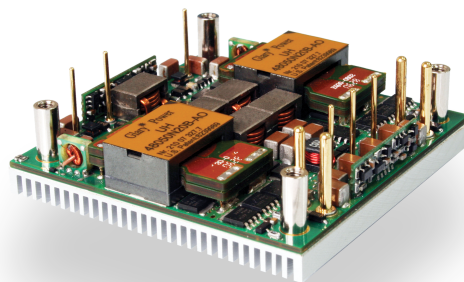
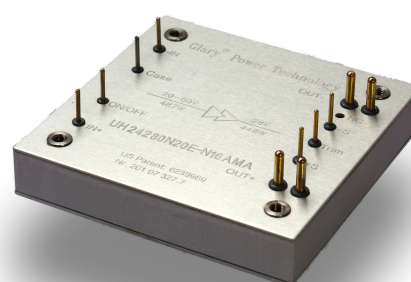


Efficiency >94%	2.5Mhrs MTBF	No Load $P_o < 2W$	UltraFast i-Limit	Current Share
219W/in <sup>3</sup>	Open Frame Package	OCP	OTP	OVP
INPUT 2:1	Remote ON OFF			



Efficiency >94%	2.5Mhrs MTBF	No Load $P_o < 2W$	UltraFast i-Limit	Current Share
219W/in <sup>3</sup>	Full Metal Package	OCP	OTP	OVP
INPUT 2:1	Remote ON OFF			



The UH series provides up to 800W/145A outputs in a half brick package. The converter core is composed of the patented "Buck Reset" forward topology with SR stage that would reduce power loss to achieve 219W/in<sup>3</sup> of power density. A proprietary UltraFast i-Limit technology is embedded to eliminate the so called "**Short-Circuit-Current-Runaway**", and enable the UH modules to deliver 2X of rated output current for few hundreds milli-second without reliability impact, and makes it even more suitable for powering the non-Ohmic loads such as motors or heaters. The UH Series is equipped with an active current sharing loop and anti-back-driving circuit, which allow connecting multiple modules in parallel without external OR-ing devices for higher power application with better energy efficiency and high reliability. The optional metal-enclosed package with vacuum potted high thermal conductivity silicone resist moisture, oil and dusty environments with harsh vibration, and help the heat transfer from the junction of power semiconductor chips to surrounding. Its low thermal resistance and lower temperature deviation advantages effectively simplify the system power design of Telecoms, Servers, Networking equipments and other industrial applications.

### MODEL NUMBER SYSTEM

UH48120	a	b	c	d		-	N	XXXXX
Model Name	Enable Logic	Pin Length	Standoff Height	Base-Plate / module thickness			Current Share	Suffix
UH48120	P: Positive N: Negative	1: 0.16" 2: 0.20" 3: 0.24"	0: 0.02" 1: 0.08" 2: 0.16"	Open-Frame(c= 0, 1 and 2) M: 1.0mm Metal Plate / 0.48" S: 3.0mm Metal Plate / 0.56" A: 3.0mm Sink-Plate / 0.56" B: 5.0mm Sink-Plate / 0.64"	Metal-Enclosed (c= 0 only) E: 1.0mm Metal Plate / 0.53" U: 3.0mm Metal Plate / 0.61" V: 5.0mm Metal Plate / 0.69" W: 3.0mm Sink-Plate / 0.61"	-	N: None S: Current share	For marketing purpose only

The selected option codes for the "abcd" section in the model number determine what options will be applied in production. For example, the UH48120P20E-SXXXXX module is configured to has positive enable logic, 0.20" pin length, 0.02" standoff height and 1.0mm metal-plate, which result in 0.53" of the module thickness. The total height is 0.55" obtained by summing up the 0.02" to the listed module thickness.

### MODEL LIST (Contact factory for special input / output)

Model Name	Maximum Input	Maximum Output	Efficiency
UH48033	36V-75V 550W	3.3V/145A 478W	89%
UH48050	36V-75V 670W	5.0V/120A 600W	92%
UH48120	36V-75V 874W	12V/67A 804W	94%

Model Name	Maximum Input	Maximum Output	Efficiency
UH48280	36V-75V 883W	28V/29A 812W	93%
UH48480	36V-75V 887W	48V/17A 816W	93%

### Preliminary Data Sheet

## COMMON SPECIFICATIONS

### Absolute Maximum Ratings

Temperature	Operation Storage	-40°C to +110°C -55°C to +125°C
Input Voltage Range	Operation: 48V Models  Transient (100mS): 48V Models	-0.5V to +80Vdc  100V Maximum
Isolation Voltage	Input to Output Input to Case Output to Case	2.0kV Minimum 1.0kV Minimum 1.0kV (0.5kV for Open-frame) Minimum
Remote Control		-0.5V to +12Vdc

### General Parameters

MTBF	Bellcore TR-332 issue 6	2.51×10 <sup>6</sup> hrs @GB/25°C (UH48050)
OTP	T <sub>AVG</sub> Or T <sub>C</sub>	110°C ±5°C for standard setting
Weight	3.0mm (Open-frame) 3.0mm/5.0mm Base-plate (Metal-enclosed)	90g 140g/160g

### Control Functions

Remote Control	Logic High Logic Low	+3.0V to +6.5V 0V to +1.0V
Input Current of Remote Control Pin		-0.5mA ~ +1.5mA

### Input

Operation Voltage Range	48V Models	+36V to +75Vdc
Power ON Voltage Ranges	48V Models	+34.0V to +36.0Vdc
Power OFF Voltage Ranges	48V Models	+31.2V to +33.2Vdc
Off State Input Current	V <sub>NOM</sub>	6mA Max
Latch-State Input Current	V <sub>NOM</sub>	8mA Max
Input Capacitance	48V Models	22.0uF Max

### Output Limitations

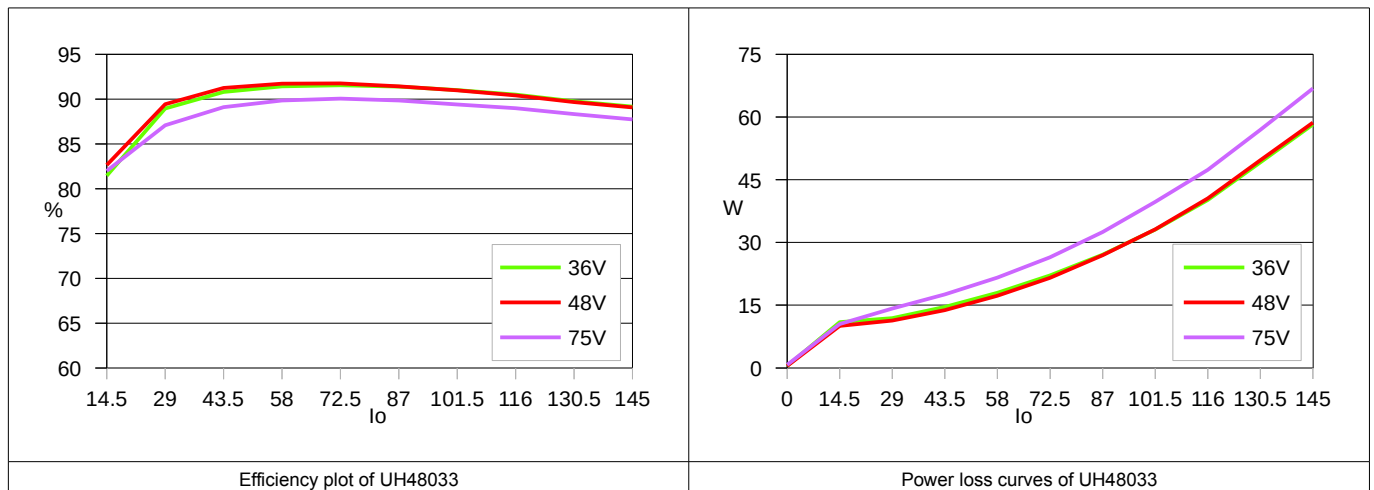
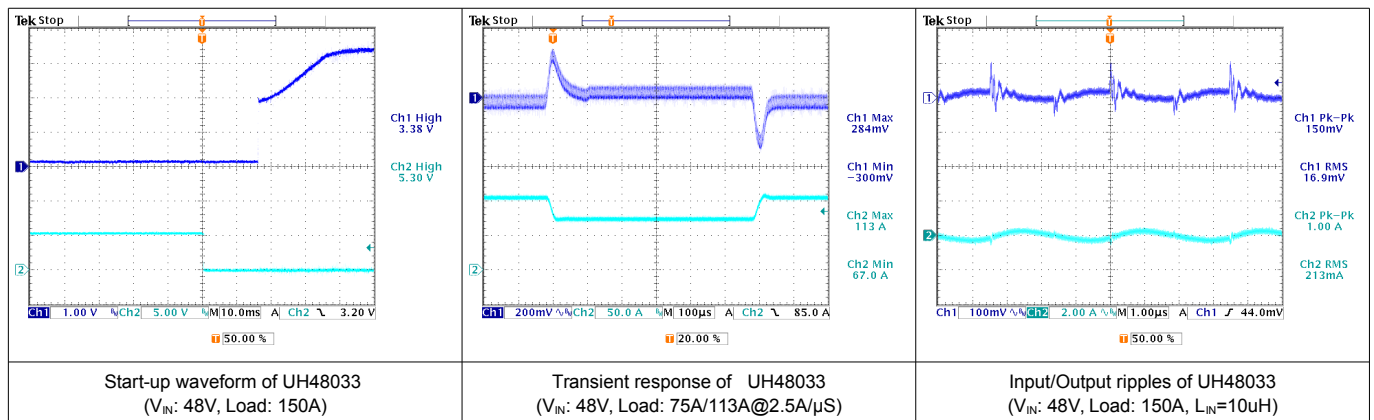
Model Name	Capacitive Load C <sub>E</sub>	Pre-biased Voltage V <sub>B</sub>	Reverse Current I <sub>B</sub>	Short Circuit Output Current I <sub>S</sub>	Note
UH48033	<100000uF@23mΩ Load	<3.1V	<100mA@V <sub>B</sub>	<350A @ 1mΩ Load	
UH48050	<47000uF@42mΩ Load	<4.75V	<100mA@V <sub>B</sub>	<300A @ 1mΩ Load	
UH48120	<6800uF@180mΩ Load	<11.4V	<100mA@V <sub>B</sub>	<170A @ 1mΩ Load	
UH48280	<1200uF@960mΩ Load	<26.6V	<100mA@V <sub>B</sub>	<75A @ 1mΩ Load	
UH48480	<470uF@2850mΩ Load	<45.6V	<100mA@V <sub>B</sub>	<50A @ 1mΩ Load	

