MQ7836
Isolated 36V ~ 72V input, single output 75W DC-DC Converter

FEATURES

- Wide operating voltage: 36~72V
- Single output:
  - 5V/15A
  - 9V/8.5A
  - 12V/6.5A
  - 24V/3A
  - 28V/3A
- Output power up to 75W
- High Efficiency 93%(48Vin, 12V Full load)
- Synchronous Rectifiers Technology
- Spectrum spreading technology for EMI friendly
- Over-current / Short-circuit protection
- Input under-voltage Protection
- Monotonic start-up
- Minimal space on PCB:
  - 50.8mm x 25.4mm x 17mm or
  - 2.0in x 1.0 in x 0.67in
- Wide Operating Temperature: -40℃~+85℃
- RoHS Compliant available

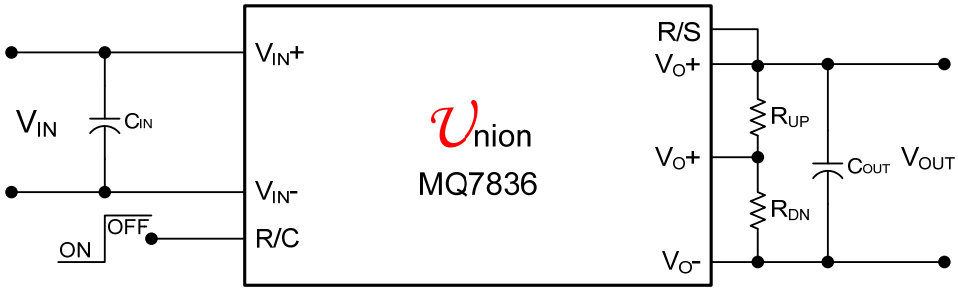
APPLICATIONS

- Telecommunication
- Data communication
- Distribute Power Architecture

Description

The MQ7836 Power Modules are isolated single dc-dc converter that operate over a wide input voltage range of 36Vdc to72Vdc and provide a precisely (1%) regulated dc output in 1”*2” size. Such a module is suitable to application with 48V application. The modules of 12V output have a maximum output power 75W with typical efficiency to 93% at full load.

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

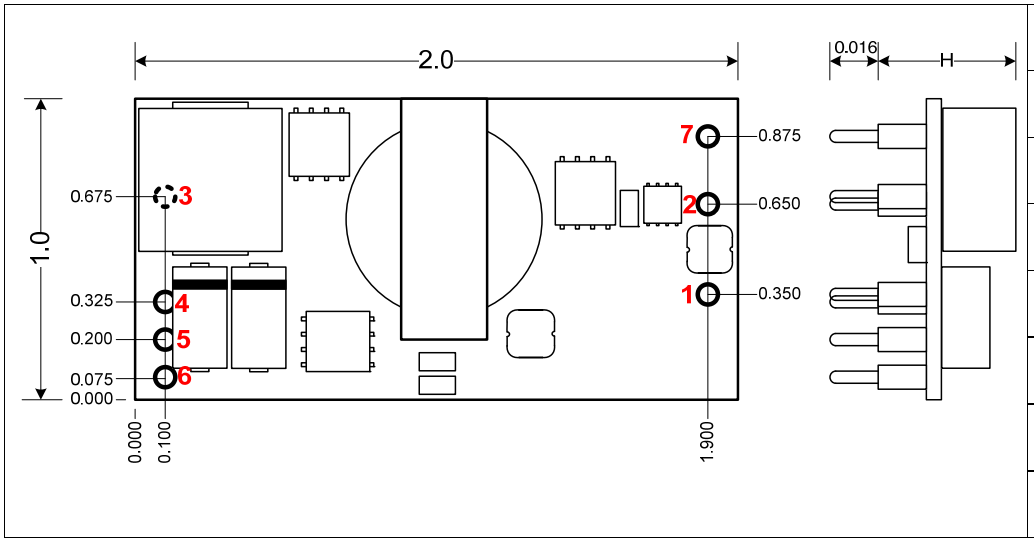


Performance Specifications (at TA=+25℃)

Model	Input V_{IN} Range (V)	Output				Efficiency (%)
		P_{OUT} (W)	V_{O1}(V)	Regulation		
				Line (%)	Load (%)	
MQ7836T050	36~72	75	5V	1	1	92
MQ7836T090			9V			93
MQ7836T120			12V			93
MQ7836T240			24V			92
MQ7836T280			28V			92
MQ7836ET050	36~72	75	5V	1	1	92
MQ7836ET090			9V			93
MQ7836ET120			12V			93
MQ7836ET240			24V			92
MQ7836ET280			28V			92

Mechanical Outline Diagram

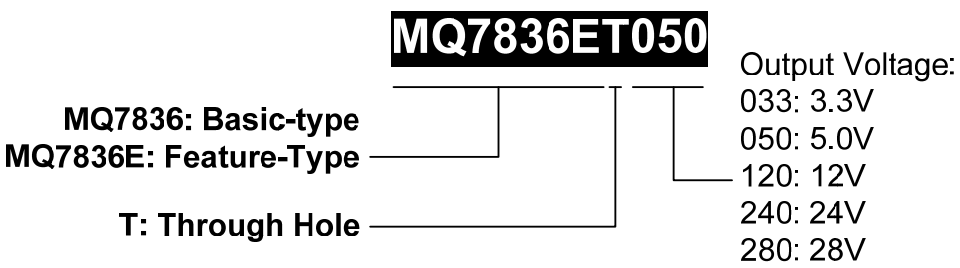
Unit: inches
Tolerances: x.x ± 0.5 mm (0.02 in.), x.xx ± 0.25 mm (0.010 in.), unless otherwise noted.



PIN	Description
1	Vin-
2	Vin+
3	Vo+
4	Vo-
5*	R/S: Remote Sense
6*	Trim
7*	R/C: Remote Control

***Note: Available for MQ7836E**

Ordering Information



Union Microsystems, Shanghai
Tel: +86 21 5109 5021
Fax: +86 21 5106 2878
sales@union-pwr.com
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Absolute Maximum Ratings

Note: These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability. Proper operation under conditions other than those listed in the Performance Specifications Table is not implied.

Parameter	Symbol	Min	Max	Unit
Input Voltage	V_{IN}	-0.3	80	V
Storage Temperature	T_{STG}	-40	125	℃

MQ7836-050 Electrical Specifications: *(T_A=+25°C)*

Parameter	Condition	Symbol	Min	Typ	Max	Unit
Input Voltage Range		V_{IN}	36		72	V
Operating range		$V_{IN.oip}$	36		72	V
Output Current		Io	0		15	A
Output Voltage Set point	100% load	ΔVo	-2		+2	%
Temperature Regulation	T_A= $T_{A.MIN}$ To $T_{A.MAX}$	-		0.4		%$V_{O.SET}$
Overcurrent Protection				12	15	A
Output Ripple and Noise Voltage	Io=6A, 0~20MHz, refer to corresponding character figure			60	100	mVpp
Line Regulation	See each output's corresponding character figure			0.5	1	%
Load Regulation				0.5	1	%
Transient Response	Load step from 50%~100%~50% Io.max Co=1000uF Al-cap			250	300	mVpp
				1	1.5	mS

General Specifications

Parameter	Condition	Symbol	Min	Typ	Max	Unit
Under Voltage Lockout Trip Level	Rising			30		V
	Falling			29		
Start-up Delay			50		300	mS
Start-up Time	15A resistive load, no external output capacitors			50	100	mS
Switching Frequency		Fo		250		kHz
Operating Temperature	Natural convection		-40		85	℃
Vibration	3 Axes, 5 Min Each	10~55Hz，0.35mm，5g				
	3 Axes, 6 Times Each	Peak Deviation 300g，Settling Time 6mS				
MTBF		500,000				Hour

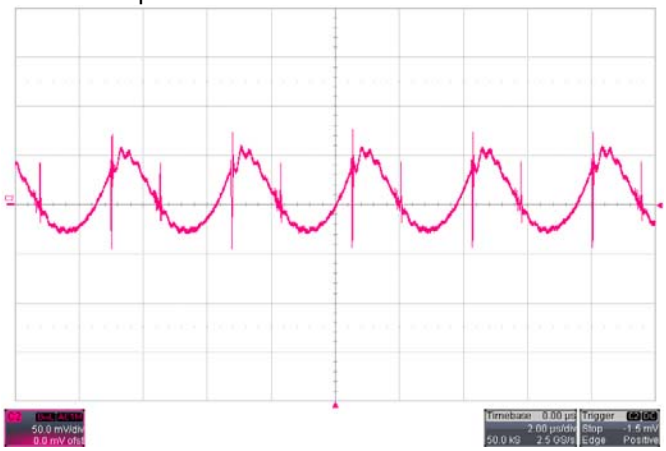
Typical Characteristics – 5V output

General conditions:

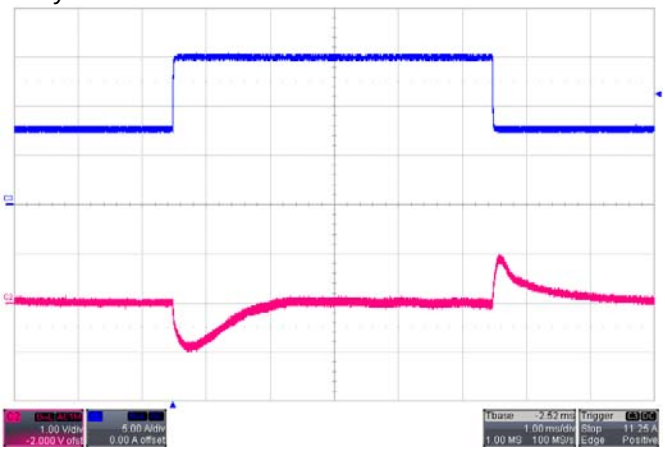
Input filter: 68uF/100V Electrolytic Capacitors

Output filter: 220uF/6.3V Electrolytic Capacitors

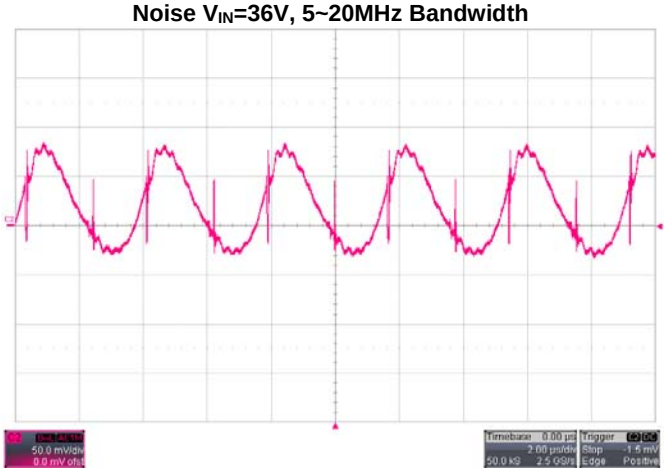
Maximum capacitive load: Resistive full load with 10000uF Electrolytic CAP



