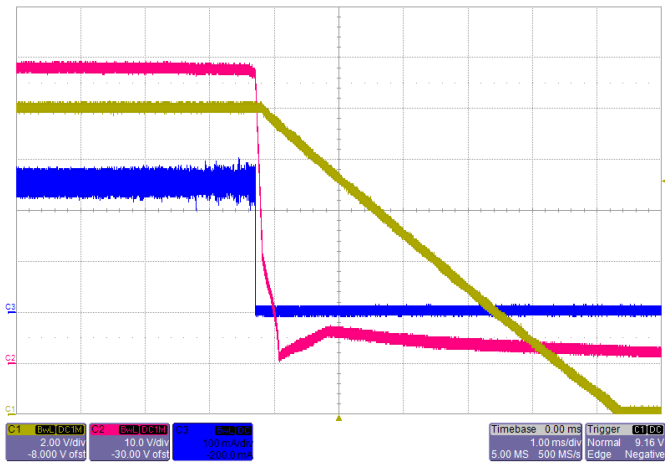
Short-Circuit Output, Vin=40V



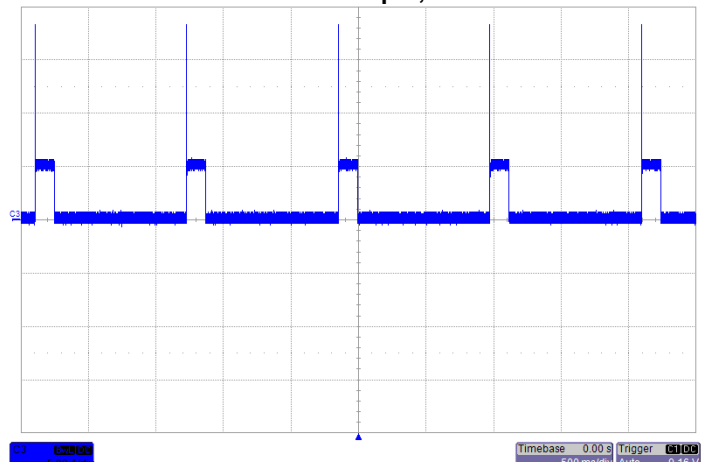
Power Down Vin=48V



Short-Circuit Output, Vin=48V

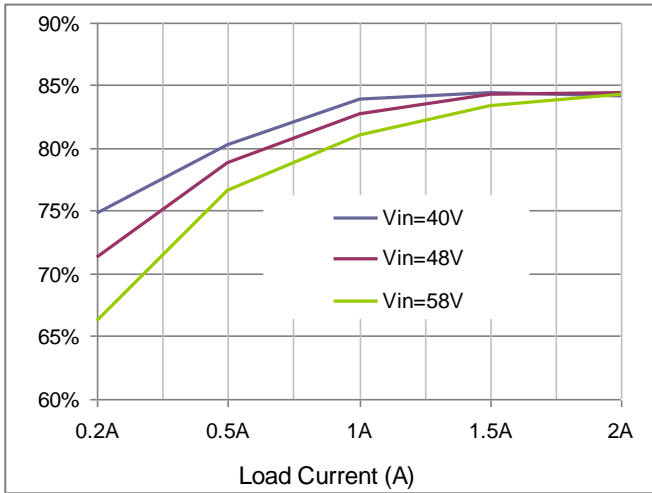


Power Down, Vin=58V

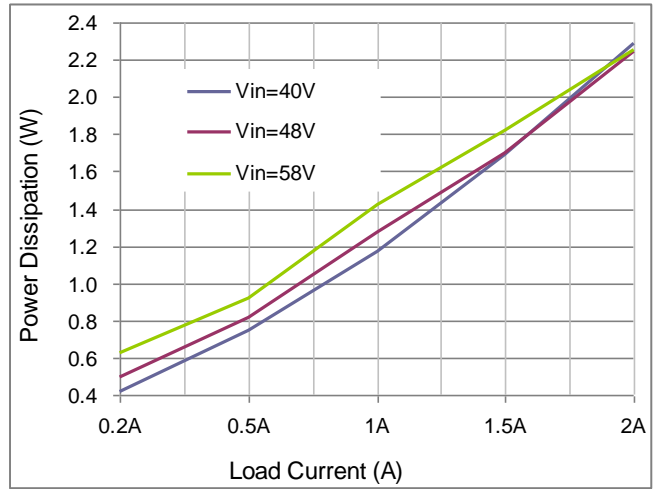


Short-Circuit Output Vin=58V

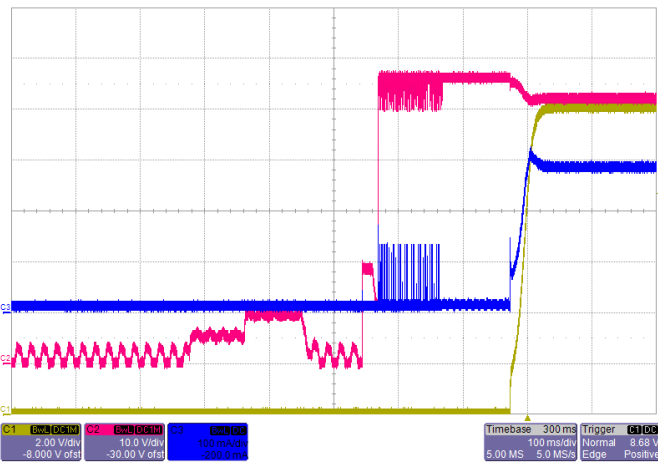




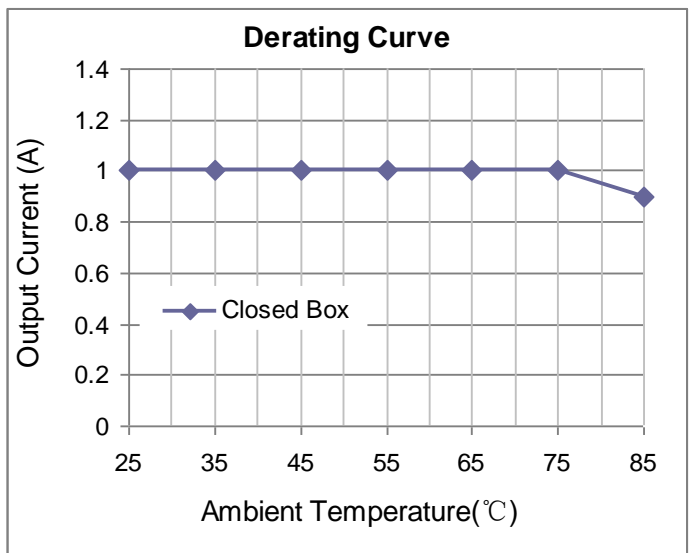
