



thermaltake

TOUGHPOWER SERIES
POWER SUPPLY

TOUGHPOWER GF1 650W



TOUGHPOWER GF1 650W

DATASHEET



thermaltake

TOUGHPower SERIES POWER SUPPLY

TOUGHPower GF1 650W

Ultra Quiet

Hydraulic Bearing Fan

Smart Zero Fan

Low Ripple Noise

Fully Modular

Flat Cables

100% Japanese

Capacitors



10 YEAR
Warranty



Features

- 650W continuous output at 50°C/122°F operating environment.
- High efficiency Zero Cable Platform with premium build quality.
- 100% high quality Japanese 105°C/221°F capacitors.
- < 30mV low ripple noise design.
- Extremely strict voltage regulation < $\pm 2\%$
- Fully modular low-profile flat black cables.
- Upgraded CPU/PCI-E main cables (16AWG wires) for high end enthusiasts' PCs
- Ultra Quiet 140mm Hydraulic Bearing Fan delivers excellent airflow.
- Smart Zero Fan: Minimizes undesired noise.
- High amperage single +12V rail design.
- Intel C6/C7 states & ErP ready
- Built-in industry grade protections: OCP, OVP, UVP, OPP, SCP, OTP
- Dimension: 150mm(W)x86mm(H)x160mm(D).
- Safety approvals: CE/cTUVus/TÜV/FCC/BSMI/EAC certifications.

