

GP100H3M54TEZ Global Platform Line High Efficiency Power Supply

3 Φ -380/480V_{AC} Input; Default Outputs: \pm 54/52V_{DC} @ 6000W, 5V_{DC} @ 10W

RoHS Compliant



Applications

- 48V_{DC} distributed power architectures
- Routers/ VoIP/Soft and other Telecom Switches
- LAN/WAN/MAN applications
- File servers, Enterprise Networks, Indoor wireless
- SAN/NAS/iSCSI applications
- Semiconductor Manufacturing

Features

- Efficiency 96.5% typical, exceeds 80plus Titanium levels
- Compact 1RU form factor with 30 W/in³ density
- Constant power from 48 – 58VDC
- 6000W from nominal 3 Φ -380/480VAC
- Output voltage programmable from 42V – 58V_{DC}
- PMBus compliant dual, redundant I²C serial bus
- Power factor correction (meets EN/IEC 61000-3-2 and EN 60555-2 requirements)
- SEMI-F47 Tested and Compliant at 480V_{AC}
- Output overvoltage and overload protection
- AC Input overvoltage and undervoltage protection
- Over-temperature warning and protection
- Redundant, parallel operation with active load sharing
- Redundant +5V @ 2A Aux power

Description

The GP100 series of rectifiers provide significant efficiency improvements in the Global Platform of Power supplies. High-density front-to-back airflow is designed for minimal space utilization and is highly expandable for future growth. The 3 Φ - 380/480Vrms input product is designed to be deployed internationally. It is configured with dual-redundant PMBus™ compliant I²C communications busses that allow it to be used in a broad range of applications. Feature set flexibility makes these rectifiers an excellent choice for applications requiring modular, very-high-efficiency AC to - 48V_{DC} intermediate voltages, such as in distributed power.

- Remote ON/OFF
- Internally controlled Variable-speed fan
- Hot insertion/removal (hot plug)
- Three front panel LED indicators
- UL and cUL approved to UL/CSA*62368-1, TUV (EN62368-1), CE^S Mark (for LVD) and CB Report available
- Compliant to RoHS Directive 2011/65/EU and amended Directive (EU) 2015/863.
- Compliant to REACH Directive (EC) No 1907/2006
- Meets FCC part 15, EN55032 Class A standards
- Meets EN61000 immunity and transient standards
- Shock & vibration: Meets IPC 9592 Class II standards
- Conformally coated PCBs for protection from airborne contamination and high humidity

Technical Specifications

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

Parameter	Symbol	Min	Max	Unit
Input Voltage: Continuous	V_{IN}	0	600	V_{AC}
Operating Ambient Temperature ¹	T_A	-10	75	°C
Storage Temperature	T_{stg}	-40	85	°C
I/O Isolation voltage to Frame (100% factory Hi-Pot tested)			2087	V_{AC}

Electrical Specifications

Unless otherwise indicated, specifications apply overall operating input voltage, $V_o=54V_{DC}$, resistive load, and

INPUT

Parameter	Symbol	Min	Typ	Max	Unit	
Operating Voltage Range (3Φ delta with safety frame ground)	V_{IN}	320	380/480	530	V_{AC}	
Low voltage	V_{IN}	Turn-Off	(300)	320		
		Turn-On	(315)	330		
		Hysteresis	5			
High voltage	V_{IN}	Turn-Off	530	(550)		
		Turn-On	520	(545)		
		Hysteresis	5			
Input voltage phase unbalance	V_{IN}	-15		10		%
Frequency	F_{IN}	47		63		Hz
Operating Current (3Φ - all phases operational)	I_{IN}			15	A_{AC}	
Input current phase unbalance [load > 50% of FL]				1	%	
Inrush Transient (per Φ at 480V _{RMS} , 25°C, excluding X-Capacitor charging)	I_{IN}		25	30	A_{PK}	
Source Impedance (NEC allows 2.5% of source voltage drop inside a building)		0.20	0.25		Ω	
Idle Power (at 480V _{AC} , 25°C)	P_{IN}	Main output OFF	15		W	
		Main output ON @ $I_o=0$	25			
Leakage Current (per Φ, 530V _{AC} , 60Hz)	I_{IN}		2.5	3.5	mA	
Power Factor (50-100% load)	PF	0.96	0.995			

Technical Specifications (continued)

Electrical Specifications (Continued)

Parameter	Symbol	Min	Typ	Max	Unit
Efficiency (380/480V _{AC} , @ 25°C) 10% load 20% load 50% load 100% load	η		90/91 93/94 96/96.5 95/96		%
Holdup time (V _{in} = 320V _{rms} , V _{out} ≥ 42V _{DC} , constant power load)	T	10	12		ms
Ride through (480V _{AC} , 25°C, constant power load)	T	1/2	1		cycle
Power Fail Warning ² (V _{OUT} ≥ 42V _{DC} , P _{OUT} = constant power)	PFW	5	8	12	ms
Isolation (per EN62368-1) Input – Output Input-Chassis/Signals	V	3000 2000			V _{AC} V _{AC}

54/52/48V_{DC} MAIN OUTPUT

Parameter	Symbol	Min	Typ	Max	Unit
Output Power (320 – 530V _{AC} – 3 Φ , T _{AMB} = 0 – 45°C)	W	6000			W _{DC}
Factory set default set point V _{IN} = 480V, I = 10% FL, 25°C I ² C/RS485			54/52/48		V _{DC}
Nominal set point (droop regulation; max-no load, min-full load)		-50		450	mV _{DC}
Overall regulation (load, temperature, aging) 0 – 45°C LOAD > 2.5A	V _{OUT}	-0.5		+0.5	%
T _{AMB} > 45°C		-2		+2	%
Output Voltage Set Range Programmable voltage resolution Programmed voltage retention		42	0.012	58	V _{DC} V _{DC} days
Output Current (54 /, T _{AMB} = 45°C) V _{OUT} = 54V _{DC} V _{OUT} = 52V _{DC} V _{OUT} = 48V _{DC}	I _{out}	1		111	A _{DC}
		1		115	
		1		125	
Current Share (> 50% FL) active current share remotely controlled I _{SHARE} is employed		-5 -2		5 2	%FL %FL
Max units parallelable active current share/ remotely controlled				20/100	units
Proportional Current Share between different power supplies (> 50% FL)			<7		%FL
Output Ripple (20MHz bandwidth, load > 10%FL) Load < 10%FL	V _{OUT}			100	mV _{rms}
				250	mV _{p-p}
				400	mV _{p-p}
Voice Band Output Noise	V _{OUT}	With 880Ahr battery in system		45	dBmC
		Without battery		55	
		Psophometric Noise			2 ³
External Bulk Load Capacitance	C _{OUT}	0		1,700	μF/A
Turn-On (monotonic turn-ON from 30 – 100% of V _{nom} , above -5°C ⁴) Delay	T		5		s
Rise Time – PMBus or Analog mode			100		ms
Rise Time – RS-485 mode		2.5			s
55A (50% load)		5			
83A (75% load)	8				
100A (90% load)					
Output Overshoot	V _{OUT}			2	%

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