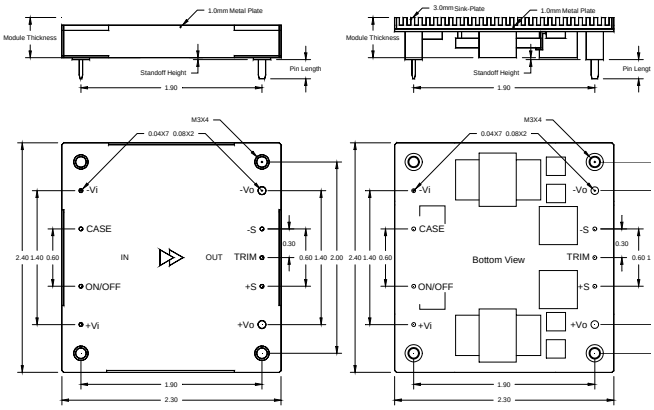
Glary Power Technology

TSH 150W/30A
1/2 Brick DC/DC Converters



The TSH series provides up to 150W/30A outputs with industry standard half brick package. The efficient Non-SR technology combining with ultra low leakage inductance magnetic gives converters "SR-like" conversion efficiency and high reliability, the single component side board designed with Sink-Plate technology eliminate the hot spot gives converter better thermal performance. Modules are designed for Telecom, Servers, Networking equipments and other applications that use a 24V or 48V (36~75V) input bus.

- High efficiency ..... 90%@28V/5.5A
  ..... 90%@15V/10A
  ..... 89%@12V/13A
- High power density .....75W/in^3
- Low profile ..... 0.36"(9.1mm)
- Standard footprint ..... 2.30"×2.40"
- Operation temperature ..... -40°C~105°C
- Sink-Plate (SP) flexible thermal managing capability (see drawing)

Part Number *	Maximum Input		Maximum Output		Efficiency
TSH48280ABCD-EF	36V~75V	177W	28V/5.5A	154W	90%
TSH48240ABCD-EF	36V~75V	180W	24V/6.5A	156W	89%
TSH48150ABCD-EF	36V~75V	168W	15V/10A	150W	90%
TSH48120ABCD-EF	36V~75V	177W	12V/13A	156W	89%
TSH48050ABCD-EF	36V~75V	176W	5.0V/30A	150W	86%

Part Number *	Maximum Input		Maximum Output		Efficiency
TSH24280ABCD-EF	18V~36V	177W	28V/5.5A	154W	89%
TSH24240ABCD-EF	18V~36V	180W	24V/6.5A	156W	88%
TSH24150ABCD-EF	18V~36V	168W	15V/10A	150W	90%
TSH24120ABCD-EF	18V~36V	177W	12V/13A	156W	89%
TSH24050ABCD-EF	18V~36V	176W	5.0V/30A	150W	86%

* Options for **TSH Series** are listed as follows:

A (Enable Logic): **P**: Positive **N**: Negative
B (Pin Dimension): **0**: 0.12" **1**: 0.16" **2**: 0.20" **3**: 0.24"
C (Standoff Height): **0**: 0.02" **1**: 0.08" **2**: 0.16"
D (Base-Plate/Module Thickness): **M**: 1.0mm Metal Plate/0.34" **A**: 3.0mm Sink-Plate/0.42" **B**: 5.0mm Sink-Plate/0.50"
E: 1.0mm Metal Plate with Metal Enclosure/0.34"
EF (Output): **00** to **99** for output current rating

Example: **TSH48120N00E-13** is a ***PH*** series half brick 48V to 12V/13A dc/dc converter with negative control logic, 0.12" pin length, 0.02" of standoff height and 1.0mm Metal Plate with Metal Enclosure. The total height of this module is 0.02"+0.34"=0.36"

ABSOLUTE MAXIMUM RATINGS

Temperature	Operation	-40°C to +120°C
	Storage	-55°C to +125°C
Input Voltage Range	Operation:	
	24V Models	-0.5V to +40Vdc
	48V Models	-0.5V to +80Vdc
	Transient (100mS):	
	24V Models	50V Maximum
	48V Models	100V Maximum
Isolation Voltage	Input to Output	2.0KV Minimum
	Input to Case	1.0KV Minimum
	Output to Case	1.0KV Minimum
Remote Control Voltage		-0.5V to +12Vdc