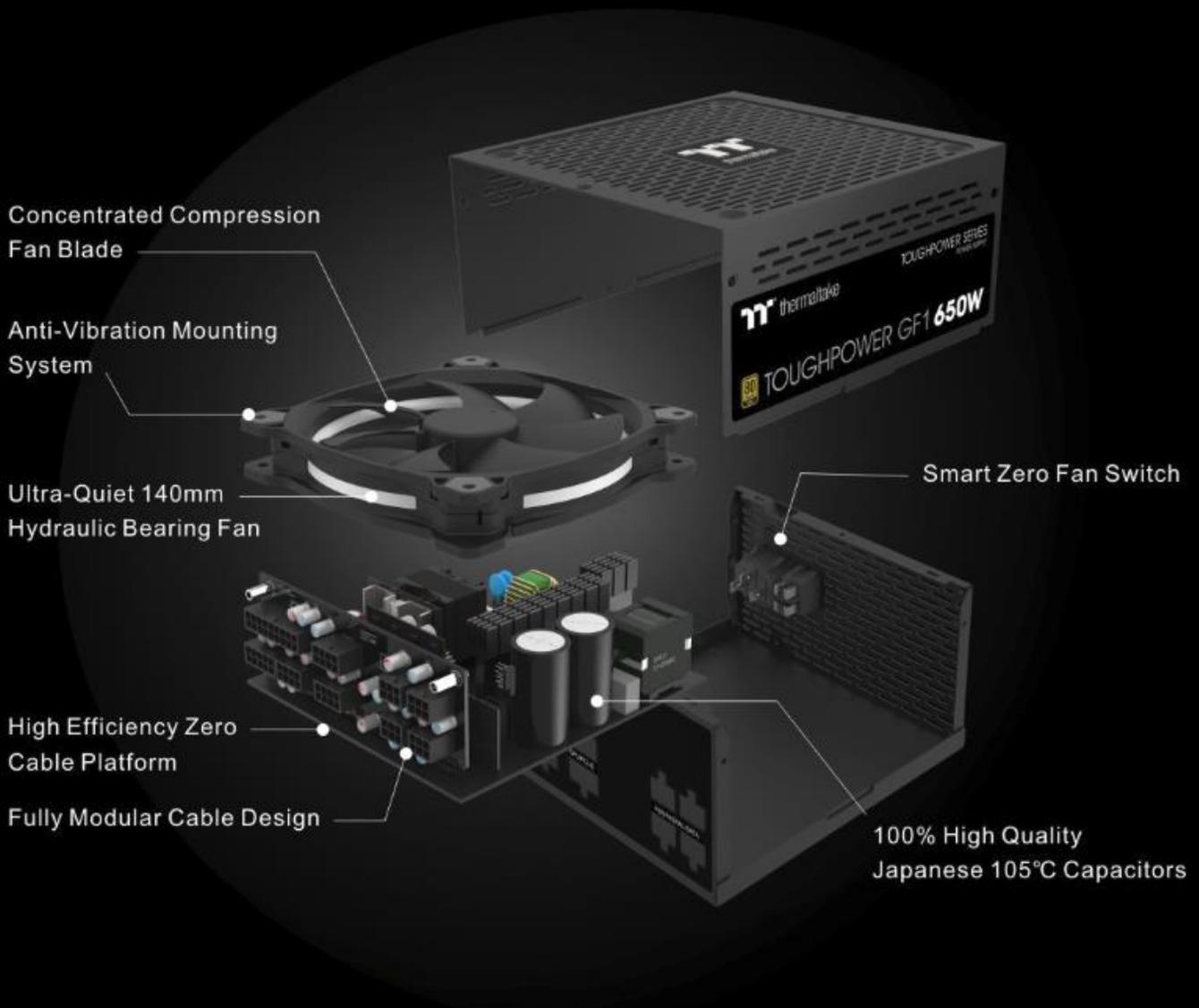


thermaltake

TOUGHPower SERIES
POWER SUPPLY

TOUGHPower GF1 650W

Premium Build Quality



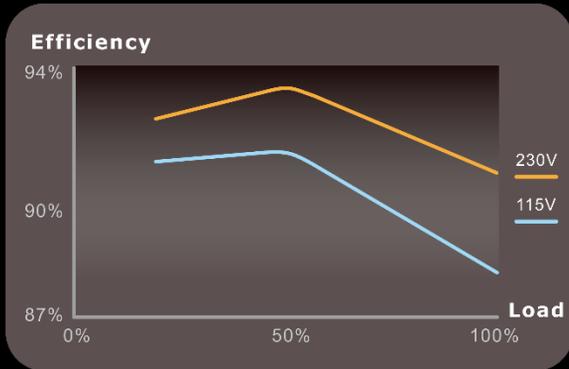


thermaltake

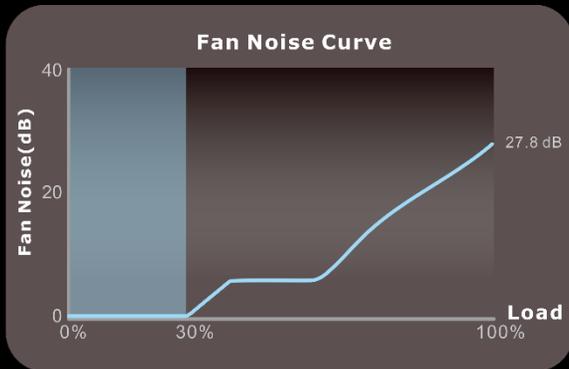
TOUGHPower SERIES POWER SUPPLY

TOUGHPower GF1 650W

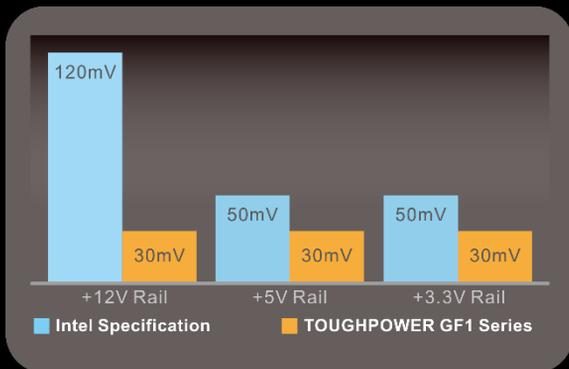
Highlight Features



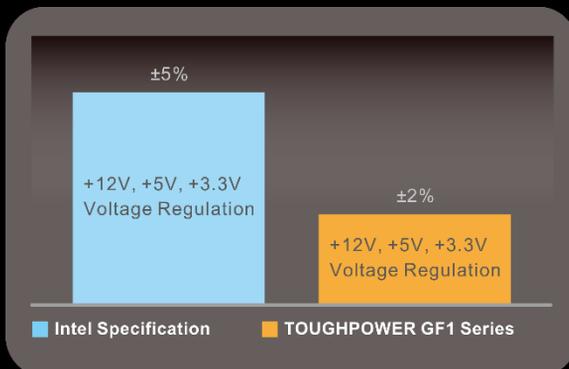
80 PLUS Gold Certified Efficiency
Delivers top end efficiency under real world load conditions.