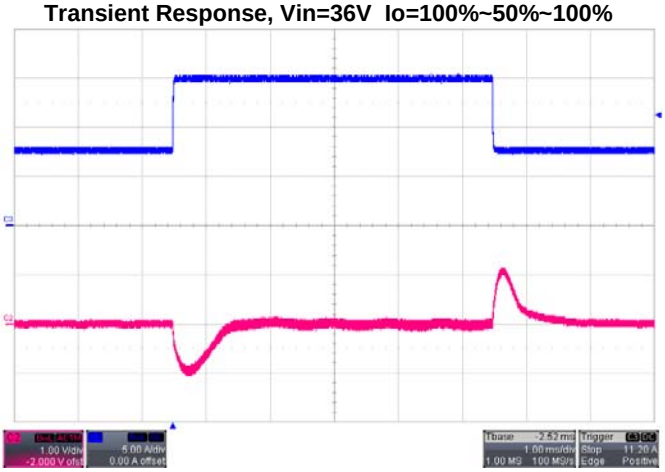
Noise V_{IN}=36V, 5~20MHz Bandwidth



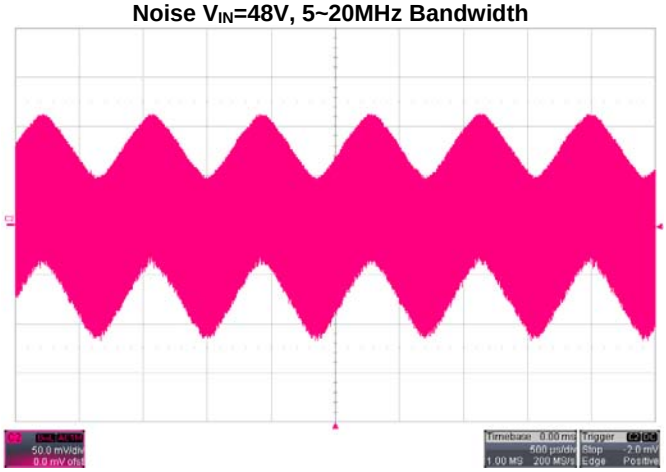
Transient Response, Vin=36V Io=100%~50%~100%



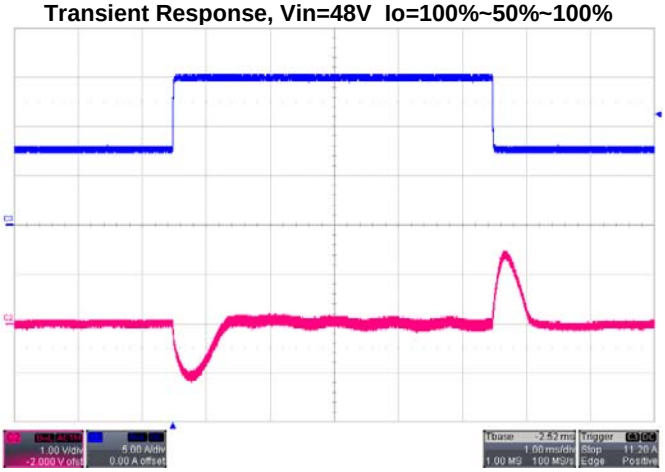
Noise V_{IN}=48V, 5~20MHz Bandwidth



Transient Response, Vin=48V Io=100%~50%~100%



Noise V_{IN}=72V, 5~20MHz Bandwidth



Transient Response, Vin=72V Io=100%~50%~100%

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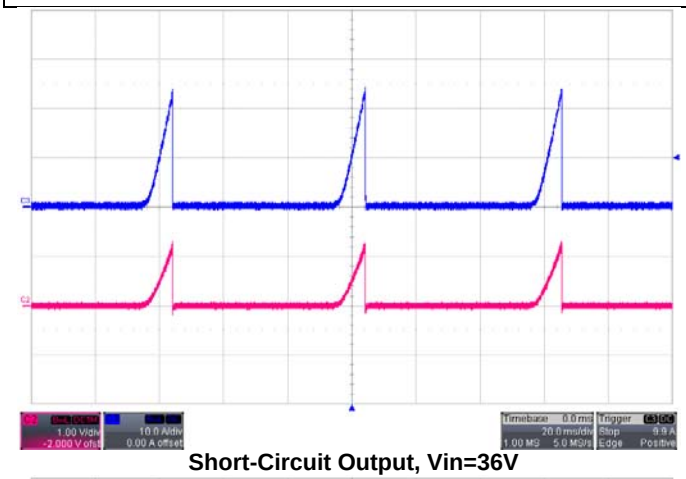
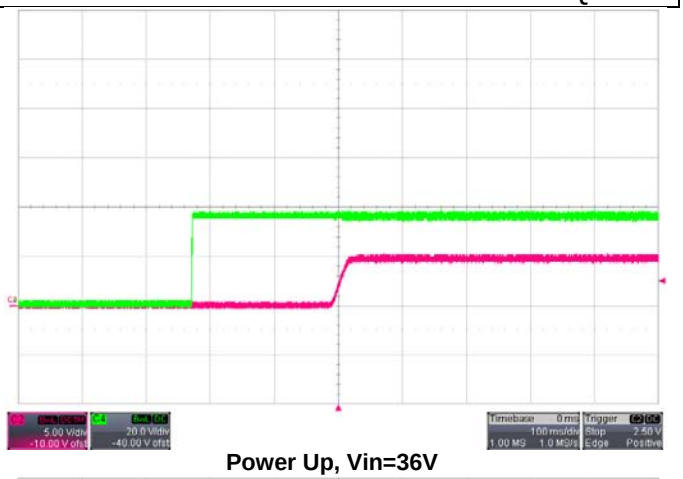
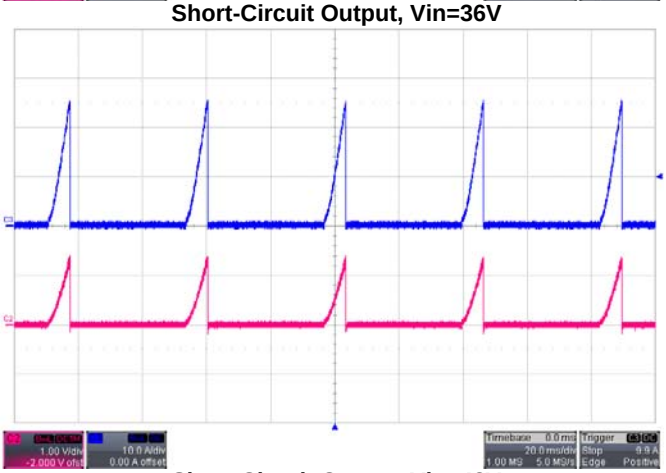