Efficiency



Power Dissipation



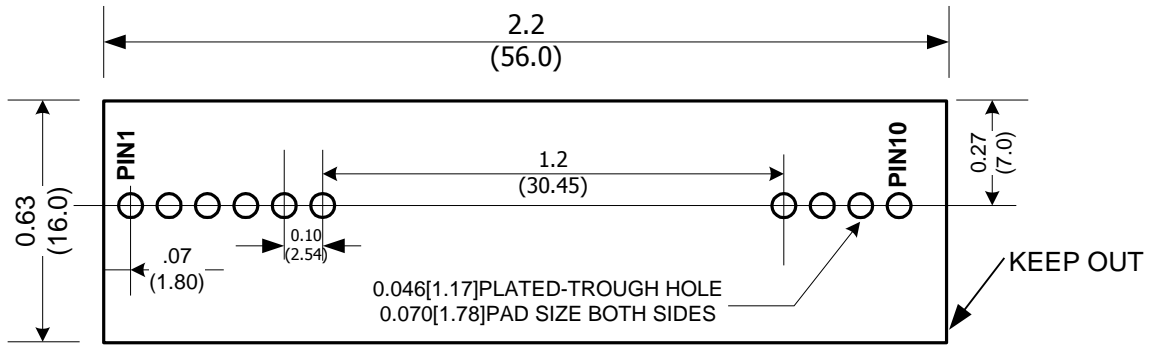
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Derating

### Recommended Hole Pattern

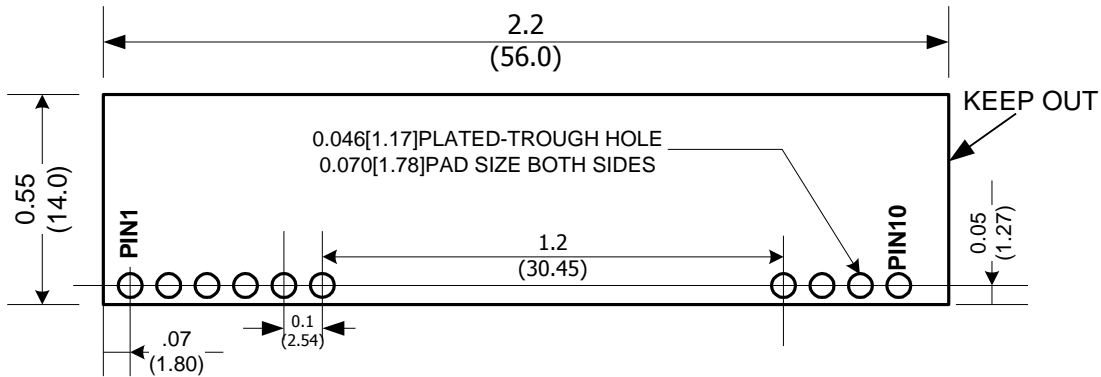
Dimensions are in inches (millimeters)



Component-side footprint

### Recommended Hole Pattern for "R" suffix

Dimensions are in inches (millimeters)



Component-side footprint