Ultra Quiet Smart Zero Fan
Minimize undesired noise.



< 30mV Low Ripple Noise Design
Top-end build quality with low ripple noise.



Extremely Strict Voltage Regulation < ±2%
Provides steady clean power through exceptional voltage stability.



TOUGHPower SERIES POWER SUPPLY

thermaltake

TOUGHPower GF1 650W

Highlight Features



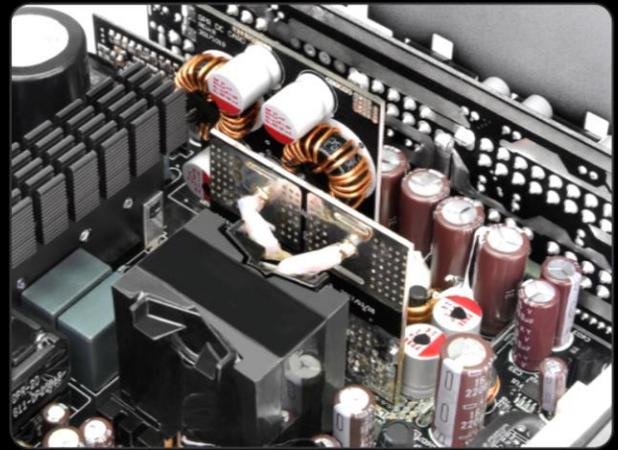
Fully Modular Low-Profile Flat Black Cables

Makes cable management easier, reduces clutter and increases airflow inside the chassis.



100% High Quality Japanese 105°C/221°F Capacitors.

Improves the durability and offers the highest stability and reliability.



High Amperage Single +12V Rail & DC to DC Design

Powerful single +12V rail and DC to DC design for the best compatibility.