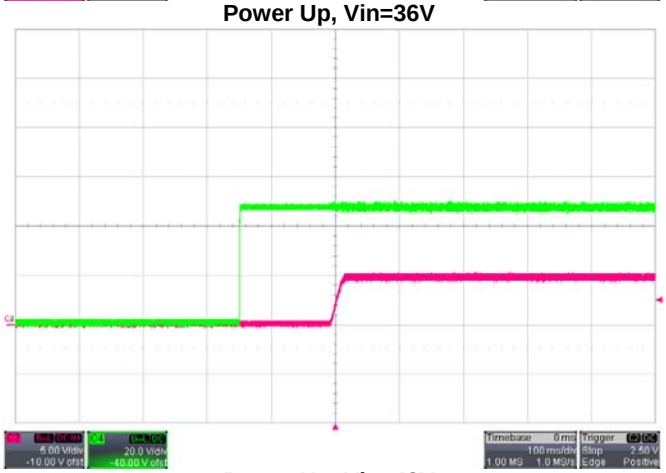
Short-Circuit Output, Vin=36V



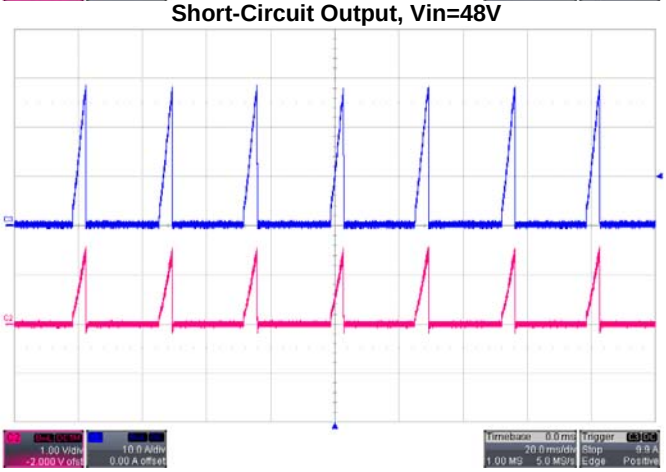
Power Up, Vin=36V



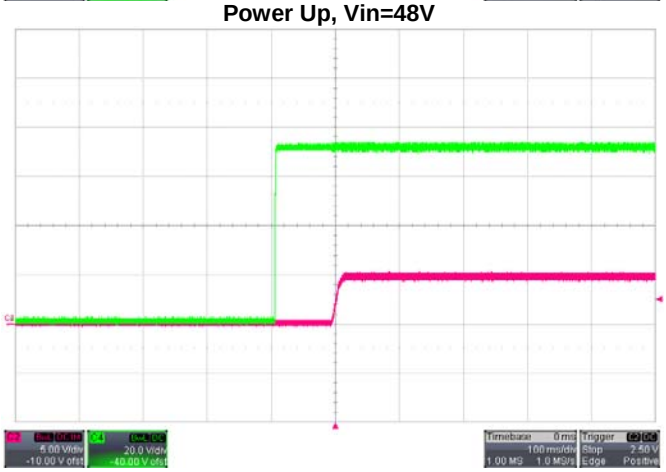
Short-Circuit Output, Vin=48V



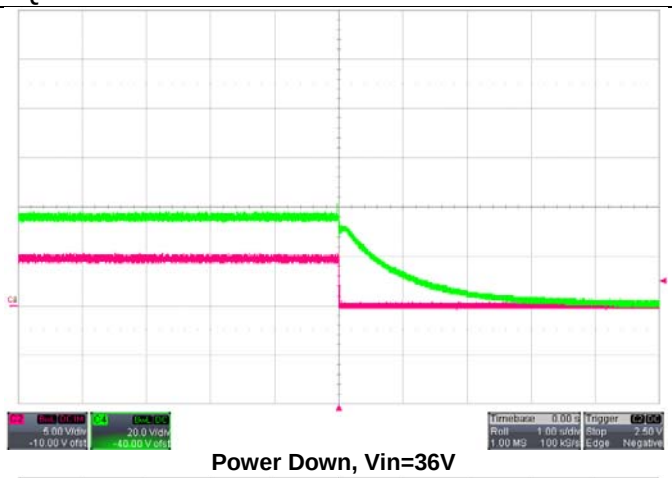
Power Up, Vin=48V



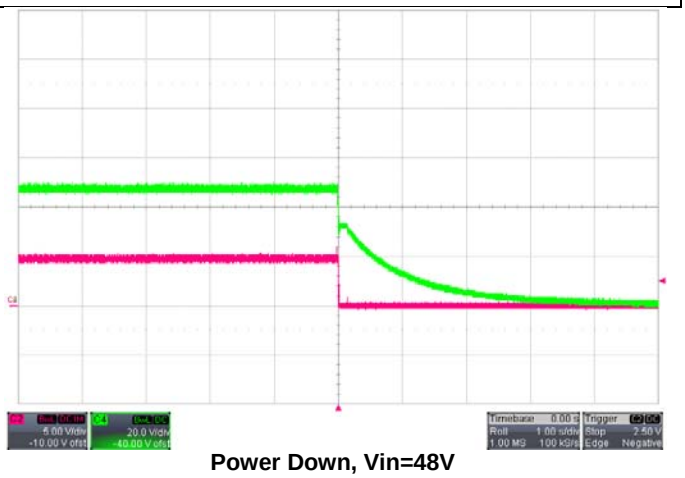
Short-Circuit Output, Vin=72V



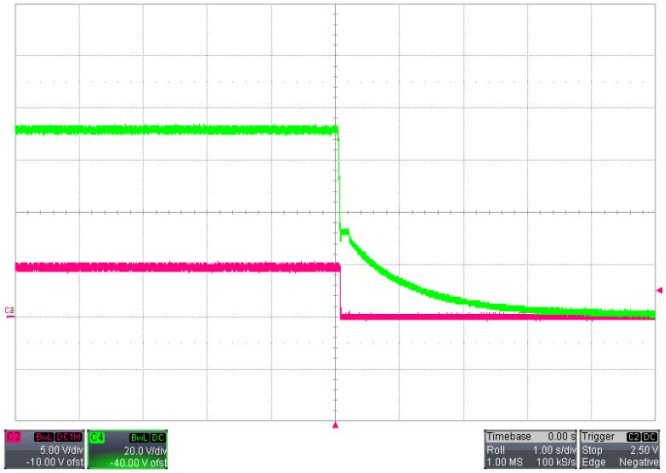
Power Up, Vin=72V



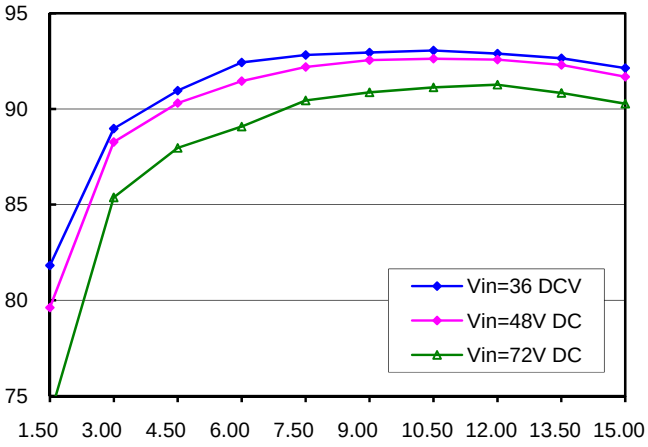
Power Down, Vin=36V



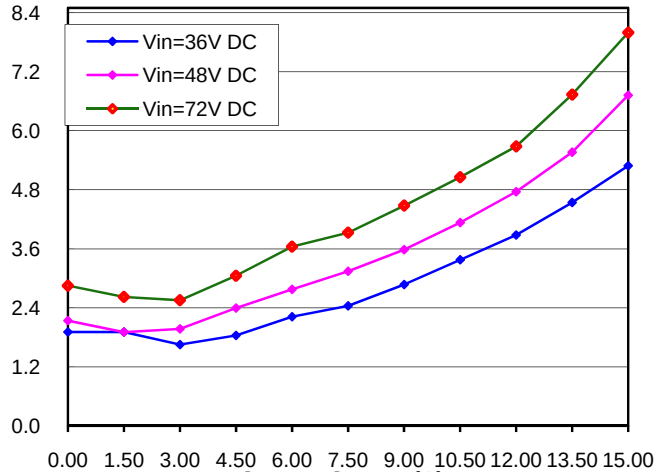
Power Down, Vin=48V



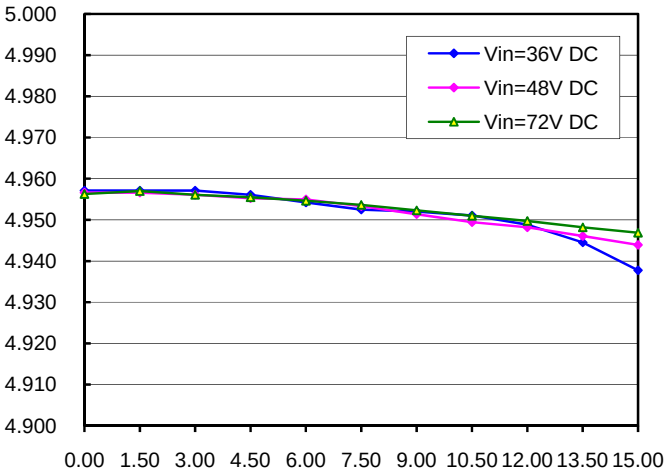
Power Down, Vin=72V



Output Current(A)
Efficiency（%）



Output Current(A)
Power Dissipation(w)



Output Current(A)
Regulation(V)

Derating

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Fax:*+86 21 5106 2878*
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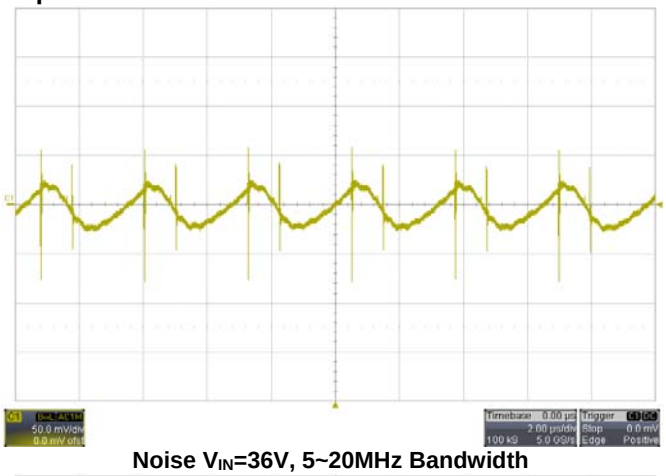
Typical Characteristics – 9V output

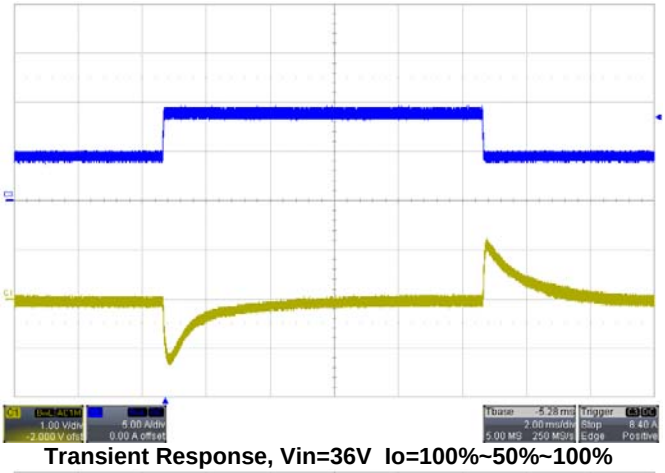
General conditions:

Input filter: 47uF/100V Electrolytic Capacitor

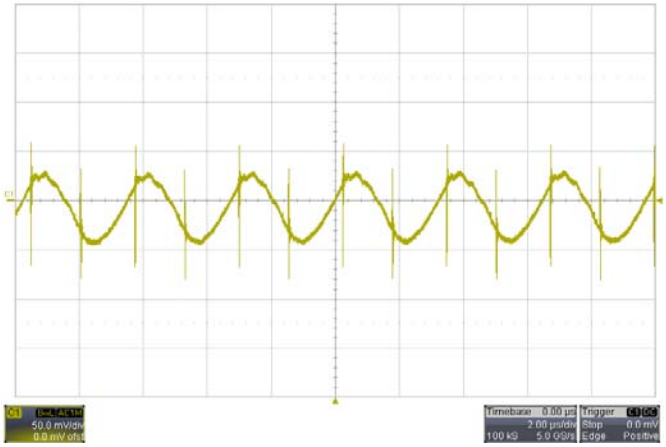
Output filter: N/A



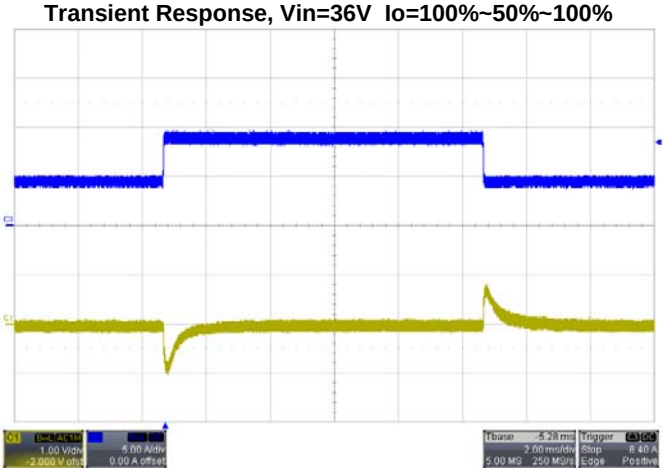
Noise V_{IN}=36V, 5~20MHz Bandwidth



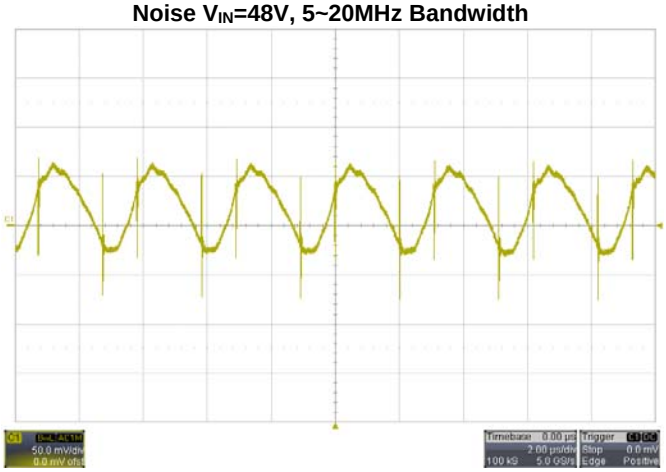
Transient Response, Vin=36V Io=100%~50%~100%



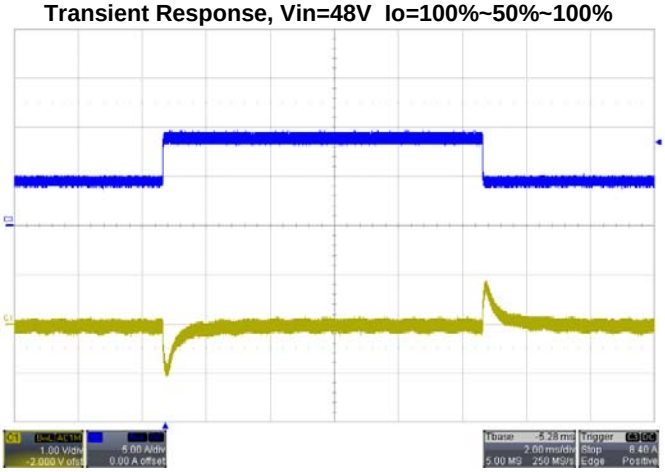
Noise V_{IN}=48V, 5~20MHz Bandwidth



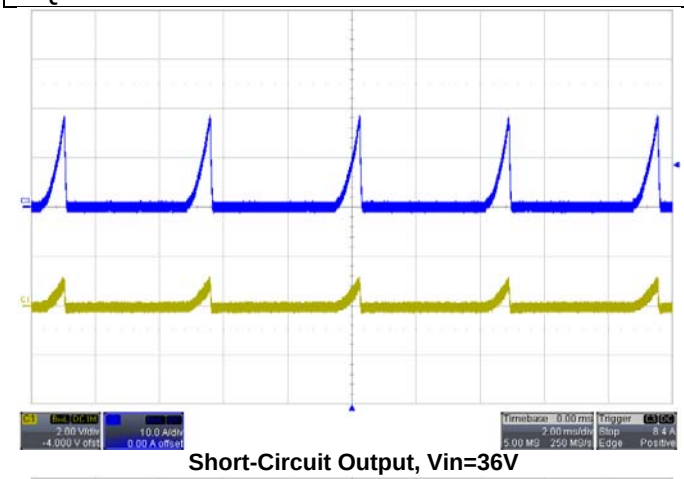
Transient Response, Vin=48V Io=100%~50%~100%



