Digital Power®
Flexible Power Solutions

(877) 634-0982
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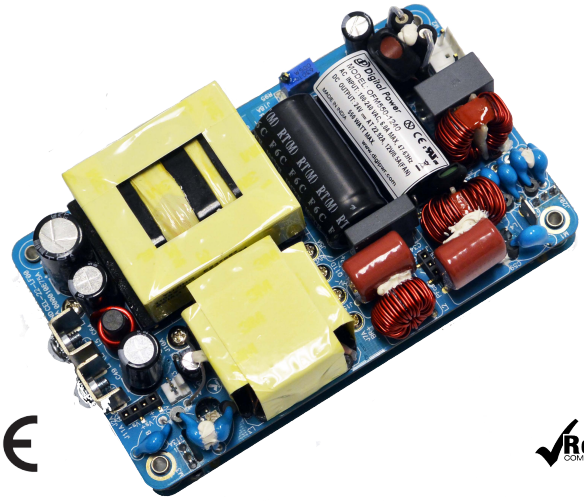
OFM550 Series

550 Watt High Density AC/DC Medical Grade Power Supply



Product Specification

Universal AC Input with PFC
3" x 5" Footprint
Single Output with 12V Aux fan

Key Product Features

- EN60601-1 3rd Ed. Safety Approved
- Medical (BF) Safety Approvals
- Class I
- High Power Density—24W/in³
- Active PFC
- High Efficiency—up to 92% typ.

Safety and EMC

- CSA/UL 60601-1 Medical Safety
- IEC/EN60601-1 3rd Edition
- CAN/CSA C22.2 No. 60601-1 3rd Edition
- Nemko, UL, cUL and CE Marks
- EN50022 (CISPR 22) FCC Part 15 Conducted—Level B
- EN61000-3-2 Class D Harmonics
- EN61000-4-2, 3, 4, 5 Level 3 Immunity

Description

The OFM550 Series of open frame switching power supplies utilizes a highly advanced circuit topology to deliver 550 Watts in an industry standard package that has a 3.00 x 5.00 inch footprint and 1.5 in. height. The series has been designed meet the requirements of Telecom and Industrial applications and operates over the universal AC input range with active PFC. These supplies feature cutting edge efficiency and power density and are fully and compliant with worldwide safety and EMC standards.

Ratings

Input Voltage Range—AC Input	90–264 VAC/390 VDC, Universal (see derating curves)
Input Frequency Range	47–63Hz
Input Current	6.0A at 115VAC max. , 3.0A at 230VAC max.
Output Power—forced air	550W with 400 LFM airflow—see derating curves
Output Power—natural conduction	250W natural conduction—see derating curves
Output Power—natural convection	150W natural convection—see derating curves
Operating Temperature Range	-40°C to +50°C, to +70°C with derating
Power Factor	>0.95 at full load

Model Selection

Model	Output Voltage, VDC	Rated Current, A		
		400 LFM Forced Air	Natural Conduction	Natural Convection
OFM550-1120	12.0	41.67	16.67	9.17
OFM550-1150	15.0	33.33	13.33	7.33
OFM550-1240	24.0	22.92	10.42	6.25
OFM550-1300	30.0	18.33	8.33	5.00
OFM550-1480	48.0	11.46	5.21	3.13
OFM550-1580	58.0	9.48	4.31	2.59

Electrical Specifications

Input

Input Voltage	90-264 VAC/390 VDC, Universal (see derating under output power)
Input Frequency	47-63 Hz
Input Current	6.0A at 115VAC max. , 3.0A at 230VAC max.
No Load Power	<0.5W 115VAC , <0.7W 230VAC
Inrush Current	115 VAC – 25 A, 230 VAC – 45 A, 264 VAC – 75 A
Leakage Current	<200 uA @ 115VAC , <400uA @ 230VAC Touch current <100uA
Efficiency	92% (48V,58V), 91% (24V,30V), 90% (12V,15V) typical @ 230VAC full load
Hold-up Time	Full Load > 16ms typical, Convection Load > 55ms typical, Conduction Load > 30ms typical
Power Factor	exceeds 0.95 with Full Load, Active PFC