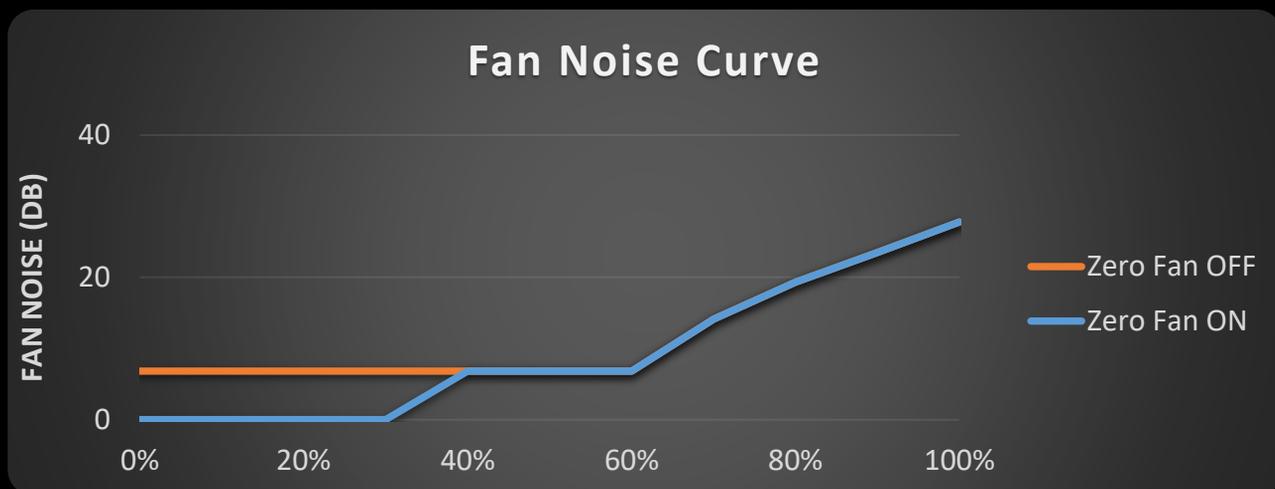


thermaltake

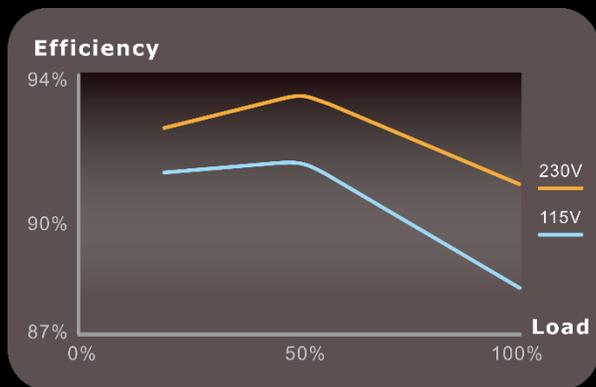
TOUGHPOWER SERIES POWER SUPPLY

TOUGHPOWER GF1 650W

Fan Curve



Eco Design



80 PLUS® Gold Certified Efficiency
Delivers top end efficiency under real world load conditions.

Supports Energy Star 5.0* energy standard

Toughpower GF1 series is suitable for use in Energy Star-compatible computers.

Supports Intel Deep Power Down C6 Status

Helps your PC system operate more power efficiently.

Corresponds to the EU directives on WEEE and RoHS

Thermaltake considers its full impact on the environment during manufacturing and maintains green facilities to ensure Toughpower GF1 series meets WEEE & RoHS requirements.



Output Specification

AC Input	Input Voltage: 100V - 240V~ Input Current: 10A Frequency: 50Hz - 60Hz				
DC Output	+3.3V	+5V	+12V	-12V	+5VSB
Max Output Current	22A	22A	54.2A	0.3A	3A
Max Output Power	120W		650.4W	3.6W	15W
Total Power	650W				

Connect Specification

Connector						
Wattage	Main Power Connector (24Pin)	ATX 12V (4+4Pin)	SATA (5Pin)	PCI-E (6+2Pin)	Peripheral (4Pin)	FDD Adapter
650W	1	1	9	4	4	1

Wattage	Connector Type	Connector Quantity & Cable Length
650W	Main Power (24pin)	1 x 24pin Main connector (600mm)
	ATX 12V (4+4pin)	1 x ATX 12V 4+4pin connector (650mm)
	PCI-E (6+2pin)	2 x PCI-E 6+2pin connectors (500mm + 150mm) 2 x PCI-E 6+2pin connectors (500mm + 150mm)
	SATA	3 x SATA connectors (500mm + 150mm + 150mm) 3 x SATA connectors (500mm + 150mm + 150mm) 3 x SATA connectors (500mm + 150mm + 150mm)
	Peripheral	4 x Peripheral connectors (500mm + 150mm + 150mm + 150mm)
	Floppy Adapter	1 x Peripheral to Floppy adapter cable (150mm)



GENERAL INFO	
P/N	PS-TPD-0650FNFAGU-1
Max. Output Capacity	650W
Peak Output Capacity	780W
Color	Black
Dimension (W/H/D)	150mm(W) x 86mm(H) x 160mm(D)
PFC	Active PFC
Power Good Signal	100-500 msec
Hold-Up Time	> 16msec at 100% of full load
AC INPUT	
Input Current	10A
Input Frequency Range	50Hz - 60Hz
Input Voltage	100V – 240V~
ENVIRONMENTAL	
Operating Temperature	0°C to + 50°C
Operating Humidity	20% to 90%,non-condensing
Storage Temperature	-20°C to + 70°C
Storage Humidity	5% to 95%, non-condensing
Cooling System	14cm hydraulic bearing fan
MISCELLANEOUS	
Efficiency	Meet 80 PLUS®Gold at 115Vac input.
MTBF	120,000 hrs minimum
Safety Approval	CE/cTUVus/TÜV/FCC/BSMI/EAC
PCI-E CONNECTOR	
PCI-E 6+2pin	4



thermaltake

TOUGHPOWER SERIES POWER SUPPLY

TOUGHPOWER GF1 650W

Total Protection

Voltage Source	Over Voltage Protection	Under Voltage Protection	Over Current Protection
	Protection Point		
+3.3V	4.5Vmax	Not lower than 2.2~2.4V	180% max.
+5V	7Vmax	Not lower than 3.3~3.7V	180% max.
+12V	14.5Vmax	Not lower than 8.5~9.5V	150% max.
Over Power Protection	Protection at 120%~150% over peak load.		
Over Temperature Protection	Protection temperature is 70°C at 115V and full load.		
Short Circuit Protection	Activated when any DC rails short circuited.		