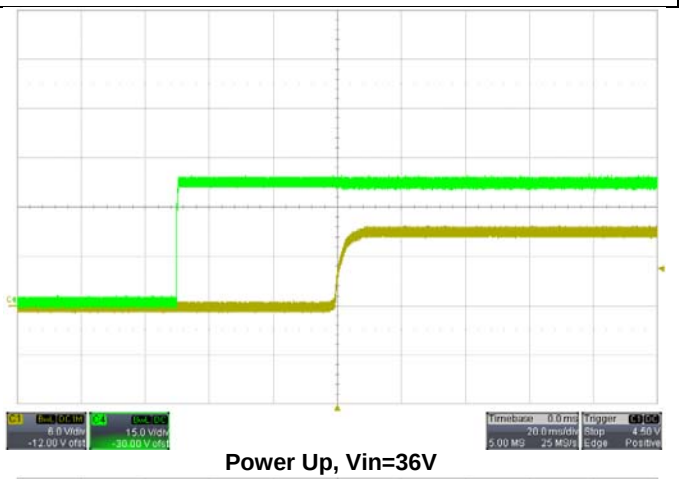
Noise V_{IN}=72V, 5~20MHz Bandwidth



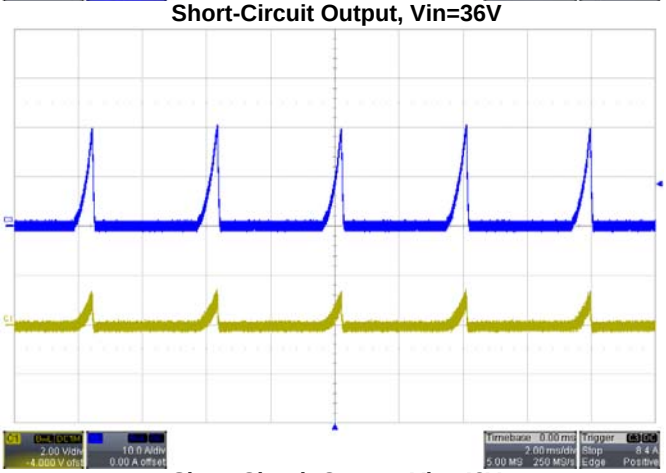
Transient Response, Vin=72V Io=100%~50%~100%



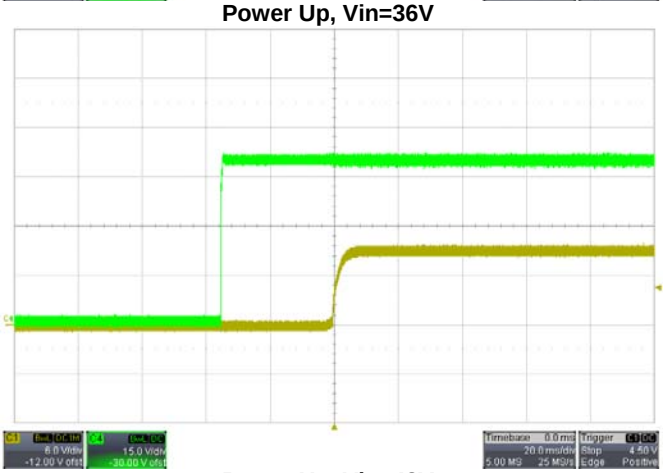
Short-Circuit Output, Vin=36V



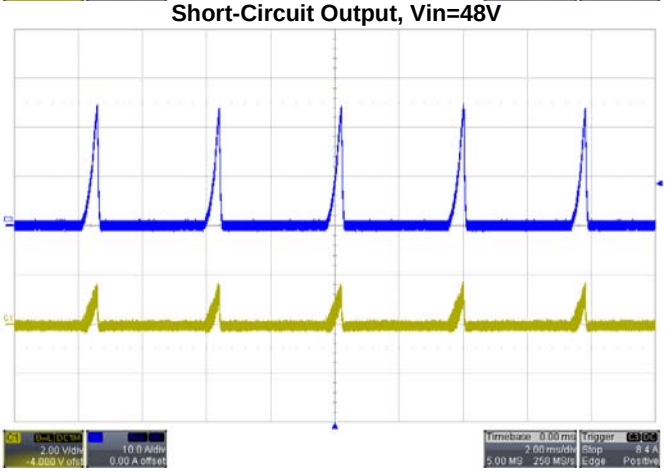
Power Up, Vin=36V



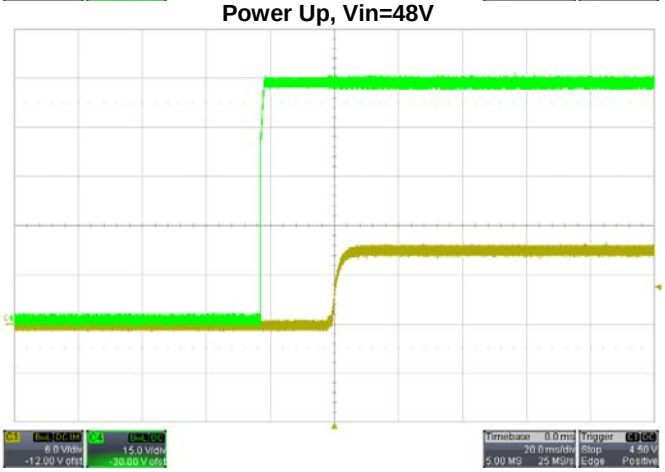
Short-Circuit Output, Vin=48V



Power Up, Vin=48V



Short-Circuit Output, Vin=72V



Power Up, Vin=72V

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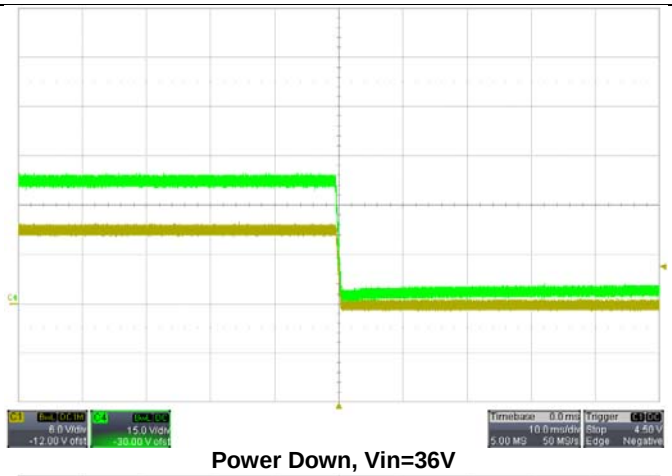
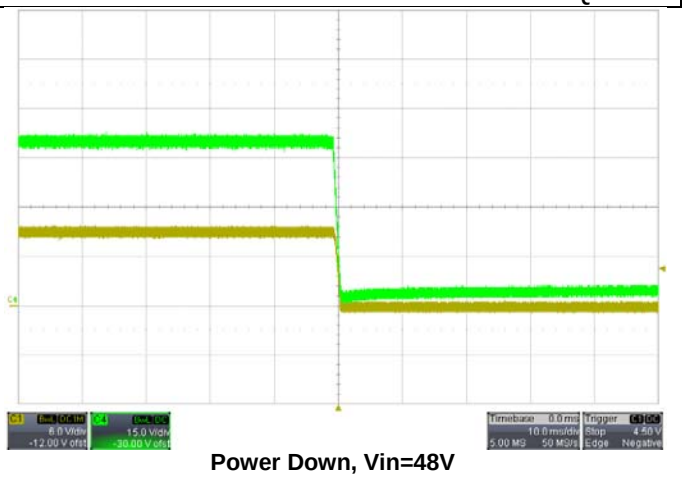
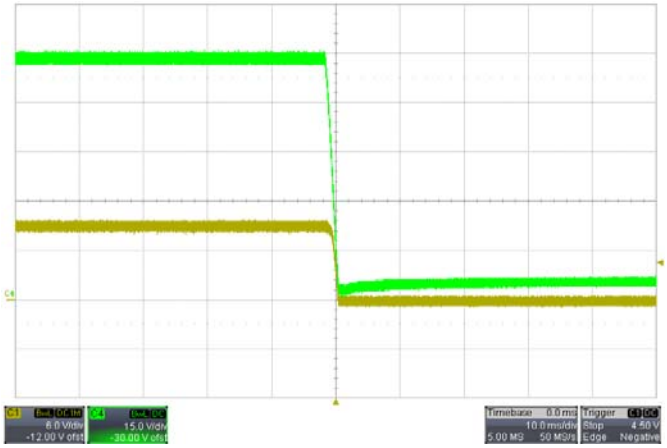


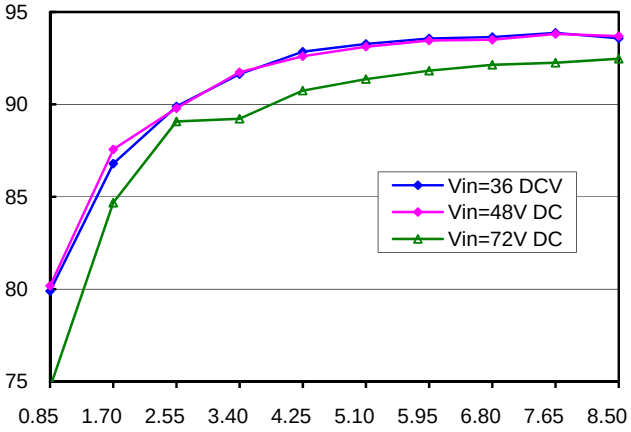
Power Down, Vin=36V



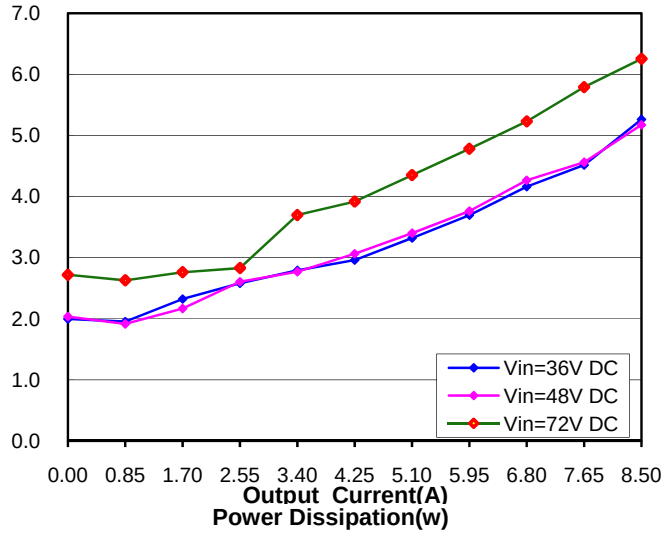
Power Down, Vin=48V



Power Down, Vin=72V

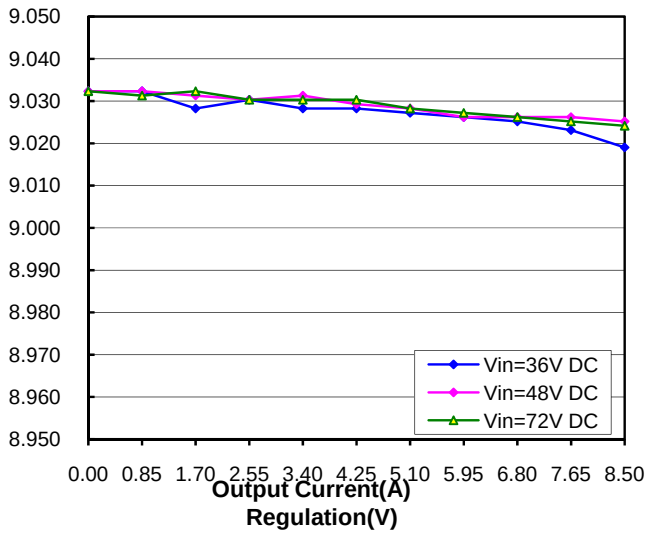


Output Current(A)
Efficiency（%）



Output Current(A)
Power Dissipation(w)