Output

Output Voltage Adjustability	+/-3%
Line Regulation	+/-0.5%
Load Regulation	+/-1%
Transient Response	50–100% step load change, at 0.1A/uS slew rate, 50% duty cycle, 50Hz=5% , recovery time < 5 ms
Rise Time	55ms typical
Set Point Tolerance	+/-1%
Over Current Protection	> 110%, Hiccup mode / Auto recovery
Over Voltage Protection	110 to 140%, Hiccup mode / Auto recovery
Short Circuit Protection	Hiccup mode / Auto recovery

EMC and Safety Certifications

EMC

CE Mark	Complies with LVD Directive
Conducted Emissions	EN55022-B, CISPR22-B, FCC PART15-B
Static Discharge	EN61000-4-2, Level-3
RF Field Susceptibility	EN61000-4-3, Level-3
Fast Transients/Bursts	EN61000-4-4, Level-3
Radiated Emissions	Level A radiated
Surge Susceptibility	EN61000-4-5, Level-3
Harmonic Current	EN61000-3-2, Class D

Safety

Safety Standard(s)	UL/CSA: ANSI/AAMI ES60601-1 (2005+C1:09+A2:10) AMD1:2012; CORR1; AMD2:2010 CAN/CSA-C22.2 No. 60601-1 (2008) CAN/CSA C22.2 No 60601-1:14 IEC: IEC60601-1: 2005 + CORR. 1:2006 + CORR. 2:2007 + AM1: 2012 (or IEC 60601-1: 2012 reprint) EN: EN 60601-1:2006; A1
Approval Agency	Nemko, UL, C-UL
Isolation Voltage	Input to Output—4000VAC Medical applications. Input to GND—1500VAC, Output to GND—1500VAC for type BF, 500VAC for type B

Environmental Specifications

Operating Temperature*	-40 to +70°C * -40 to 0 °C startup is guaranteed with specification deviation (ref note 6)
Storage Temperature	-40 to +85°C
Relative Humidity	5% to 95%, noncondensing
Altitude	Operating: 16,000 ft.; Nonoperating: 40,000 ft.
MTBF	3.42m Hours, Telcordia-SR332-3

Mechanical Specifications

AC Input Connector (J1)	JST: B3P-VH-B(LF)(SN) or equivalent Mating: VHR-3M or equivalent Pins: SVH-41T-P1.1 or equivalent
DC Output Connector (J2) (Screw Terminal)	6-32 inch. Pan Head Screw Mating designed to accept Ring Tongue Terminal AMP: 8-31886-1, wherein one 16AWG(max) wire can be crimped. *Note: One Ring Tongue Terminal with 16AWG is recommended for current up to 11A only. Use multiple tongue terminals with wire for more current.*
Aux (Fan) Output (J3)	AMP: 640456-2 Mating: 640440-2
Earth (J4)	Molex: 19705-4301 Mating: 19003-001
Dimensions	5 x 3 x 1.5 inches (127 x 76.2 x 38.1mm)
Weight	500gm Max.

Connector Pin Assignments

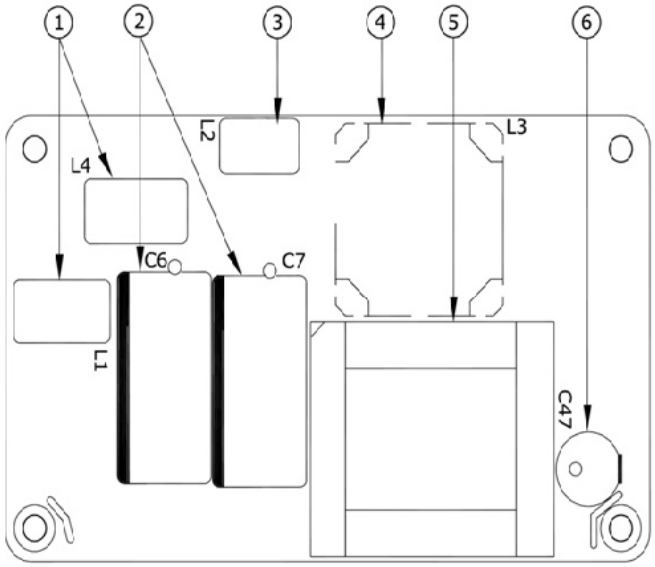
Connector	Pin	Function
J1	1	AC Line
	2	Not Provided
	3	AC Neutral
J2	1	+Vout
	2	-Vout
J3	1	Fan +Vout
	1	Fan -Vout