## Model Name: UH48033

### MODEL PARAMETERS

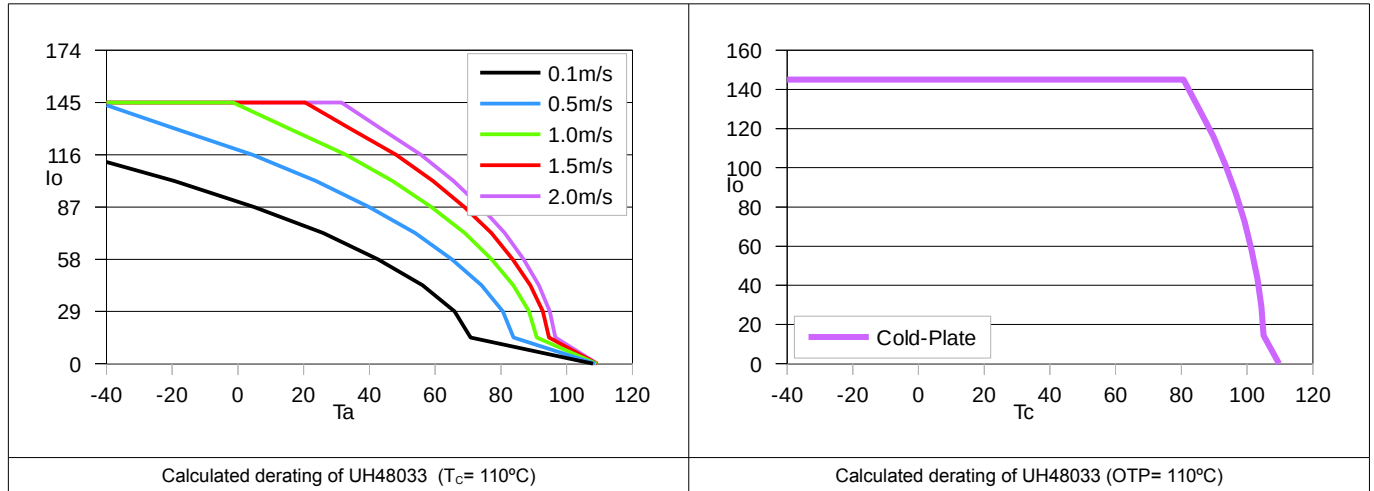
General		
Conversion Efficiency	Typical	See efficiency plots
Switching Frequency	Typical	300KHz
Input/Output		
Reflected Input Ripple Current	$L_{EXT} = 10\mu H$	20mA rms/60mAp-p
Input Ripple Rejection (<1KHz)	$V_{NOM}$ , Full Load	-50dB
Voltage Accuracy	Typical	$\pm 1.0\%$
Line Regulation	Full Input Range	$\pm 0.2\%$
Load Regulation	0%~100%	$\pm 0.2\%$
Temperature Drift	-40°C ~100°C	$\pm 0.03\%/^{\circ}C$
Output Tolerance Band	All Conditions	$\pm 4\%$
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) $V_O$
Over Voltage Protection	$V_{NOM}$ , 10% Load	115~130 % $V_O$
Output Current Limits	$V_{NOM}$	108%~125%
Voltage Trim	$V_{NOM}$ , 10% Load	$\pm 10\%$
Step Load (2.5A/ $\mu S$ )	50%~75% Load	$\pm 6\%V_O/500\mu S$
Start-Up Delay Time	$V_{NOM}$ , Full Load	20mS/250mS

### TYPICAL WAVES AND CURVES

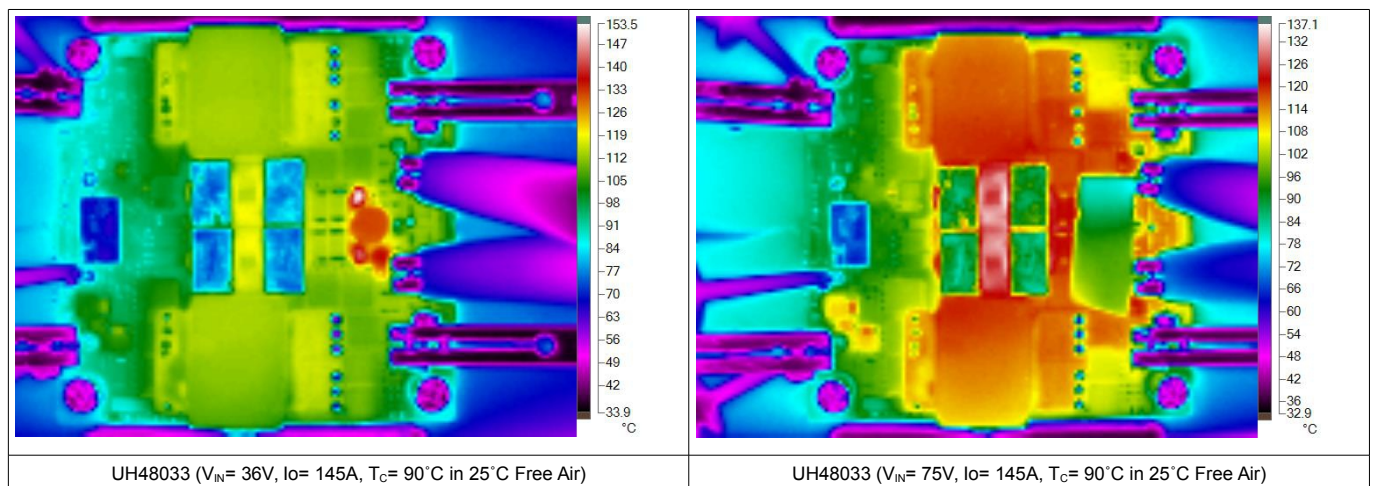


**Model Name: UH48033**

## DERATING CURVES

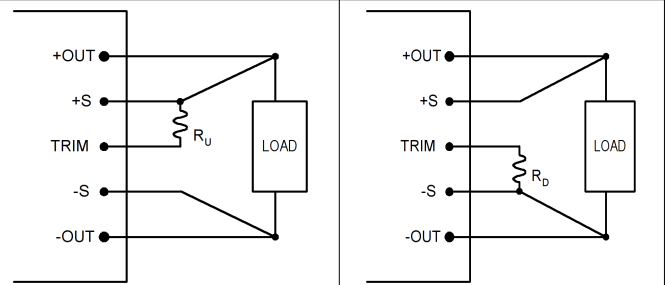


## REFERENCED THERMAL IMAGES



## TRIM AND TRIM TABLE

The output of the power module can be adjusted for higher or lower than the rated voltage level by connecting the TRIM pin through a resistor to the pins of +S or -S respectively as shown as on the right hand side. The resistor for trimming output voltage higher or lower are denoted as  $R_U$  and  $R_D$ , which have different resistances for each different output voltage level. The resistance table for trimming the output voltage with 1% of step are listed as below for reference.



Trim Up	+1%	+2%	+3%	+4%	+5%	+6%	+7%	+8%	+9%	+10%	-	-	-	-	-	-	-	-	-
$R_U$ (K $\Omega$ )	43.43	21.72	14.48	10.86	8.687	7.239	6.205	5.429	4.826	4.343	-	-	-	-	-	-	-	-	-

Trim Down	-1%	-2%	-3%	-4%	-5%	-6%	-7%	-8%	-9%	-10%	-	-	-	-	-	-	-	-	-
$R_D$ (K $\Omega$ )	10.57	5.010	3.158	2.232	1.677	1.307	1.042	0.844	0.689	0.566	-	-	-	-	-	-	-	-	-

\* Please contact Glary Power if a trim range beyond  $\pm 10\%$  is needed.