GENERAL SPECIFICATIONS

Conversion Efficiency	Typical	See table
Switching Frequency	Typical	360KHz
MTBF	Bellcore	4.56×10^6 hrs @GB.
OTP	Internal	115°C
Weight		1.9 oz or 3.2 oz
Size		2.30"×2.40"×0.36"

CONTROL FUNCTIONS

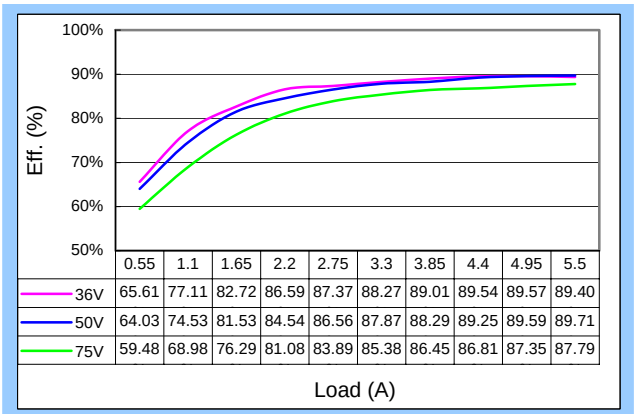
Remote Control	Logic High	+3.0V t0 +6.5V
	Logic Low	0V to +1.0V
Input Current of Remote Control Pin		-0.5mA ~ +1.5mA

INPUT SPECIFICATIONS

Operation Voltage Range	24V Models	+18V to +36Vdc
	48V Models	+36V to +75Vdc
Reflected Ripple Current	L_{EXT} = 10uH	20mA Max
Power ON Voltage Ranges	24V Models	+17.5V to +17.9Vdc
	48V Models	+35.0V to +35.8Vdc
Power OFF Voltage Ranges	24V Models	+17.0V to +17.4Vdc
	48V Models	+34.0V to +34.8Vdc
Off State Input Current	V_{NOM}	6mA Max
Latch-State Input Current	V_{NOM}	8mA Max
Input Capacitance	24V Models	33.0uF Max
	48V Models	6.8uF Max

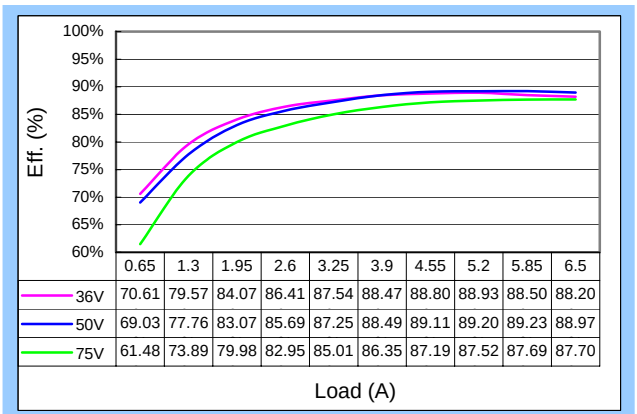
OUTPUT SPECIFICATIONS

Voltage Accuracy	Typical	±1%
Line Regulation	Full Input Range	±0.2%
Load Regulation	10%~100%	±0.2%
Temperature Drift	-40°C ~100°C	±0.02%/°C
Output Tolerance Band	All Conditions	±3%
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) V_o
Over Voltage Protection	V_{NOM}, 10% Load	115~130 %Vo
Output Current Limits	V_{NOM}	105%~125%
Voltage Trim	V_{NOM}, 10% Load	±10%
Input Ripple Rejection (<1KHz)	V_{NOM}, Full Load	-50dB
Step Load (2.5A/uS)	50%~75% Load	300mV/500uS
Start-Up Delay Time	V_{NOM}, Full Load	20mS/250mS



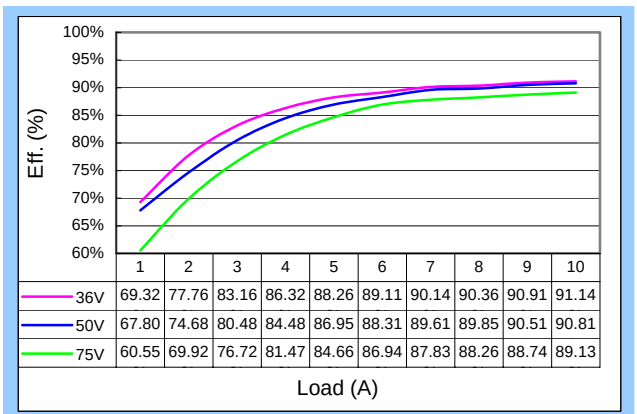
	0.55	1.1	1.65	2.2	2.75	3.3	3.85	4.4	4.95	5.5
36V	65.61	77.11	82.72	86.59	87.37	88.27	89.01	89.54	89.57	89.40
50V	64.03	74.53	81.53	84.54	86.56	87.87	88.29	89.25	89.59	89.71
75V	59.48	68.98	76.29	81.08	83.89	85.38	86.45	86.81	87.35	87.79