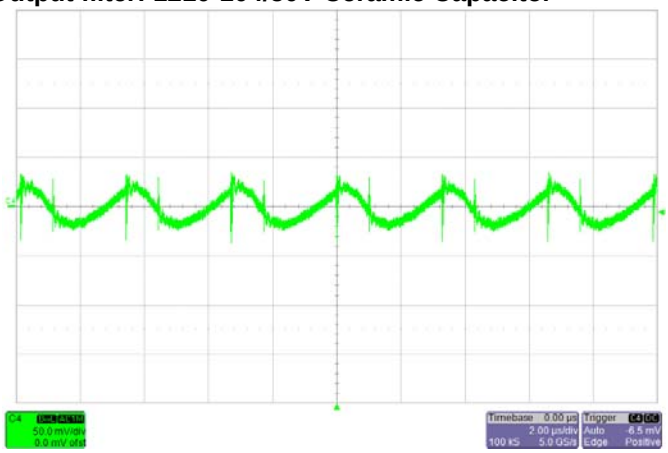
Derating



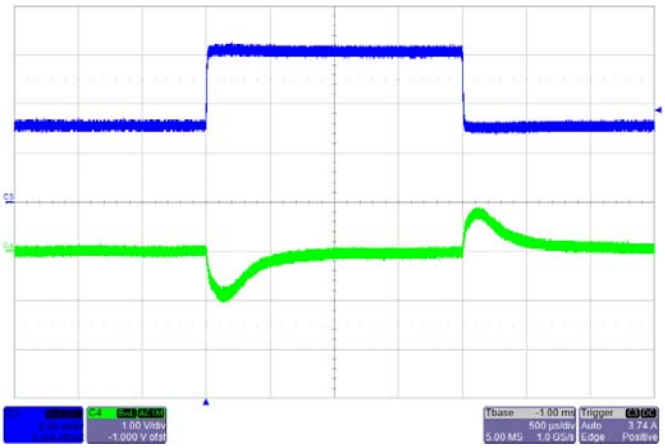
Output Current(A)
Regulation(V)

Typical Characteristics – 12V output

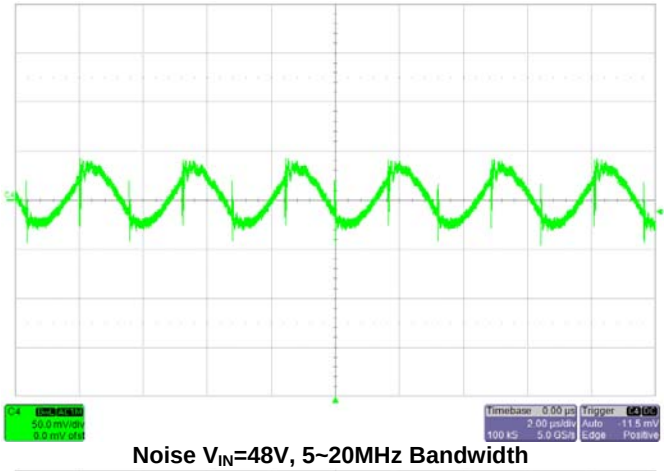
General conditions:
Input filter: 47uF/100V Electrolytic Capacitor
Output filter: 1210-104/50V Ceramic Capacitor



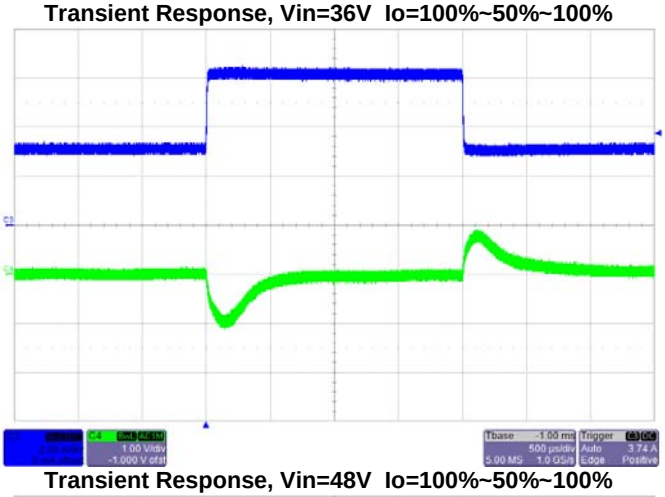
Noise V_{IN}=36V, 5~20MHz Bandwidth



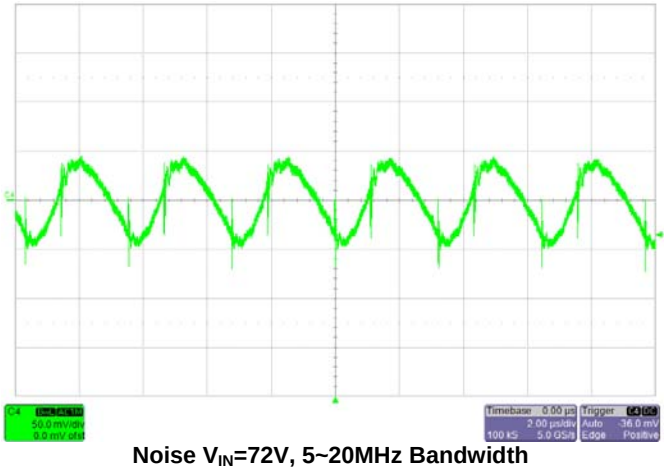
Transient Response, Vin=36V Io=100%~50%~100%



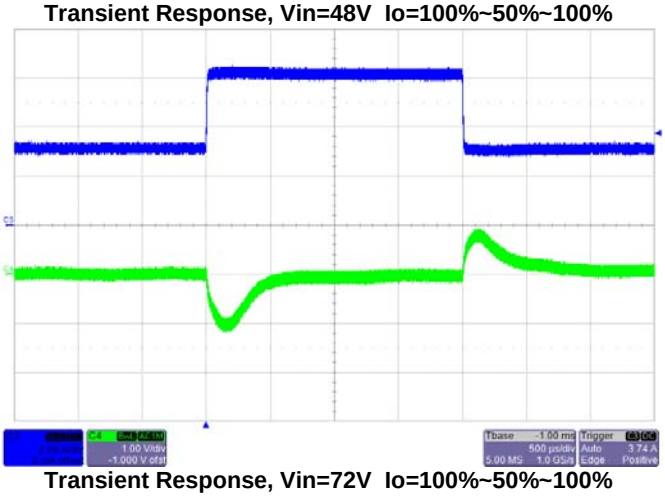
Noise V_{IN}=48V, 5~20MHz Bandwidth



Transient Response, Vin=48V Io=100%~50%~100%



Noise V_{IN}=72V, 5~20MHz Bandwidth



Transient Response, Vin=72V Io=100%~50%~100%

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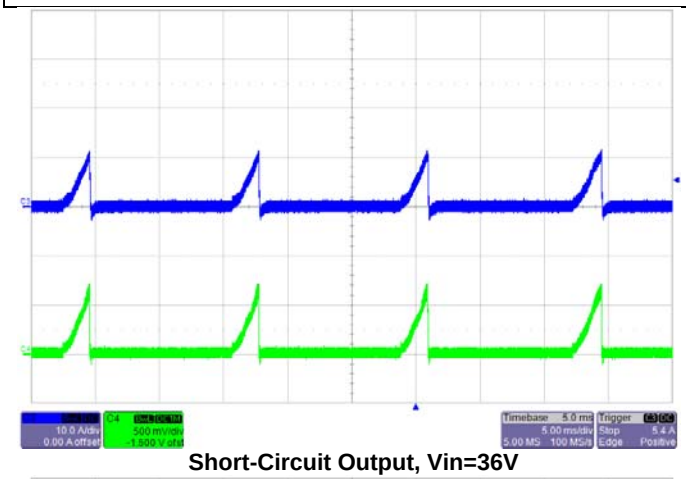
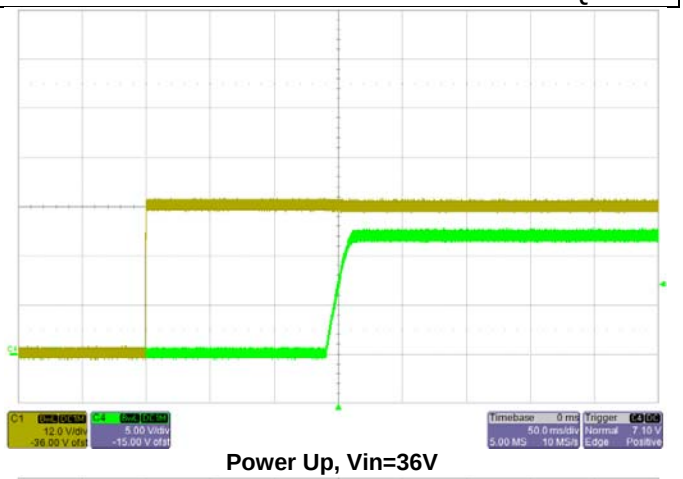
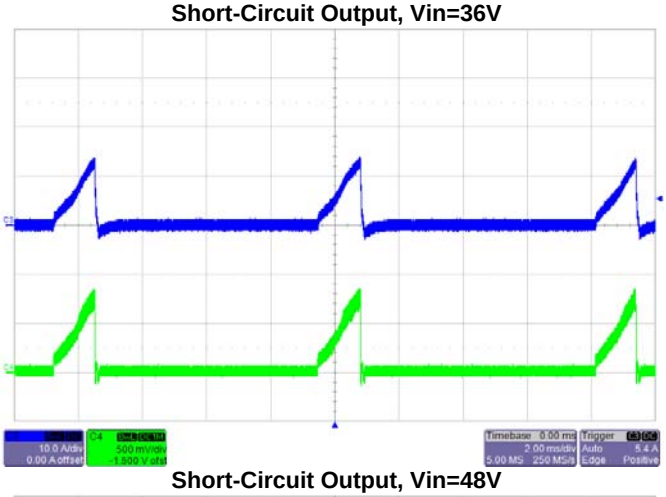