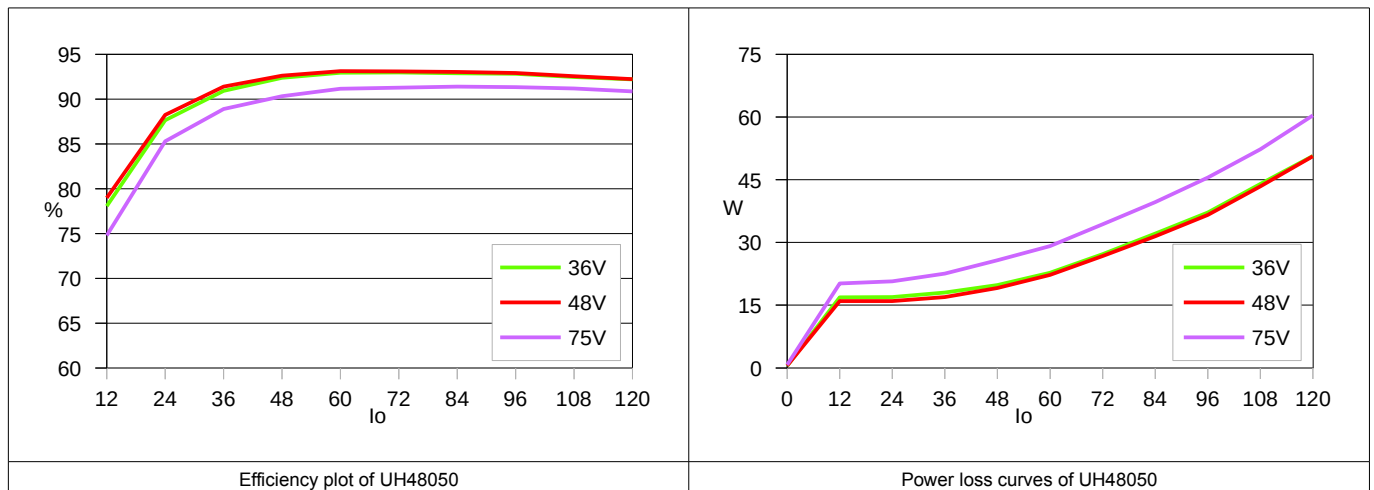
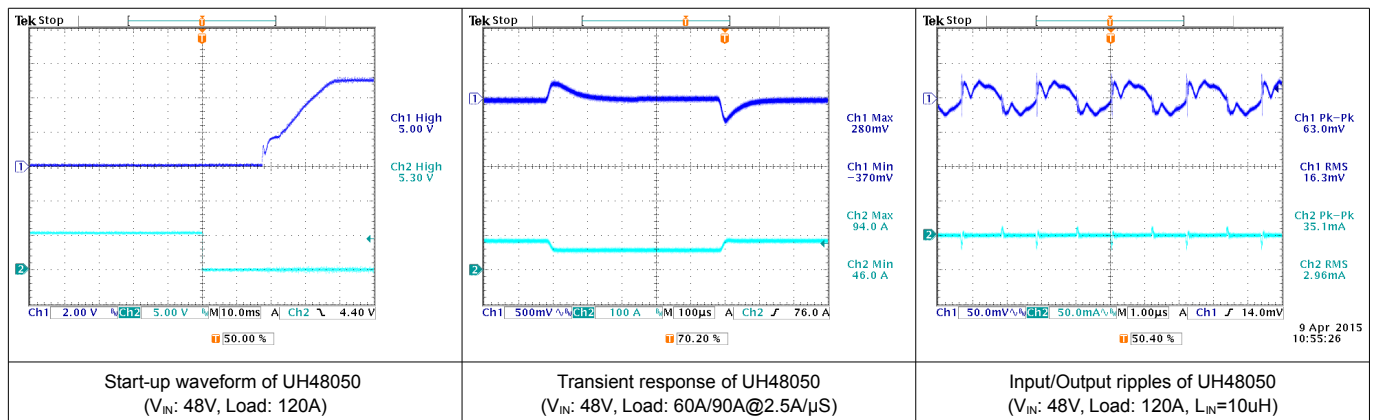


## Model Name: UH48050

### MODEL PARAMETERS

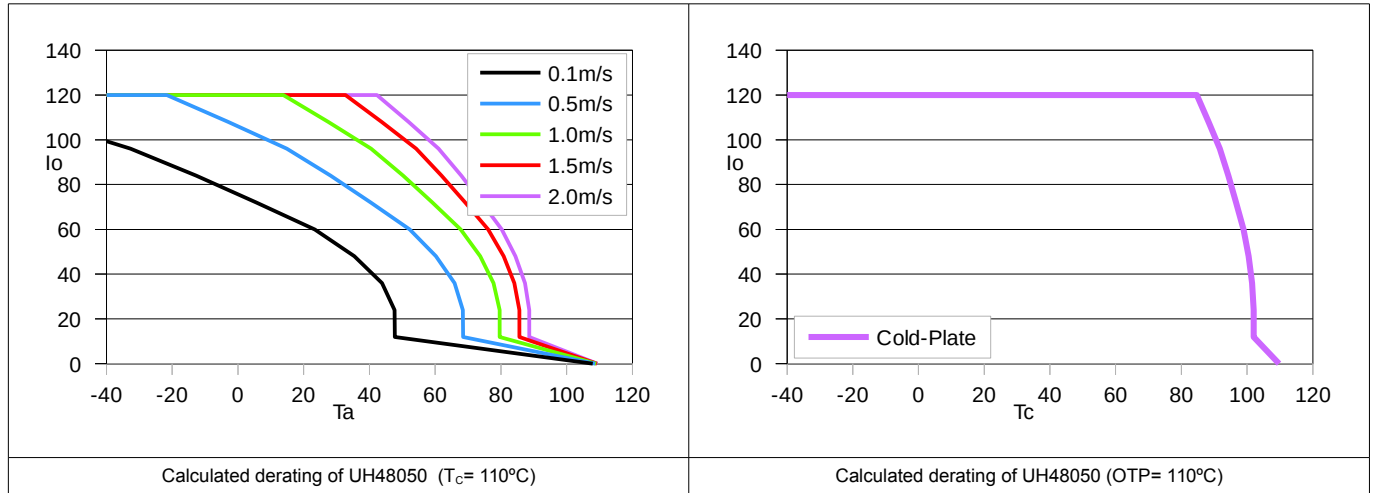
General		
Conversion Efficiency	Typical	See efficiency plots
Switching Frequency	Typical	300KHz
Input/Output		
Reflected Input Ripple Current	$L_{EXT} = 10\mu H$	20mA rms/60mAp-p
Input Ripple Rejection (<1KHz)	$V_{NOM}$ , Full Load	-50dB
Voltage Accuracy	Typical	$\pm 1.0\%$
Line Regulation	Full Input Range	$\pm 0.2\%$
Load Regulation	0%~100%	$\pm 0.2\%$
Temperature Drift	-40°C ~100°C	$\pm 0.03\%/^{\circ}C$
Output Tolerance Band	All Conditions	$\pm 4\%$
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) $V_O$
Over Voltage Protection	$V_{NOM}$ , 10% Load	115~130 % $V_O$
Output Current Limits	$V_{NOM}$	108%~125%
Voltage Trim	$V_{NOM}$ , 10% Load	$\pm 10\%$
Step Load (2.5A/ $\mu S$ )	50%~75% Load	$\pm 6\%V_O/500\mu S$
Start-Up Delay Time	$V_{NOM}$ , Full Load	20mS/250mS

### TYPICAL WAVES AND CURVES

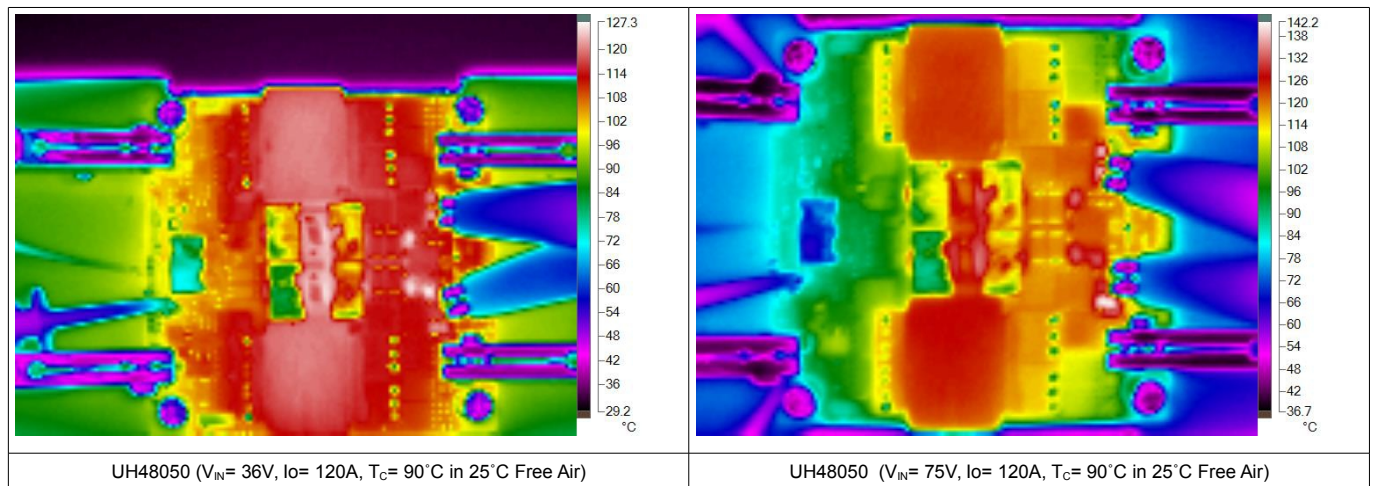


**Model Name: UH48050**

## DERATING CURVES

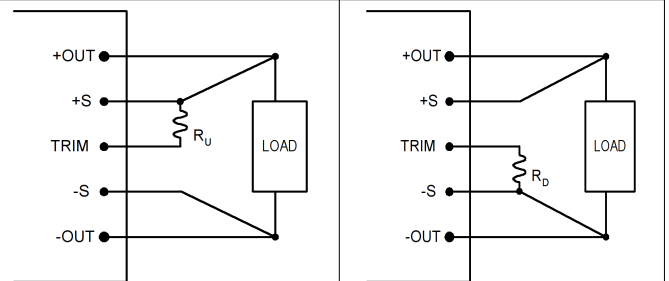


## REFERENCED THERMAL IMAGES



## TRIM AND TRIM TABLE

The output of the power module can be adjusted for higher or lower than the rated voltage level by connecting the TRIM pin through a resistor to the pins of +S or -S respectively as shown as on the right hand side. The resistor for trimming output voltage higher or lower are denoted as  $R_U$  and  $R_D$ , which have different resistances for each different output voltage level. The resistance table for trimming the output voltage with 1% of step are listed as below for reference.



