

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/in³
- Low profile 0.36" (9.1mm)
- Standard footprint 2.30" x 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"

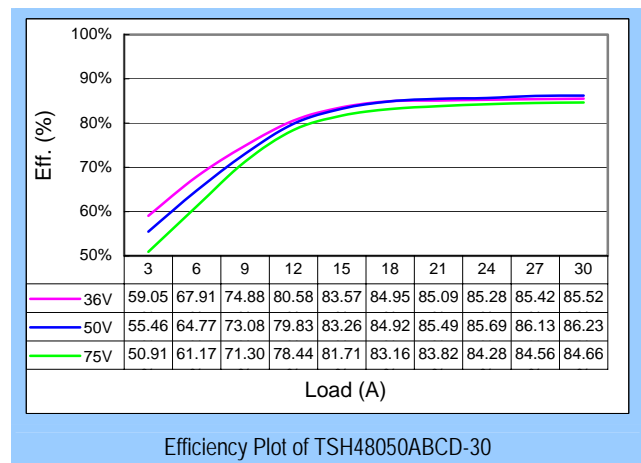
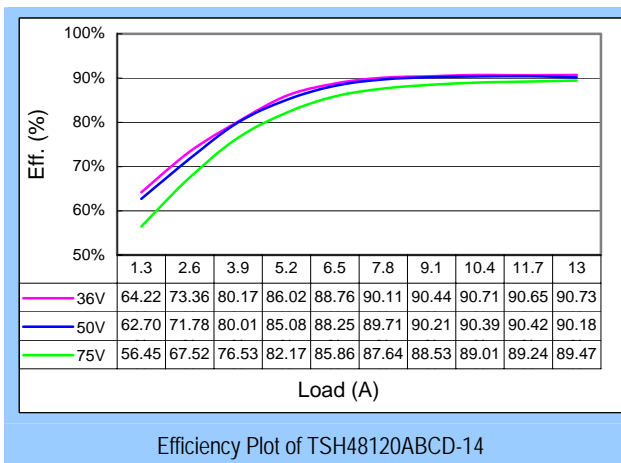
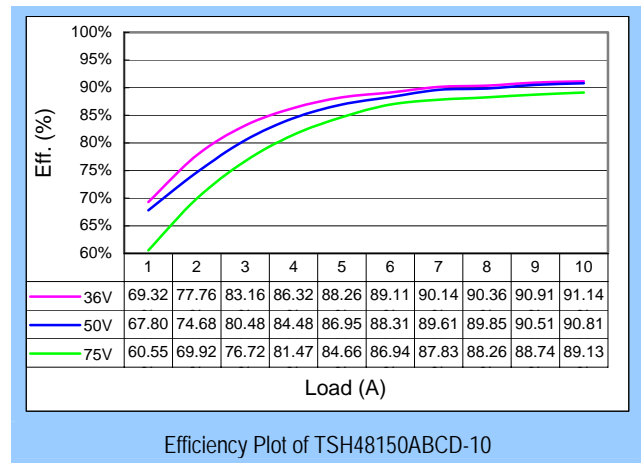
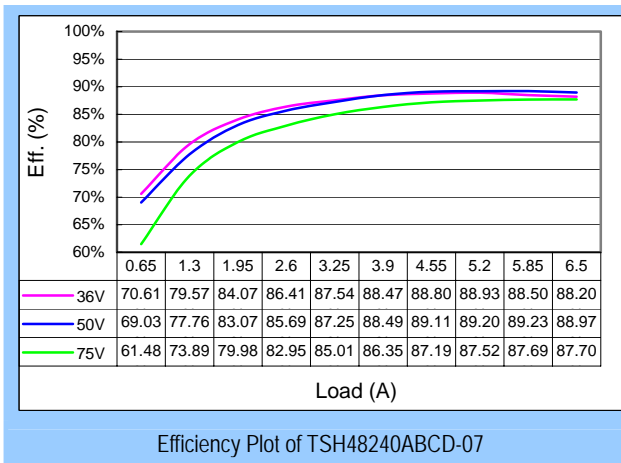
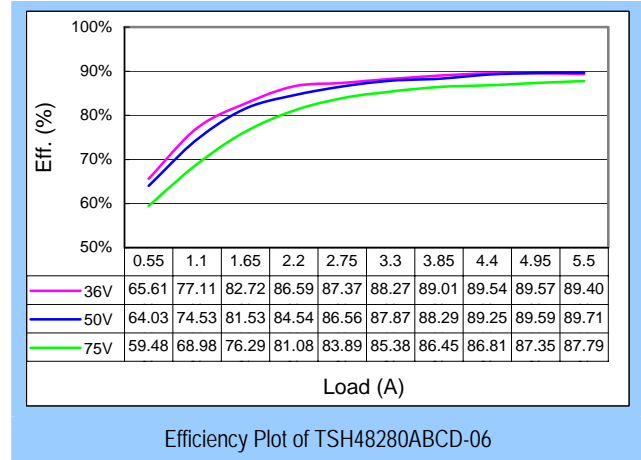
ABSOLUTE MAXIMUM RATINGS		
Temperature	Operation	-40°C to +120°C
	Storage	-55°C to +125°C
Input Voltage Range	Operation:	
	24V Models	-0.5V to +40Vdc
	48V Models	-0.5V to +80Vdc
	Transient (100mS):	
	24V Models	50V Maximum
	48V Models	100V Maximum
Isolation Voltage	Input to Output	2.0KV Minimum
	Input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

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

GENERAL SPECIFICATIONS		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	360KHz
MTBF	Bellcore	4.56x10 ⁶ hrs @GB.
OTP	Internal	115°C
Weight		1.9 oz or 3.2 oz
Size		2.30" x 2.40" x 0.36"

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 %V _o
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

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



NOTE

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