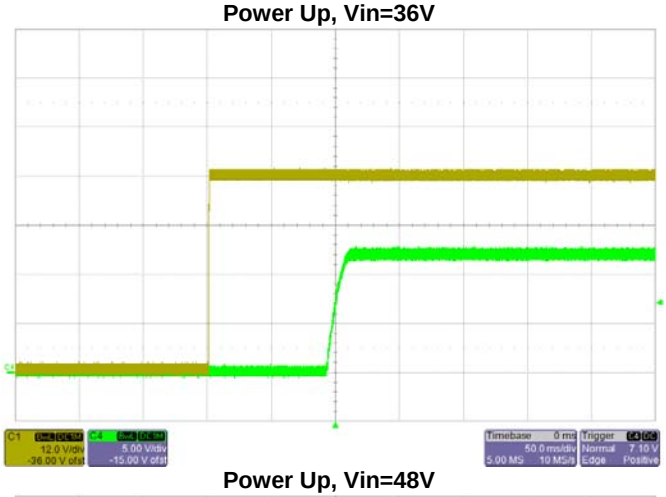
Short-Circuit Output, Vin=36V



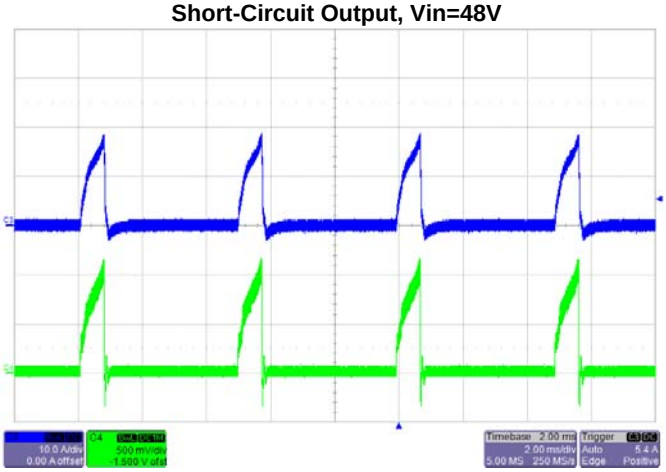
Power Up, Vin=36V



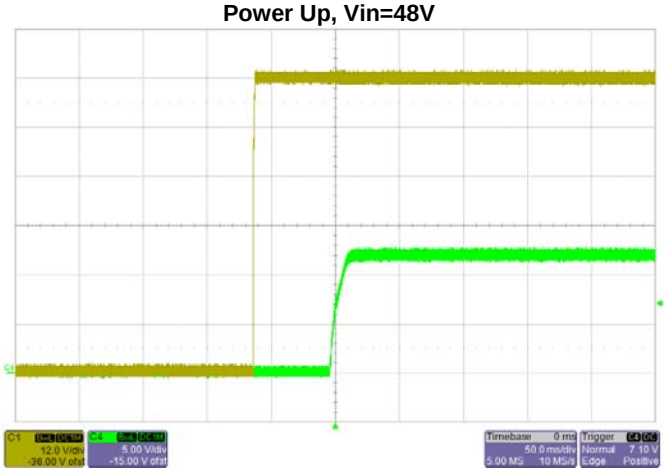
Short-Circuit Output, Vin=48V



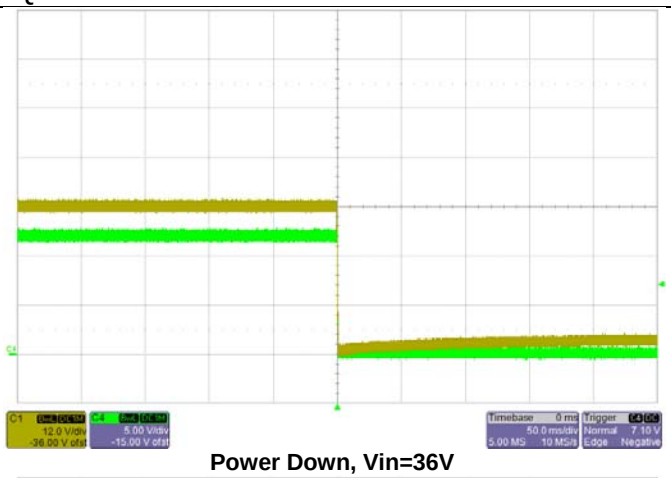
Power Up, Vin=48V



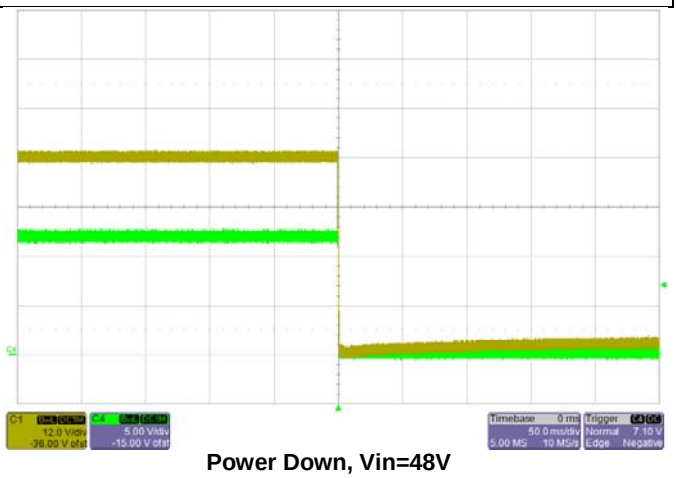
Short-Circuit Output, Vin=72V



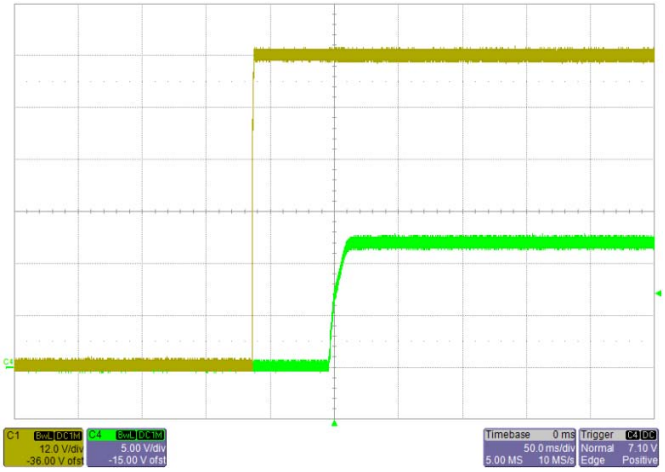
Power Up, Vin=72V



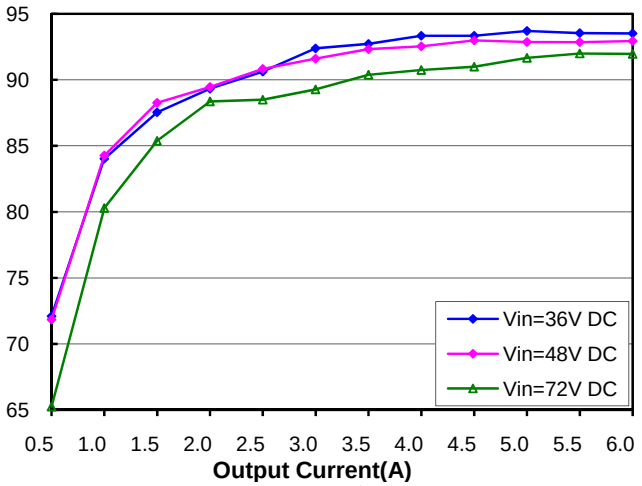
Power Down, Vin=36V



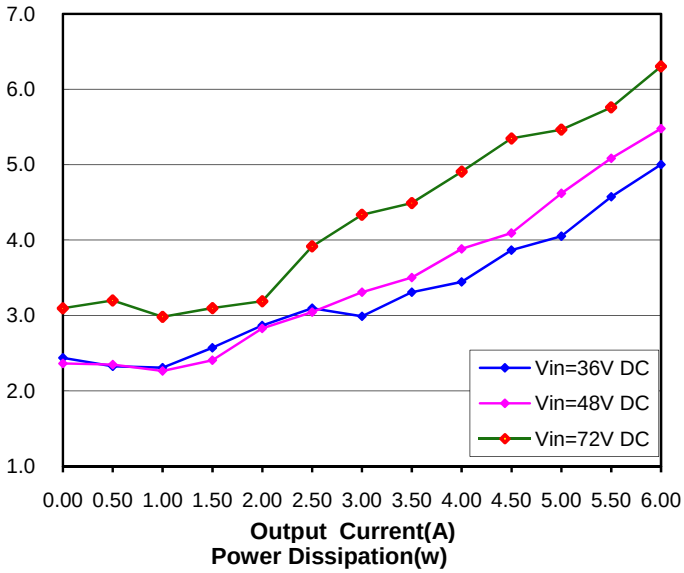
Power Down, Vin=48V



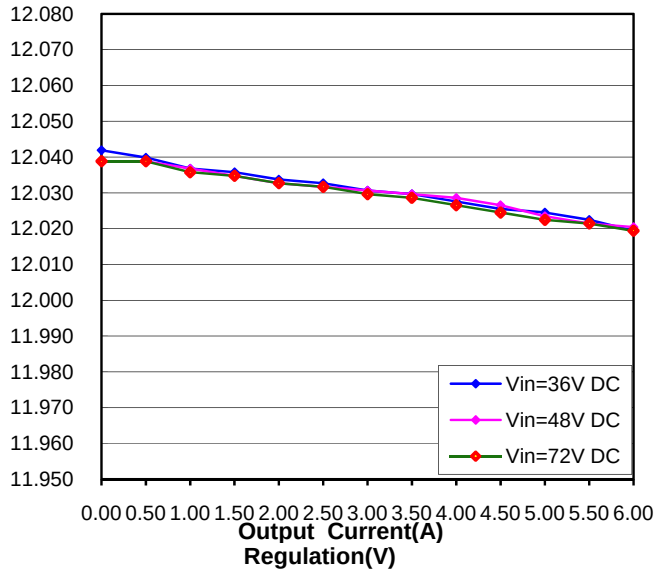
Power Down, Vin=72V



Output Current(A)
Efficiency（%）



Output Current(A)
Power Dissipation(w)



Output Current(A)
Regulation(V)

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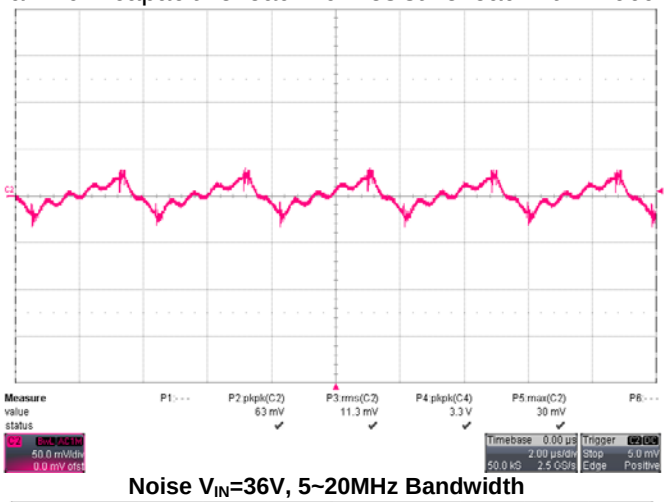
Typical Characteristics – 28V output