Trim Up	+1%	+2%	+3%	+4%	+5%	+6%	+7%	+8%	+9%	+10%	-	-	-	-	-	-	-	-	-
$R_U$ (K $\Omega$ )	63.67	31.84	21.22	15.92	12.73	10.61	9.096	7.959	7.075	6.367	-	-	-	-	-	-	-	-	-

Trim Down	-1%	-2%	-3%	-4%	-5%	-6%	-7%	-8%	-9%	-10%	-	-	-	-	-	-	-	-	-
$R_D$ (K $\Omega$ )	14.59	6.899	4.336	3.054	2.285	1.773	1.406	1.132	0.918	0.747	-	-	-	-	-	-	-	-	-

\* Please contact Glary Power if a trim range beyond  $\pm 10\%$  is needed.

## Model Name: UH48120

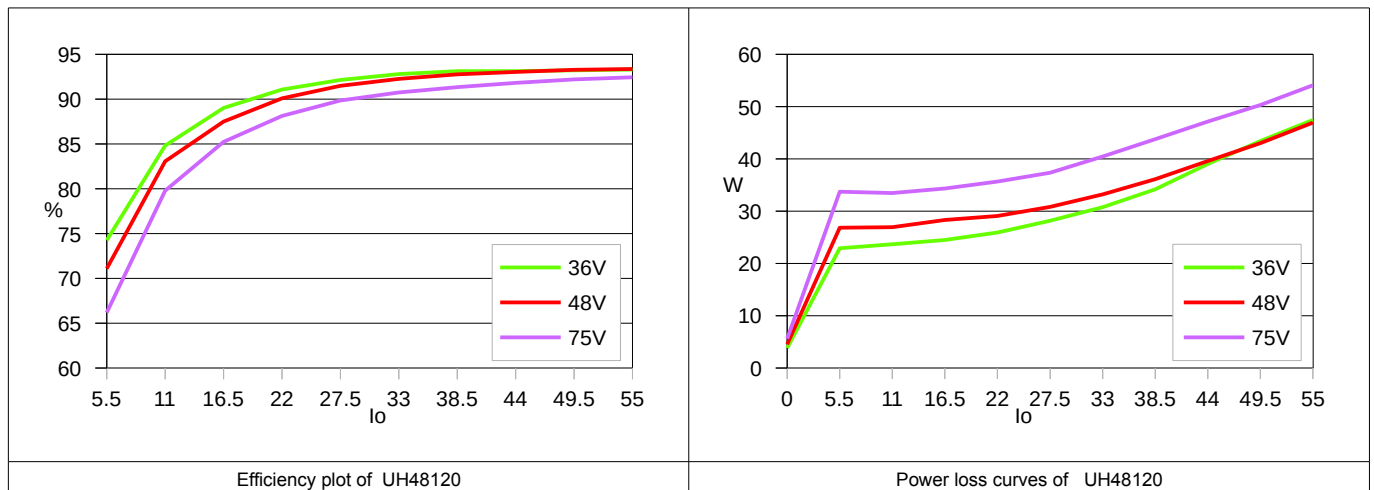
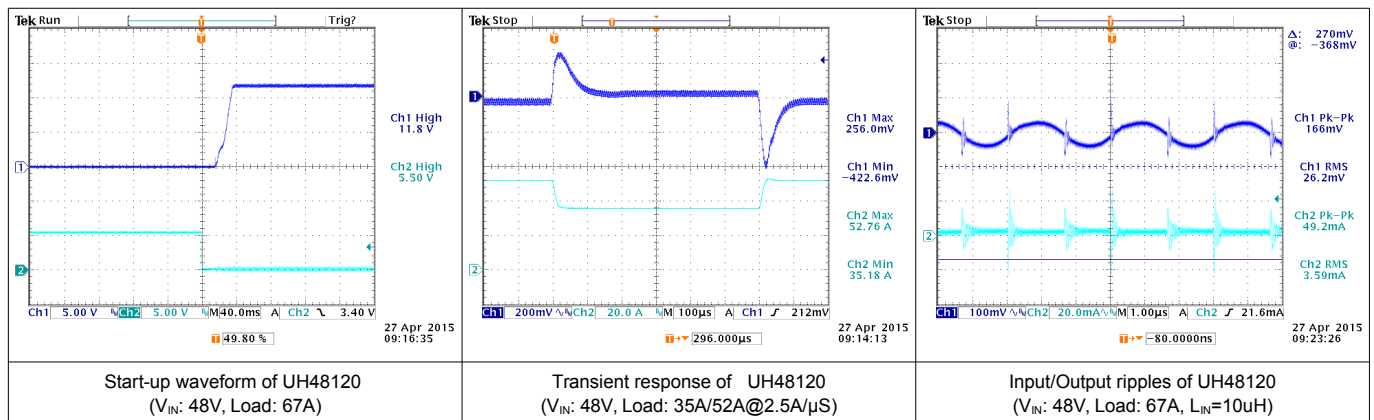
### MODEL PARAMETERS

General		
Conversion Efficiency	Typical	See efficiency plots
Switching Frequency	Typical	300KHz

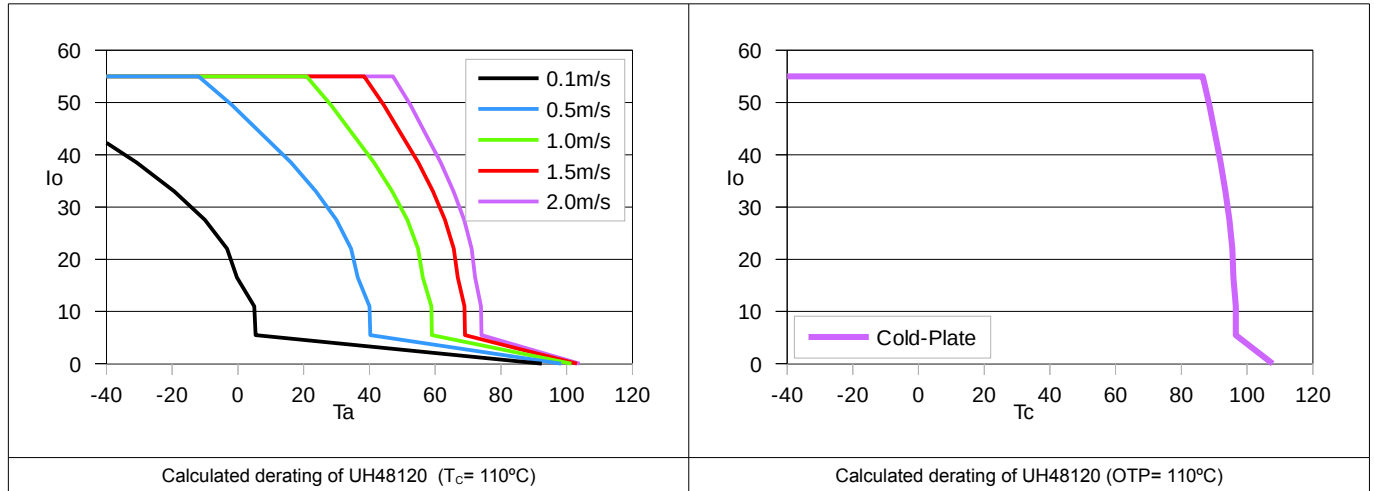
Input/Output		
Reflected Input Ripple Current	$L_{EXT} = 10\mu H$	20mA rms/60mAp-p
Input Ripple Rejection (<1KHz)	$V_{NOM}$ , Full Load	-50dB
Voltage Accuracy	Typical	$\pm 1.0\%$
Line Regulation	Full Input Range	$\pm 0.2\%$
Load Regulation	0%~100%	$\pm 0.2\%$
Temperature Drift	-40°C ~100°C	$\pm 0.03\%/^{\circ}C$
Output Tolerance Band	All Conditions	$\pm 4\%$
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) $V_O$
Over Voltage Protection	$V_{NOM}$ , 10% Load	115~130 % $V_O$
Output Current Limits	$V_{NOM}$	108%~125%
Voltage Trim	$V_{NOM}$ , 10% Load	$\pm 10\%$
Step Load (2.5A/ $\mu S$ )	50%~75% Load	$\pm 6\%V_O/500\mu S$
Start-Up Delay Time	$V_{NOM}$ , Full Load	20mS/250mS