Efficiency Plot of TSH48280ABCD-06



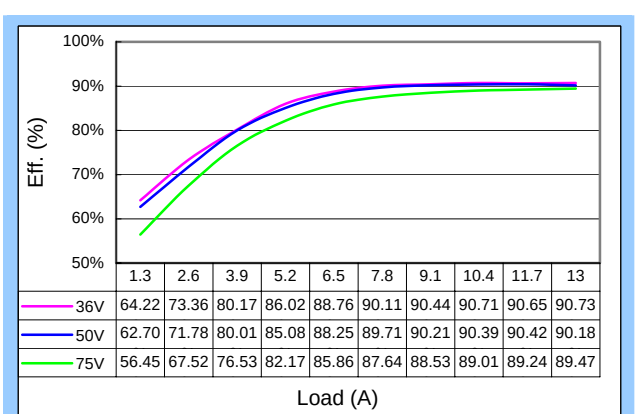
	0.65	1.3	1.95	2.6	3.25	3.9	4.55	5.2	5.85	6.5
36V	70.61	79.57	84.07	86.41	87.54	88.47	88.80	88.93	88.50	88.20
50V	69.03	77.76	83.07	85.69	87.25	88.49	89.11	89.20	89.23	88.97
75V	61.48	73.89	79.98	82.95	85.01	86.35	87.19	87.52	87.69	87.70

Efficiency Plot of TSH48240ABCD-07



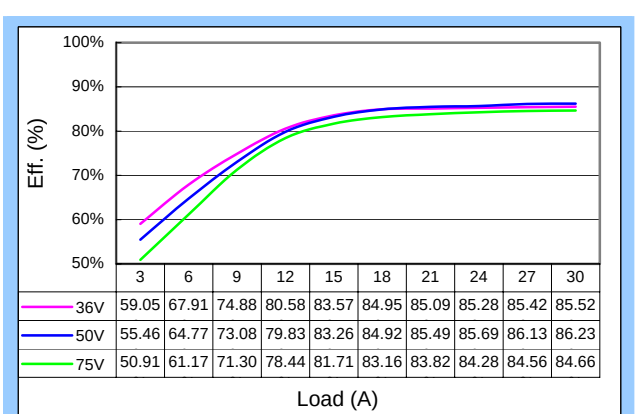
	1	2	3	4	5	6	7	8	9	10
36V	69.32	77.76	83.16	86.32	88.26	89.11	90.14	90.36	90.91	91.14
50V	67.80	74.68	80.48	84.48	86.95	88.31	89.61	89.85	90.51	90.81
75V	60.55	69.92	76.72	81.47	84.66	86.94	87.83	88.26	88.74	89.13

Efficiency Plot of TSH48150ABCD-10



	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7	13
36V	64.22	73.36	80.17	86.02	88.76	90.11	90.44	90.71	90.65	90.73
50V	62.70	71.78	80.01	85.08	88.25	89.71	90.21	90.39	90.42	90.18
75V	56.45	67.52	76.53	82.17	85.86	87.64	88.53	89.01	89.24	89.47

Efficiency Plot of TSH48120ABCD-14



	3	6	9	12	15	18	21	24	27	30
36V	59.05	67.91	74.88	80.58	83.57	84.95	85.09	85.28	85.42	85.52
50V	55.46	64.77	73.08	79.83	83.26	84.92	85.49	85.69	86.13	86.23
75V	50.91	61.17	71.30	78.44	81.71	83.16	83.82	84.28	84.56	84.66

Efficiency Plot of TSH48050ABCD-30

NOTE

1. 20MHz bandwidth current probe measured without an external filter.
2. Output ripple and noise is measured by using the proposed test method of Glary Power Technology Co. Ltd.
3. Input fusing is required and recommended to base on surge current and maximum input current.
4. Case and base-plate should be connected to AC ground to maintain good EMC performance.
5. Case and base-plate should be inaccessible to prevent the damage from highly operating temperature.
6. Contact Glary Power Technology for non-standard inquiry.