General conditions:

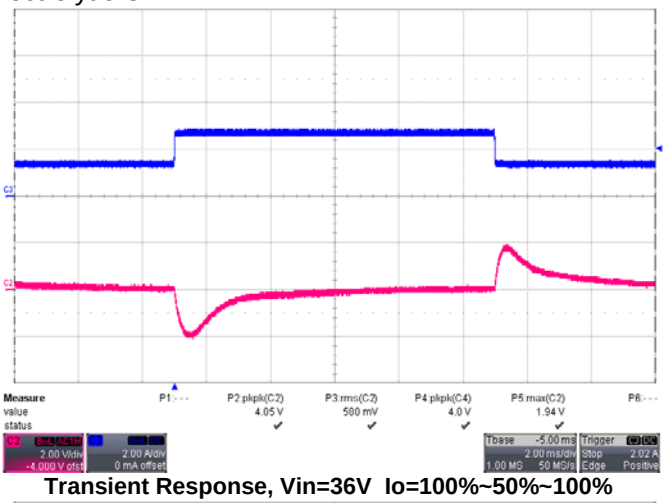
Input filter: 47uF/100V Electrolytic Capacitor

Output filter: 100uF/100V Electrolytic Capacitor

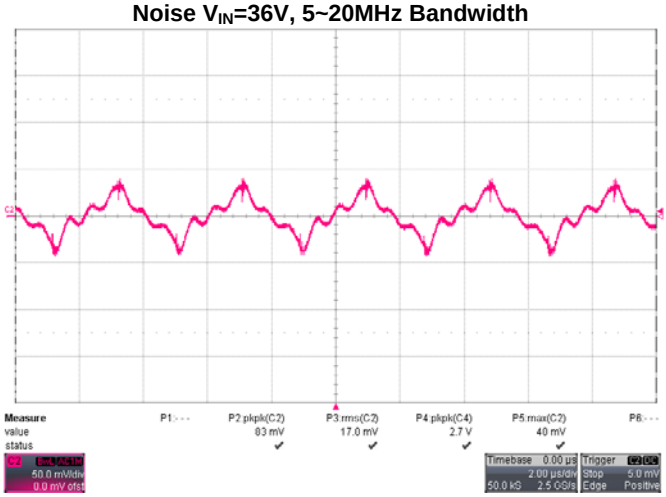
Maximum capacitive load: Full resistive load with 4700uF Electrolytic CAP



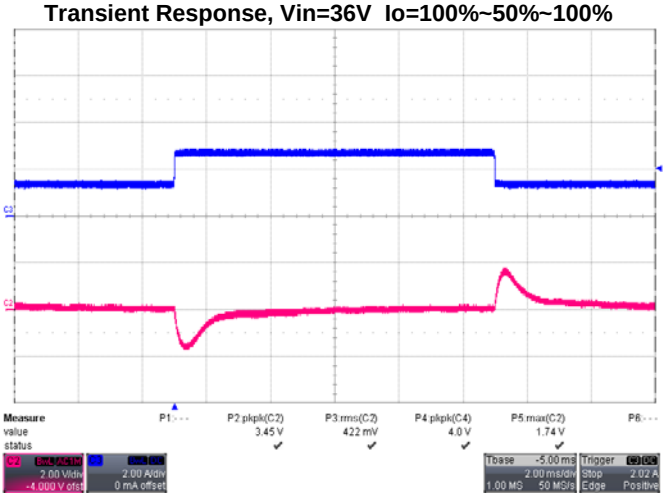
Noise V_{IN}=36V, 5~20MHz Bandwidth



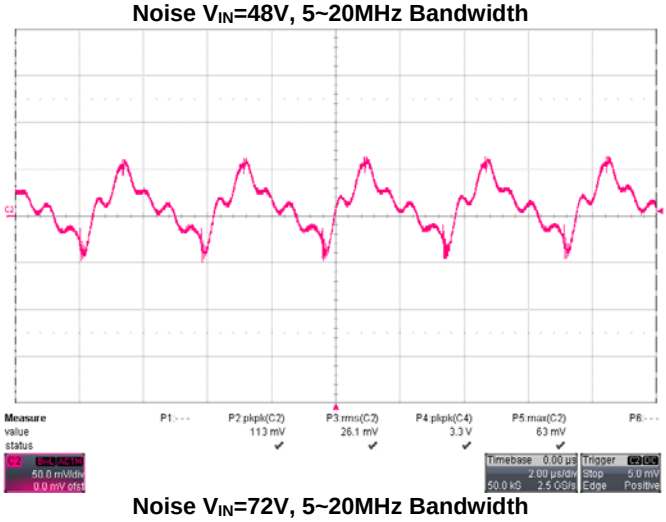
Transient Response, Vin=36V Io=100%~50%~100%



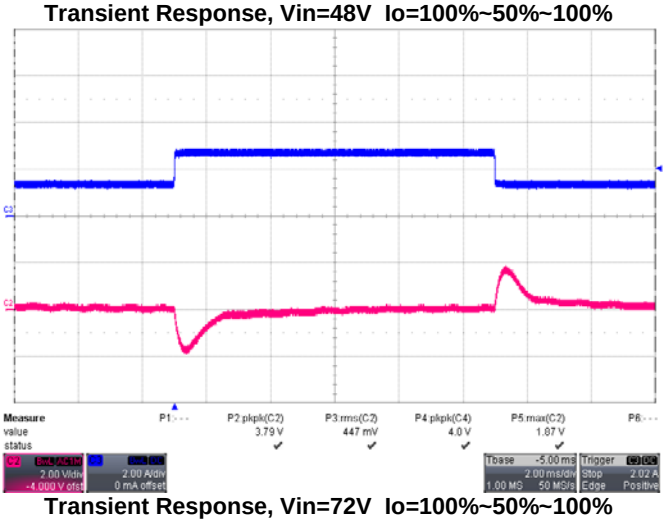
Noise V_{IN}=48V, 5~20MHz Bandwidth



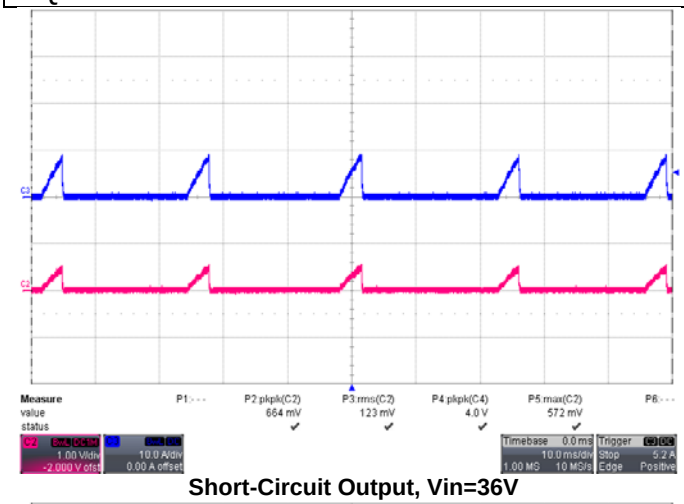
Transient Response, Vin=48V Io=100%~50%~100%



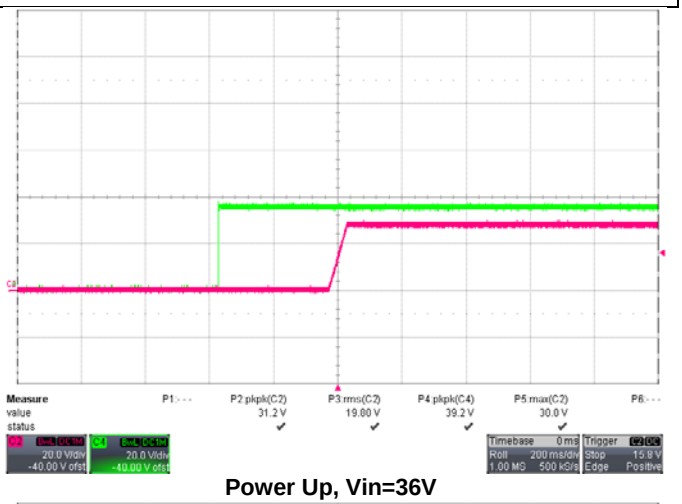
Noise V_{IN}=72V, 5~20MHz Bandwidth



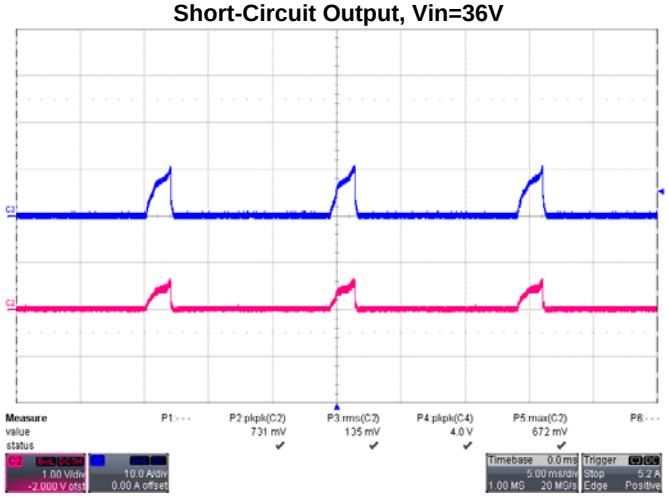
Transient Response, Vin=72V Io=100%~50%~100%