### TYPICAL WAVES AND CURVES

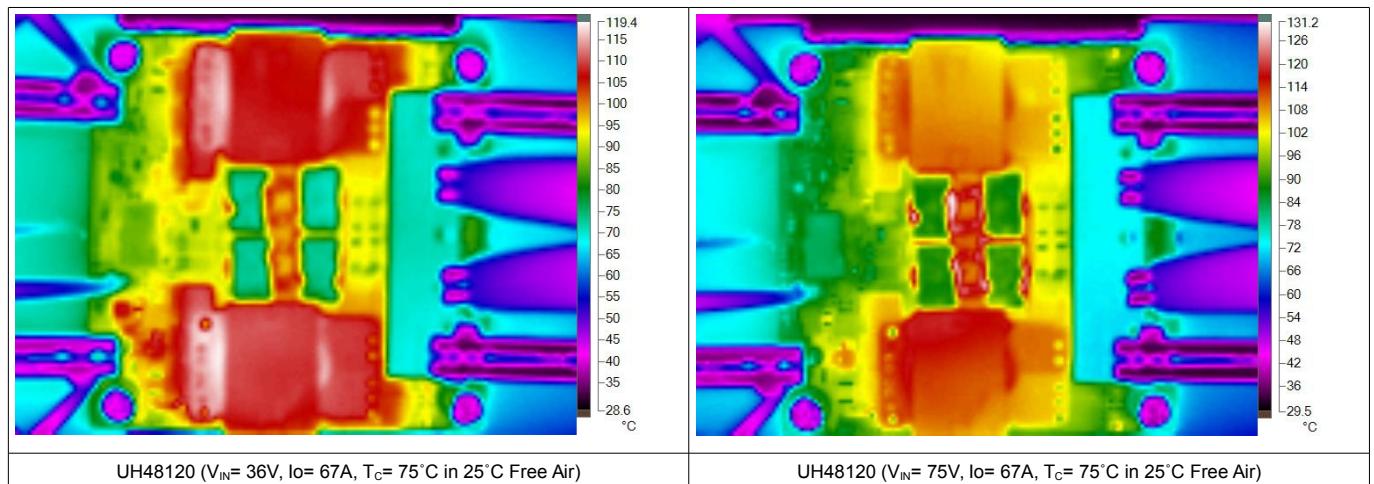


**Model Name: UH48120P20E-S67MXE**

## DERATING CURVES

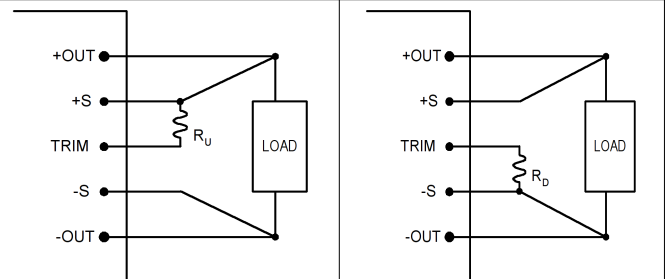


## REFERENCED THERMAL IMAGES



## TRIM AND TRIM TABLE

The output of the power module can be adjusted for higher or lower than the rated voltage level by connecting the TRIM pin through a resistor to the pins of +S or -S respectively as shown as on the right hand side. The resistor for trimming output voltage higher or lower are denoted as  $R_U$  and  $R_D$ , which have different resistances for each different output voltage level. The resistance table for trimming the output voltage with 1% of step are listed as below for reference.



Trim Up	+1%	+2%	+3%	+4%	+5%	+6%	+7%	+8%	+9%	+10%	-	-	-	-	-	-	-	-	-
$R_U$ (K $\Omega$ )	154.0	77.02	51.35	38.51	30.81	25.67	22.01	19.25	17.12	15.40	-	-	-	-	-	-	-	-	-

Trim Down	-1%	-2%	-3%	-4%	-5%	-6%	-7%	-8%	-9%	-10%	-	-	-	-	-	-	-	-	-
$R_D$ (K $\Omega$ )	35.88	16.98	10.68	7.531	5.641	4.381	3.481	2.806	2.281	1.861	-	-	-	-	-	-	-	-	-

\* Please contact Glary Power if a trim range beyond  $\pm 10\%$  is needed.

## Model Name: UH48280

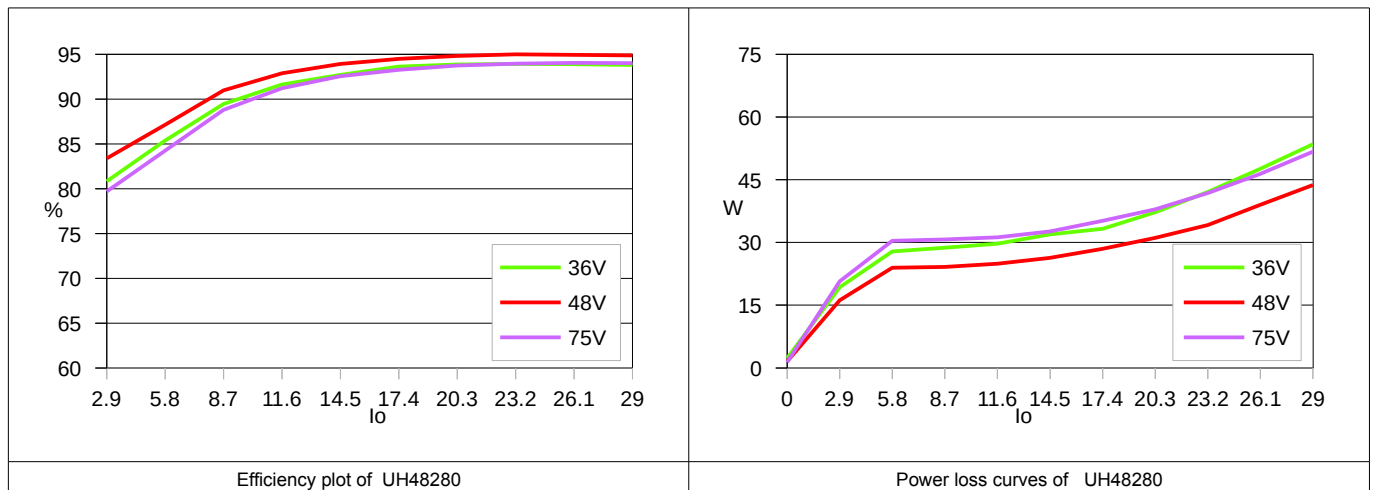
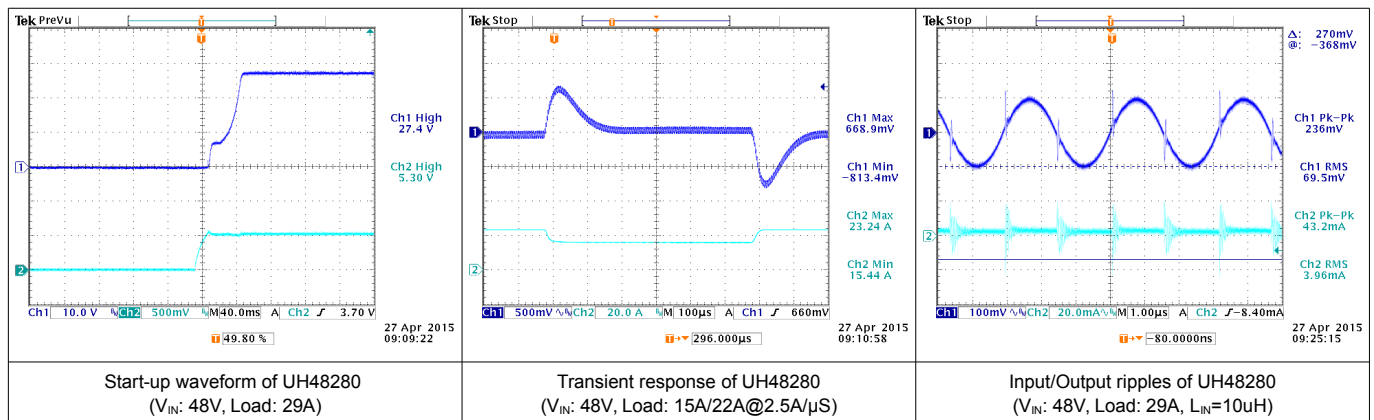
### MODEL PARAMETERS

General		
Conversion Efficiency	Typical	See efficiency plots
Switching Frequency	Typical	300KHz

Input/Output		
Reflected Input Ripple Current	$L_{EXT} = 10\mu H$	20mA rms/60mAp-p
Input Ripple Rejection (<1KHz)	$V_{NOM}$ , Full Load	-50dB
Voltage Accuracy	Typical	$\pm 1.0\%$
Line Regulation	Full Input Range	$\pm 0.2\%$
Load Regulation	0%~100%	$\pm 0.2\%$
Temperature Drift	-40°C ~100°C	$\pm 0.03\%/^{\circ}C$
Output Tolerance Band	All Conditions	$\pm 4\%$
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) $V_O$
Over Voltage Protection	$V_{NOM}$ , 10% Load	115~130 % $V_O$
Output Current Limits	$V_{NOM}$	108%~125%
Voltage Trim	$V_{NOM}$ , 10% Load	$\pm 10\%$
Step Load (2.5A/ $\mu S$ )	50%~75% Load	$\pm 6\%V_O/500\mu S$
Start-Up Delay Time	$V_{NOM}$ , Full Load	20mS/250mS