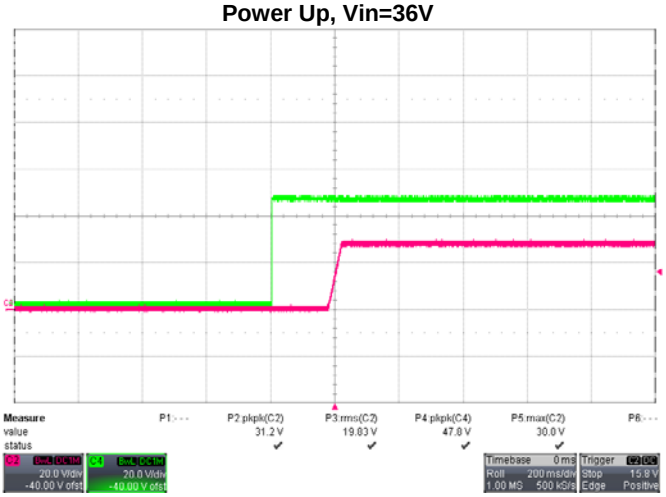
Short-Circuit Output, Vin=36V



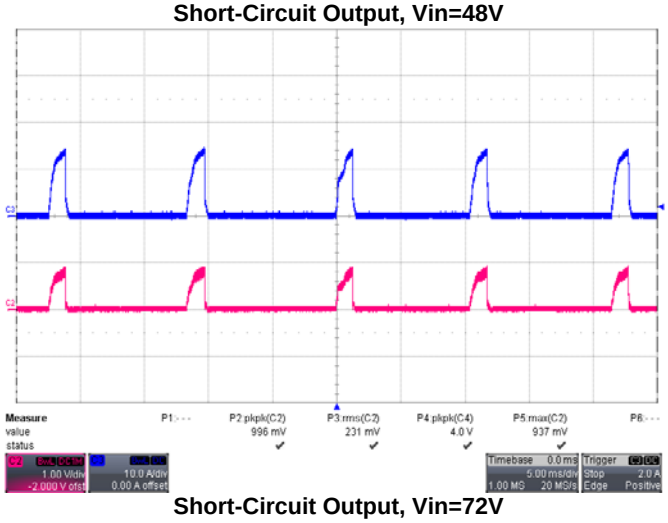
Power Up, Vin=36V



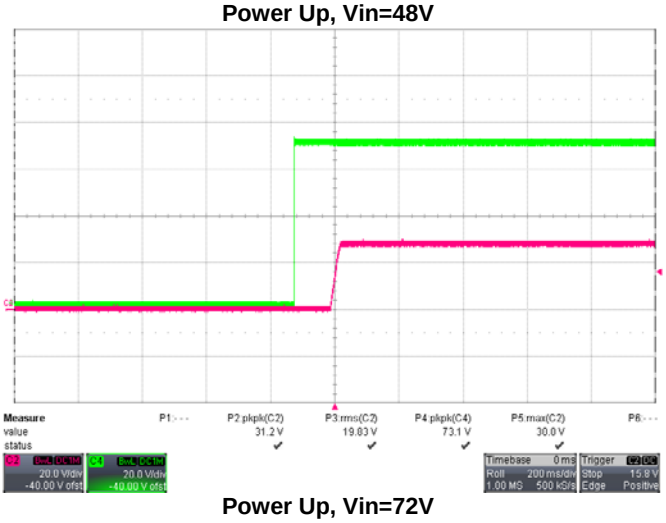
Short-Circuit Output, Vin=48V



Power Up, Vin=48V



Short-Circuit Output, Vin=72V



Power Up, Vin=72V

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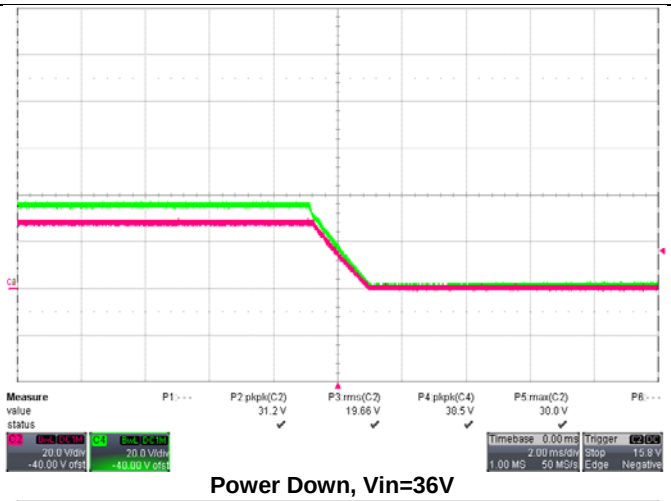
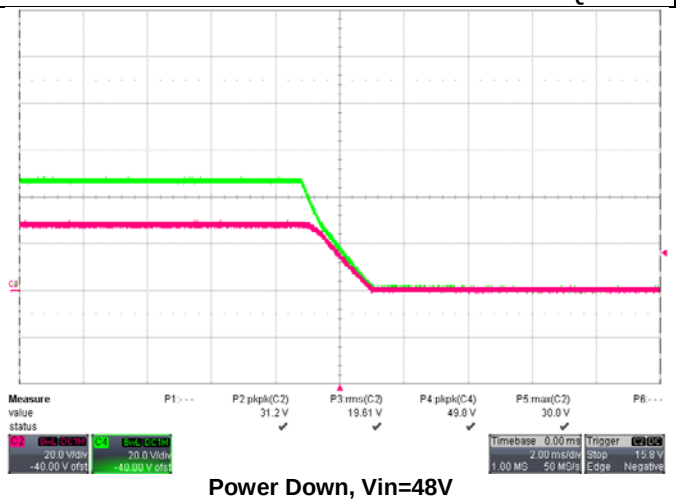
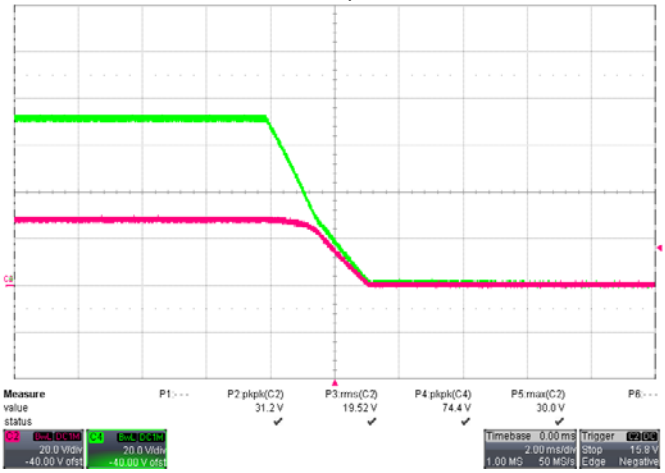


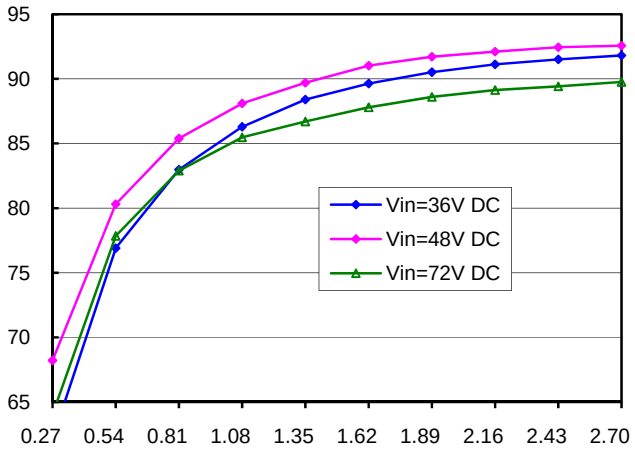
Power Down, Vin=36V



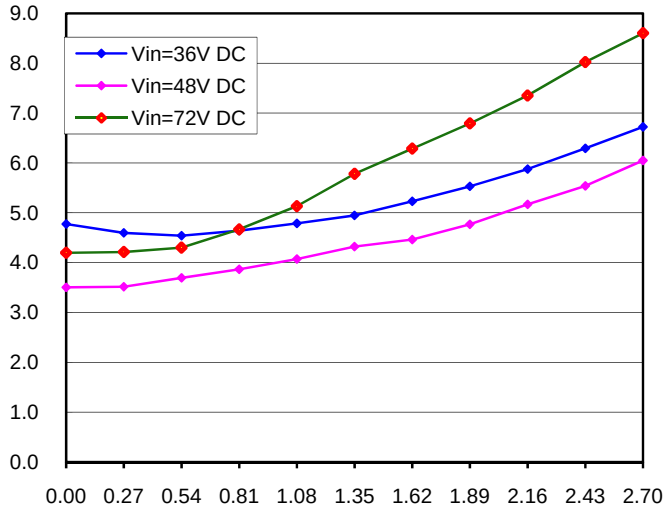
Power Down, Vin=48V



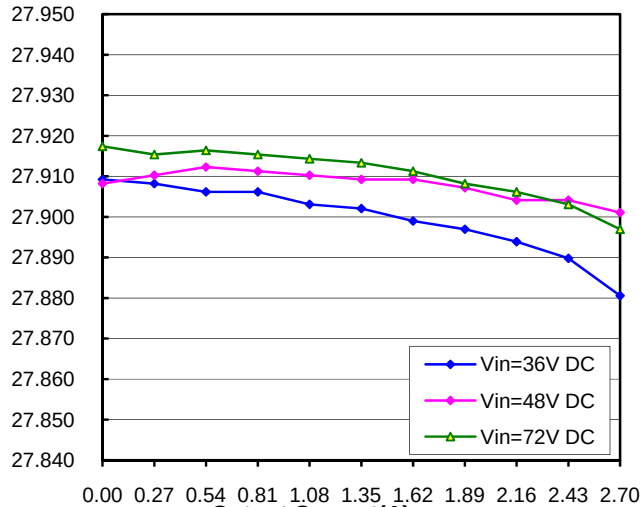
Power Down, Vin=72V



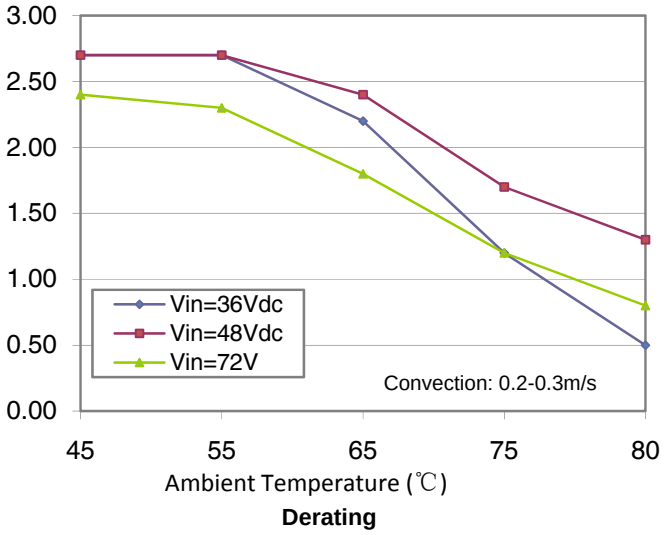
Efficiency（%）



Power Dissipation(w)



Regulation(V)



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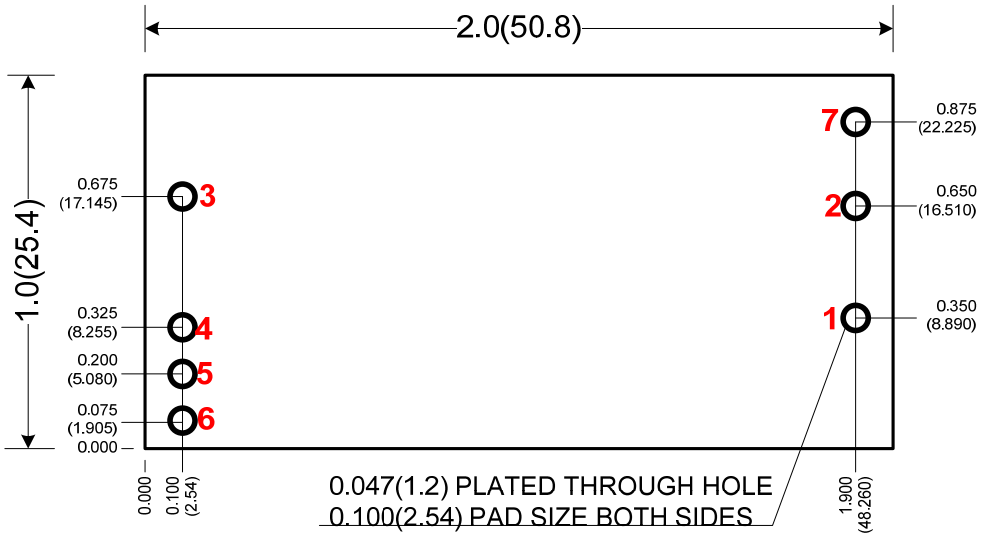
Recommended Hole Pattern

Unit: inches (millimeters)
Tolerances: x.x± 0.02 in. (0.5 mm), x.xxx ±0.010 in. (0.25 mm), unless otherwise noted.



Component side footprint

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