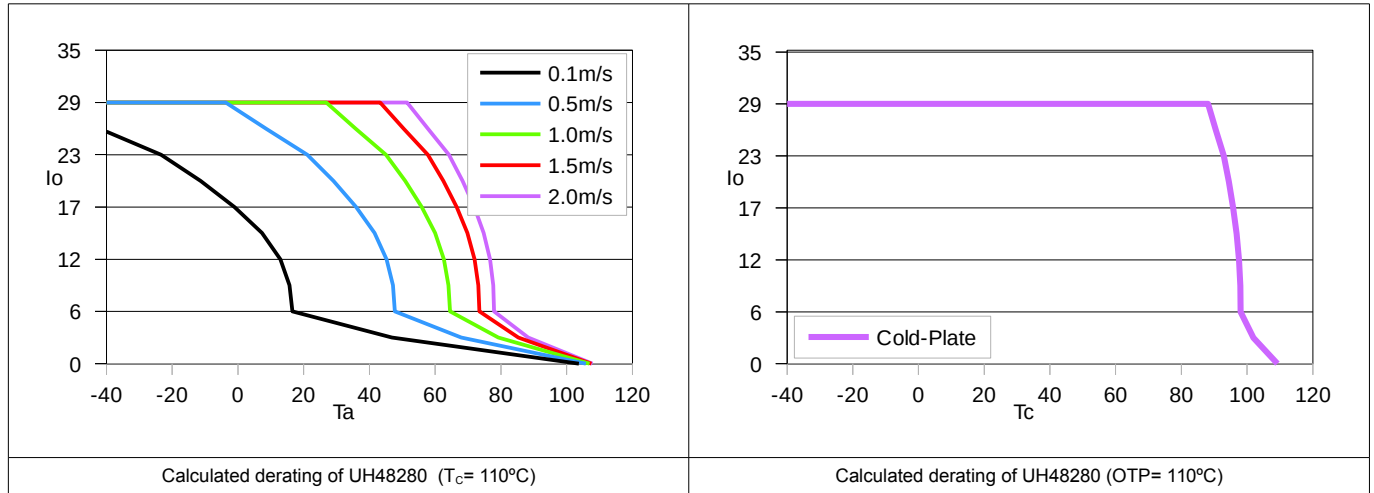
### TYPICAL WAVES AND CURVES



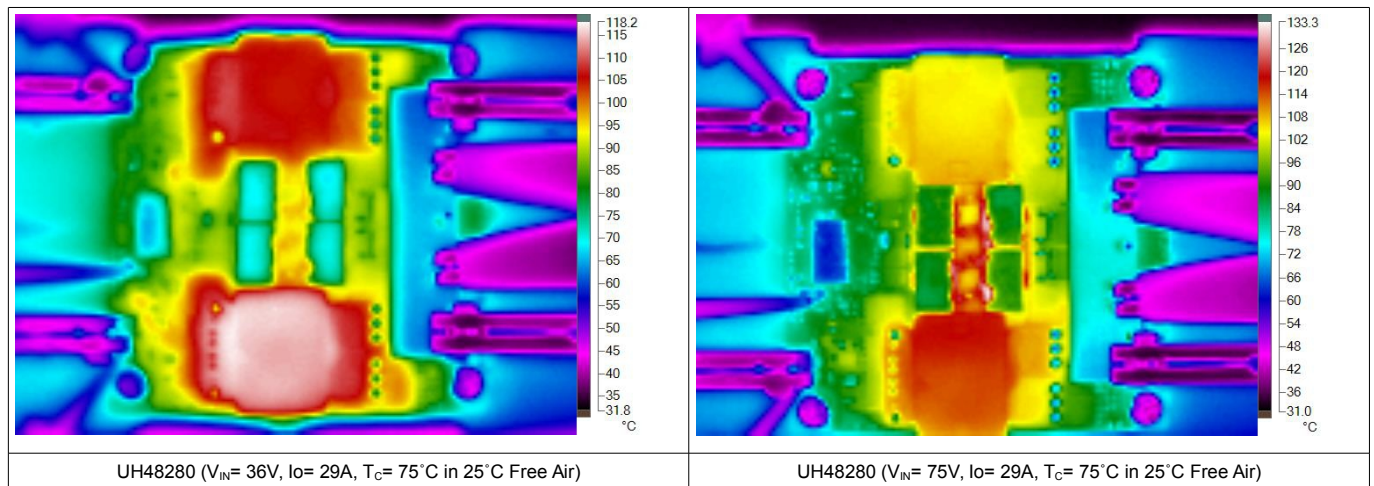


**Model Name: UH48280**

## DERATING CURVES

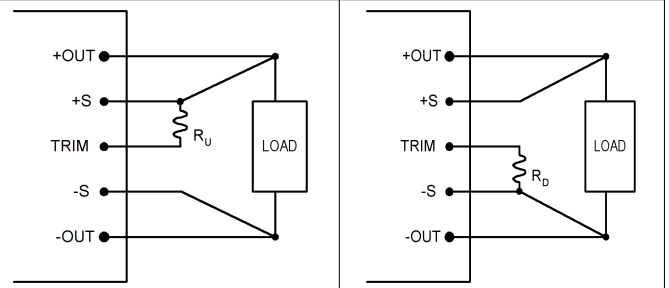


## REFERENCED THERMAL IMAGES



## TRIM AND TRIM TABLE

The output of the power module can be adjusted for higher or lower than the rated voltage level by connecting the TRIM pin through a resistor to the pins of +S or -S respectively as shown as on the right hand side. The resistor for trimming output voltage higher or lower are denoted as  $R_U$  and  $R_D$ , which have different resistances for each different output voltage level. The resistance table for trimming the output voltage with 1% of step are listed as below for reference.



Trim Up	+1%	+2%	+3%	+4%	+5%	+6%	+7%	+8%	+9%	+10%	-	-	-	-	-	-	-	-	-
$R_U$ (K $\Omega$ )	366.5	183.2	122.2	91.61	73.29	61.08	52.35	45.81	40.72	36.65	-	-	-	-	-	-	-	-	-

Trim Down	-1%	-2%	-3%	-4%	-5%	-6%	-7%	-8%	-9%	-10%	-	-	-	-	-	-	-	-	-
$R_D$ (K $\Omega$ )	88.16	41.78	26.33	18.60	13.96	10.87	8.658	7.002	5.714	4.683	-	-	-	-	-	-	-	-	-

\* Please contact Glary Power if a trim range beyond  $\pm 10\%$  is needed.

**Model Name: UH48480**

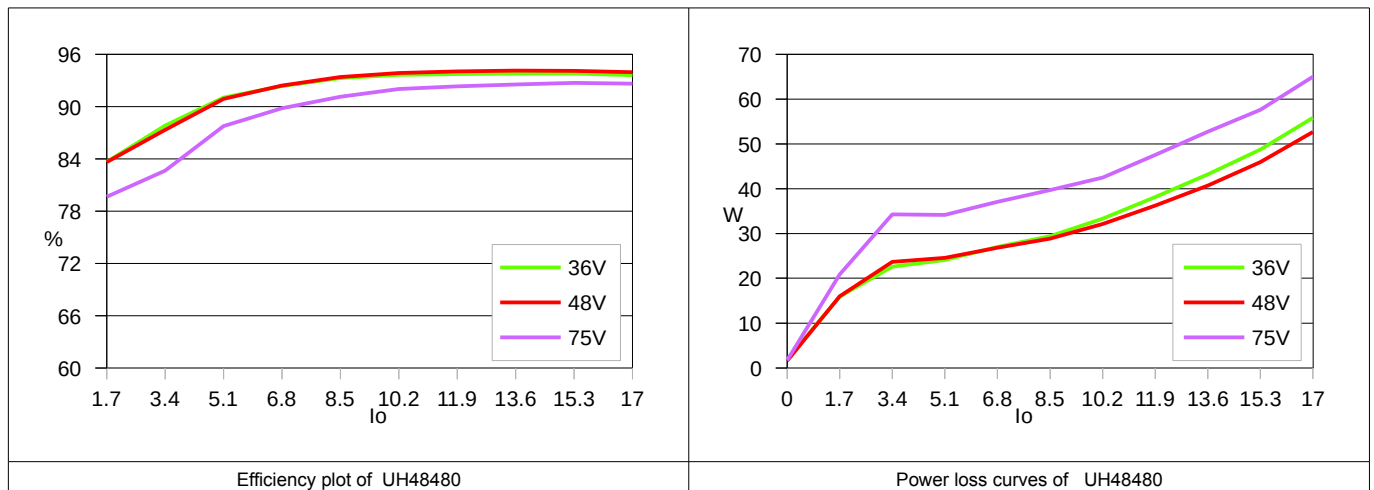
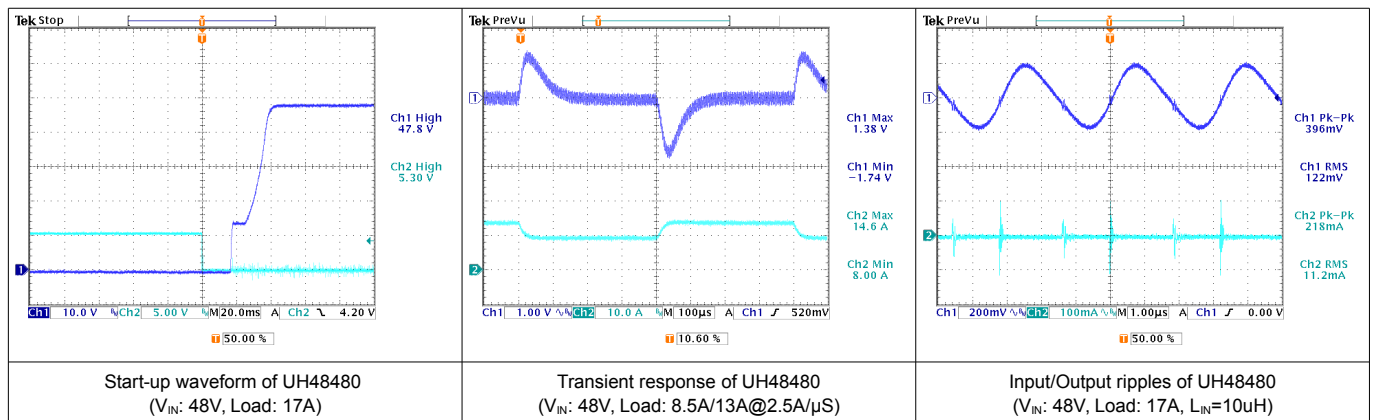
## MODEL PARAMETERS

General		
Conversion Efficiency	Typical	See efficiency plots
Switching Frequency	Typical	300KHz

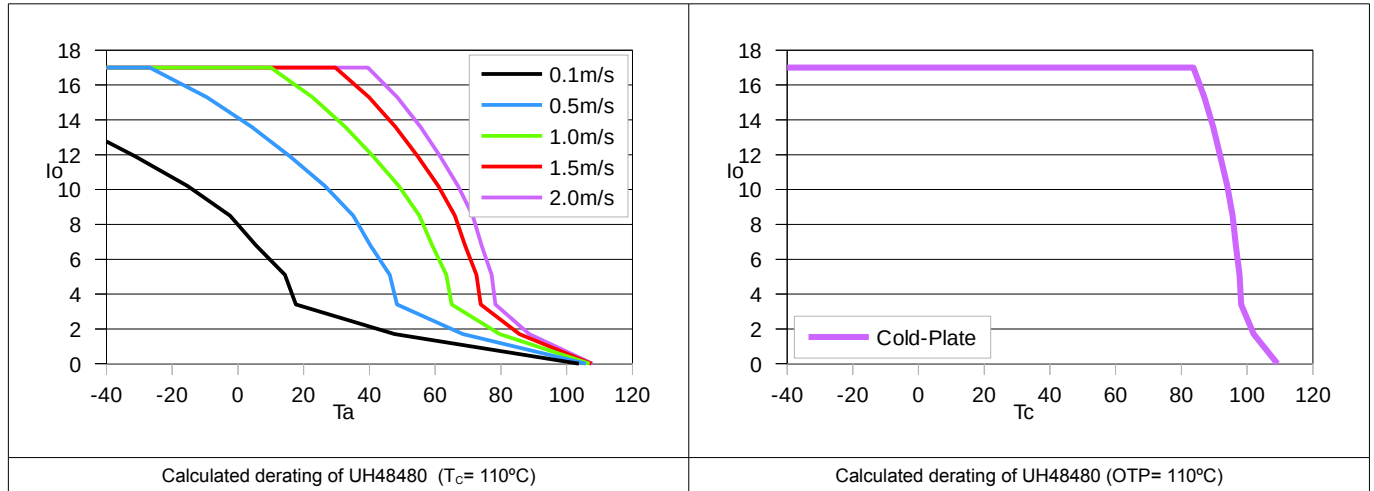
Input/Output		
Reflected Input Ripple Current	$L_{EXT} = 10\mu H$	20mA rms/60mAp-p
Input Ripple Rejection (<1KHz)	$V_{NOM}$ , Full Load	-50dB
Voltage Accuracy	Typical	$\pm 1.0\%$
Line Regulation	Full Input Range	$\pm 0.2\%$
Load Regulation	0%~100%	$\pm 0.2\%$
Temperature Drift	-40°C ~100°C	$\pm 0.03\%/^{\circ}C$
Output Tolerance Band	All Conditions	$\pm 4\%$
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) $V_O$
Over Voltage Protection	$V_{NOM}$ , 10% Load	115~130 % $V_O$
Output Current Limits	$V_{NOM}$	108%~125%
Voltage Trim	$V_{NOM}$ , 10% Load	$\pm 10\%$
Step Load (2.5A/ $\mu S$ )	50%~75% Load	$\pm 6\%V_O/500\mu S$
Start-Up Delay Time	$V_{NOM}$ , Full Load	20mS/250mS

## TYPICAL WAVES AND CURVES

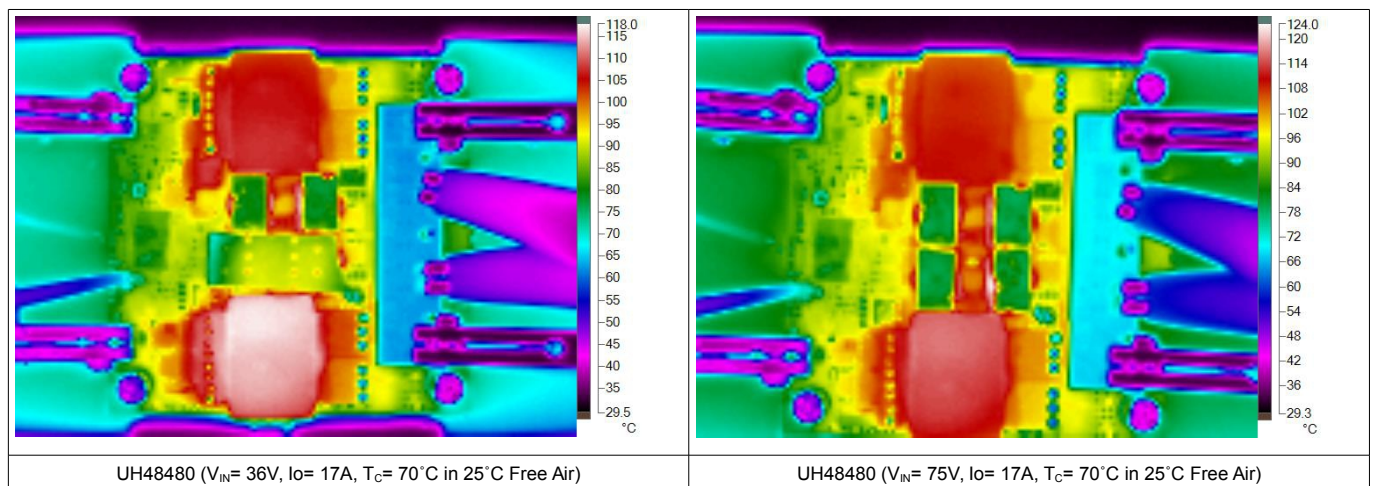


**Model Name: UH48480**

## DERATING CURVES

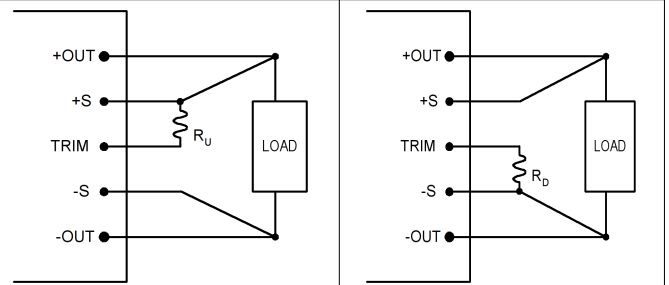


## REFERENCED THERMAL IMAGES



## TRIM AND TRIM TABLE

The output of the power module can be adjusted for higher or lower than the rated voltage level by connecting the TRIM pin through a resistor to the pins of +S or -S respectively as shown as on the right hand side. The resistor for trimming output voltage higher or lower are denoted as  $R_U$  and  $R_D$ , which have different resistances for each different output voltage level. The resistance table for trimming the output voltage with 1% of step are listed as below for reference.



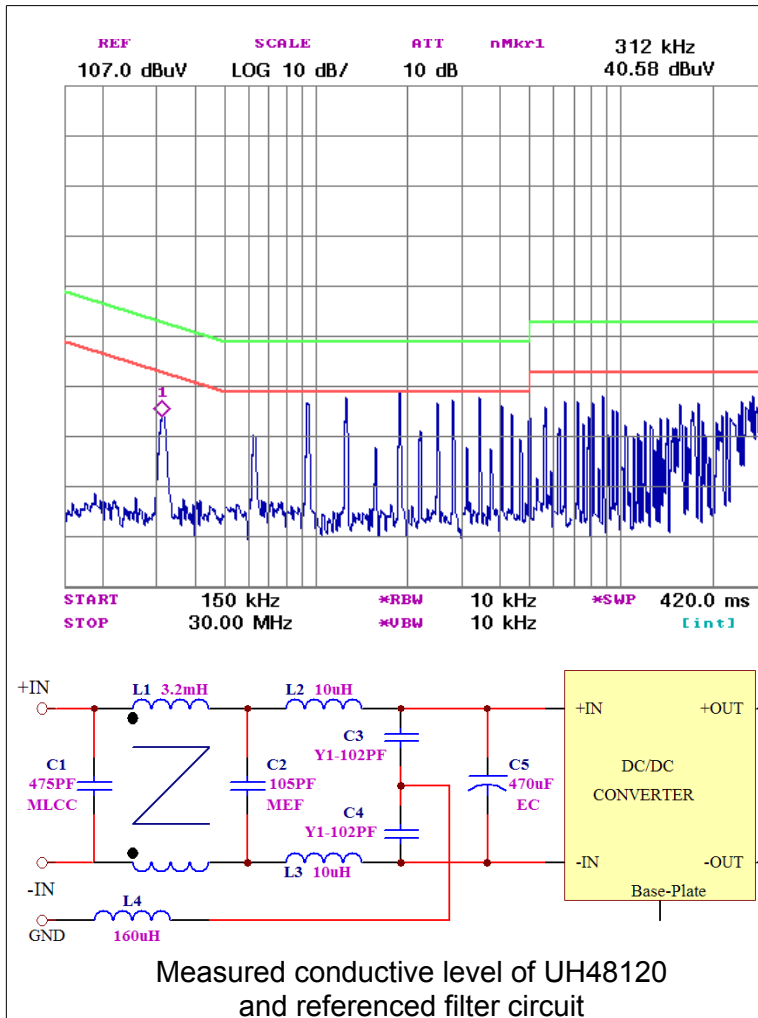
Trim Up	+1%	+2%	+3%	+4%	+5%	+6%	+7%	+8%	+9%	+10%	-	-	-	-	-	-	-	-	-
$R_U$ (K $\Omega$ )	632.1	316.0	210.7	158.0	126.4	105.3	90.30	79.01	70.23	63.21	-	-	-	-	-	-	-	-	-

Trim Down	-1%	-2%	-3%	-4%	-5%	-6%	-7%	-8%	-9%	-10%	-	-	-	-	-	-	-	-	-
$R_D$ (K $\Omega$ )	153.5	72.78	45.88	32.42	24.35	18.97	15.13	12.24	10.00	8.208	-	-	-	-	-	-	-	-	-

\* Please contact Glary Power if a trim range beyond  $\pm 10\%$  is needed.

## REFERENCED EMC CIRCUIT



## Referenced EMC Performance

The tested result shown in left-hand side is obtained by loading the power module with a resistive load only. It can be used as a design reference for customer system. However! The performance of customer's system depends on the whole system design. It should be noted that modifications on the circuit parameters and fine adjustment of the final layout would affect the final EMC performance greatly.

## Bandwidth of EMC Components

No components are ideal for infinite frequency range. The bandwidth of EMC components should be taking into consideration when designing an EMC filter circuit. To connect ceramic capacitor with electrolytic capacitor in parallel and connect low inductance inductor in series with high inductance inductor could get a better bandwidth.

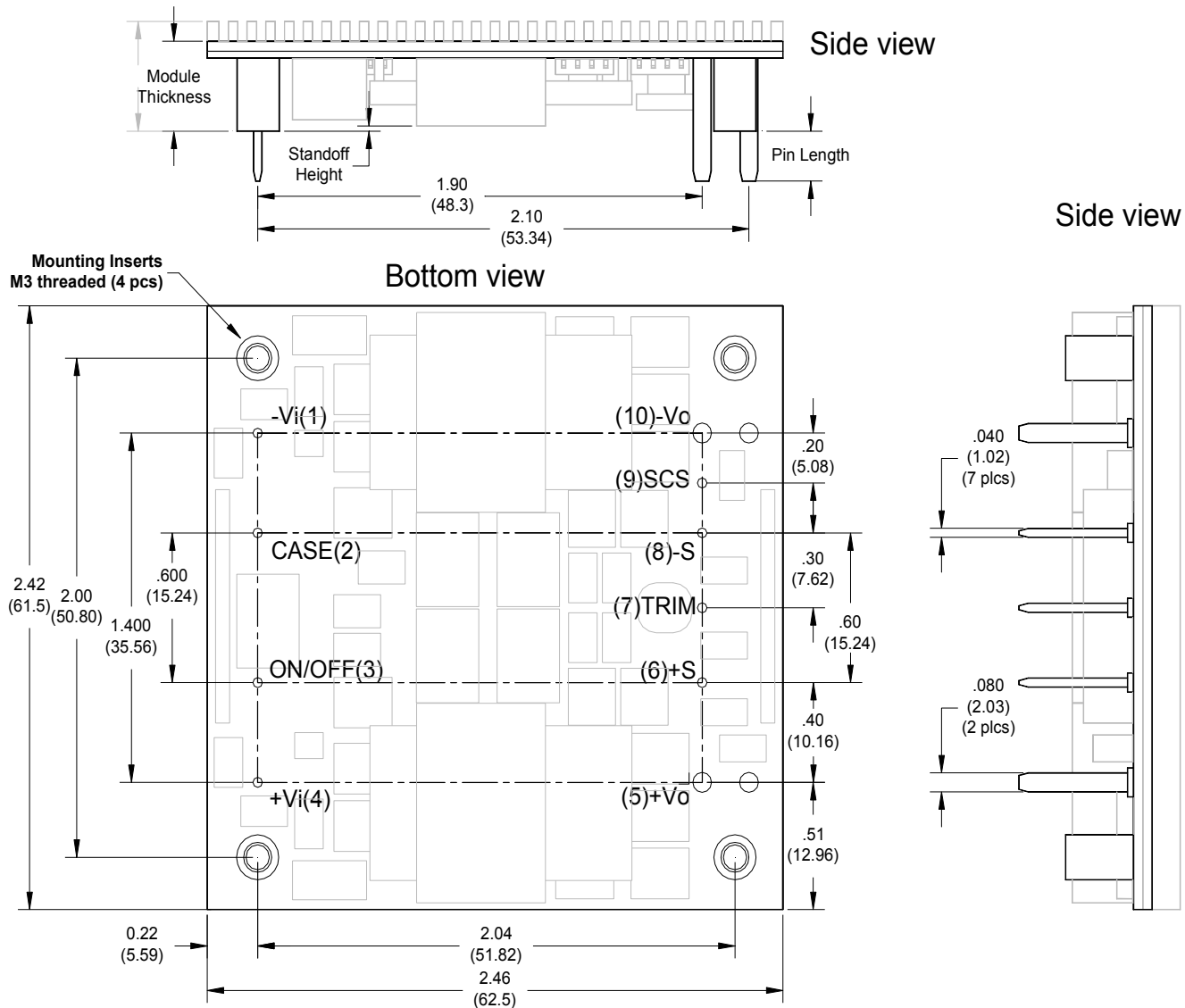
## NOTE:

1. It is recommended that the input should be protected by fuses or other protection devices.
2. All specifications are typical at nominal input, full load and 25°C unless otherwise noted.
3. Specifications are subject to change without notice.
4. Printed or downloaded datasheets are not subject to Glary document control.
5. Product labels shown, including safety agency certificates, may vary based on the date of manufacture.
6. Information provided in this documentation is for ordering purposes only.
7. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications, which necessitate specific safety and regulatory standards other than the ones listed in this datasheet.

## IMPORTANT

- ※ General specifications and the performances are related to standard series only, no special customer specification display here except requested items.
- ※ In order to secure effective usage of converter and the validity of Glary's service and warranty coverage, please refer to the application notes for general usage. For needs of usage beyond the application notes, please contact to Glary headquarter or our regional sales representative office for help.

## OPEN-FRAME



**Dimensions and Pin Connections**

Designation	Function Description	Pin #
-Vi	Negative input	1
CASE	Connected to base plate	2
ON/OFF	Remote control. To turn-on and turn-off output.	3
+Vi	Positive input	4
+Vo	Positive output	5
+S	Positive remote sense	6
TRIM	Output voltage adjust	7
-S	Negative remote sense	8
SCS	Secondary current share bus	9
-Vo	Negative output	10

**Dimensions:** inches (mm)

**Tolerances:** .xx±0.02 (.x±0.5)  
.xxx±0.01 (.x±0.25)

**Weight:** 87g

**Base plate:** Aluminum alloy with anode oxide

**Mounting inserts:** Stainless steel

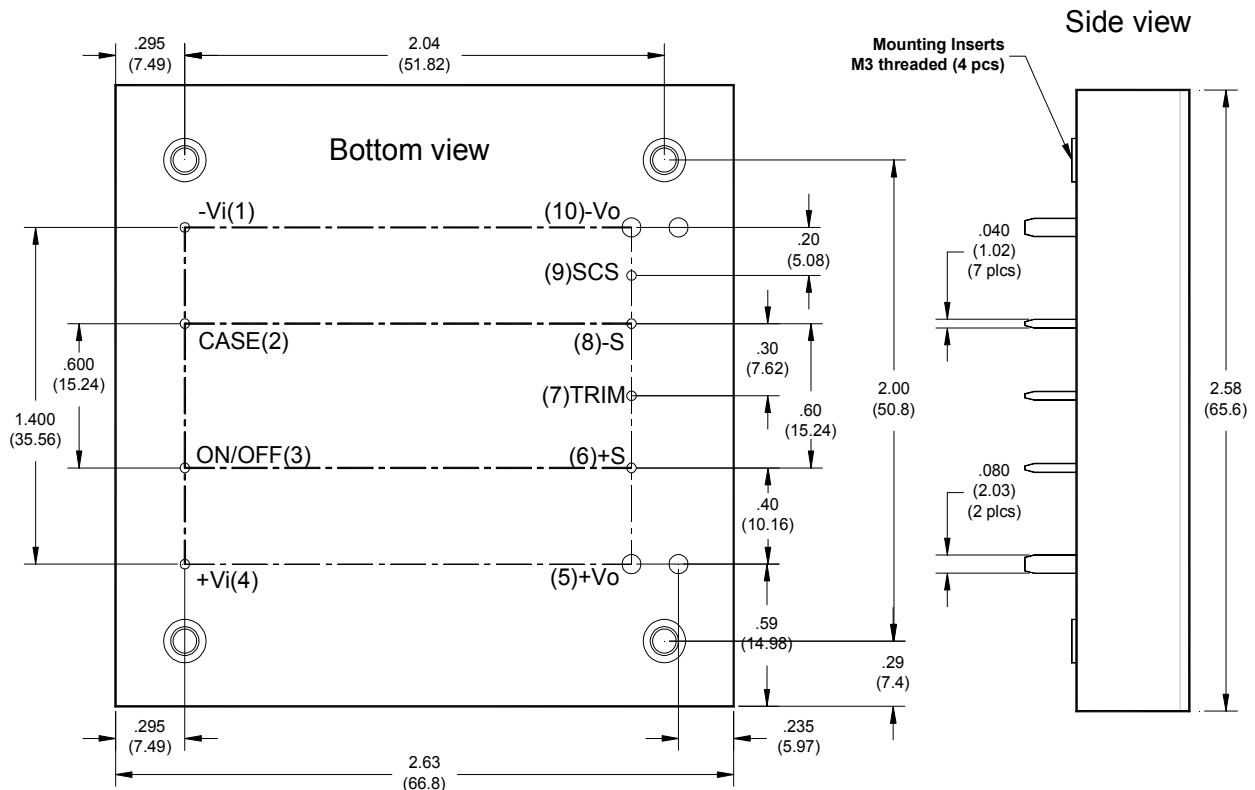
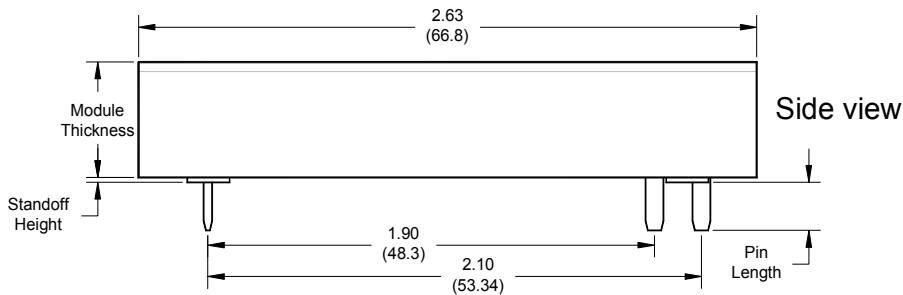
**Maximum torque:** 3.9 in-lb (0.44Nm)

**Pin material:** Copper alloy or Brass

**Pin plating:** Golden over Nickel



## METAL-ENCLOSED



**Dimensions and Pin Connections**

Designation	Function Description	Pin #
-Vi	Negative input	1
CASE	Connected to base plate	2
ON/OFF	Remote control. To turn-on and turn-off output.	3
+Vi	Positive input	4
+Vo	Positive output	5
+S	Positive remote sense	6
TRIM	Output voltage adjust	7
-S	Negative remote sense	8
SCS	Secondary current share bus	9
-Vo	Negative output	10

**Dimensions:** inches (mm)

**Tolerances:** .xx±0.02 (.x±0.5)  
.xxx±0.01 (.x±0.25)

**Weight:** 163g

**Base plate:** Aluminum alloy with anode oxide

**Mounting inserts:** Stainless steel

**Maximum torque:** 3.9 in-lb (0.44Nm)

**Pin material:** Copper alloy or Brass

**Pin plating:** Golden over Nickel