Notes:
1. Ripple is peak to peak with 20 MHz bandwidth and 10 µF (Tantalum capacitor) in parallel with a 0.1 µF capacitor at rated line voltage and load ranges.
2. Combined output of main output, fan supply shall not exceed max. Power rating.
3. Fan supply output voltage tolerance including set point accuracy, line and load regulation is +/- 10% and ripple and noise is less than 10%
4. Specifications are for nominal input voltage, 25°C unless otherwise stated.
5. Thermal shutdown feature. The power supply goes into hiccup mode when the temperature of Substrate PCB exceeds 110 °C (+/-10°C).
6. -40 to 0°C startup is guaranteed with spec deviation in output ripple can be more than 10%.
7. Refer Recommended Conduction Plate and Clearance on Page No. ?

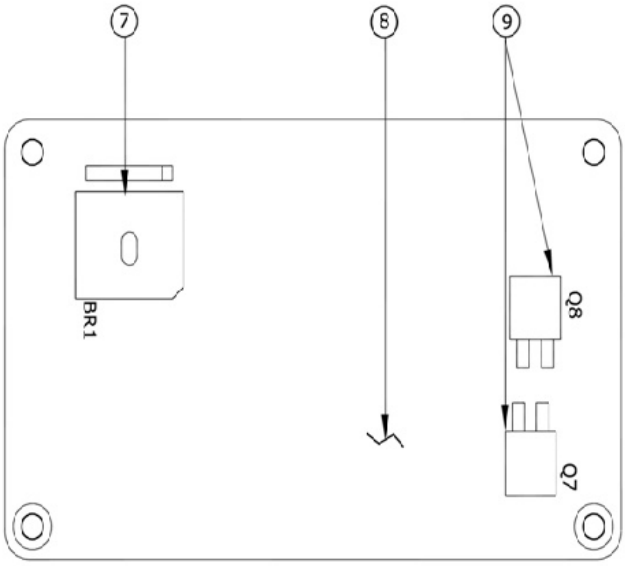
Mechanical Outline

Maximum Operating Temperature

For reliable and safe operation, please make sure the maximum component temperatures given in table below is not exceeded.



TOP PCB

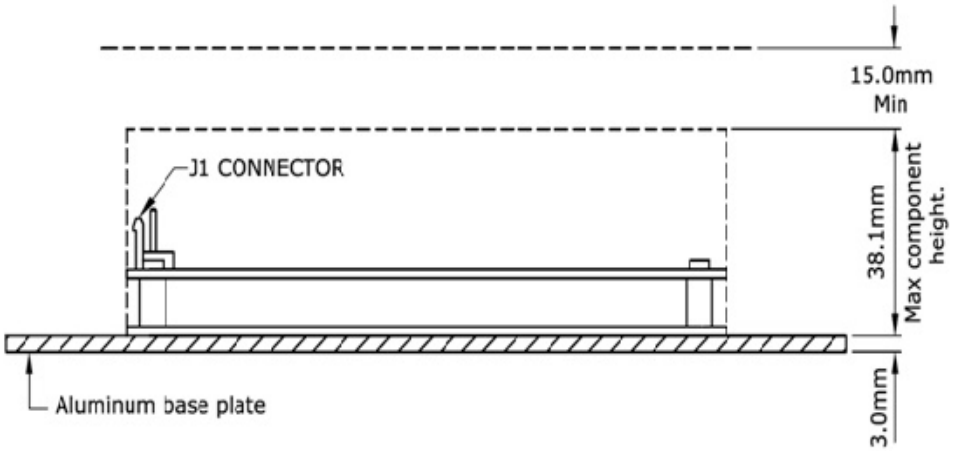


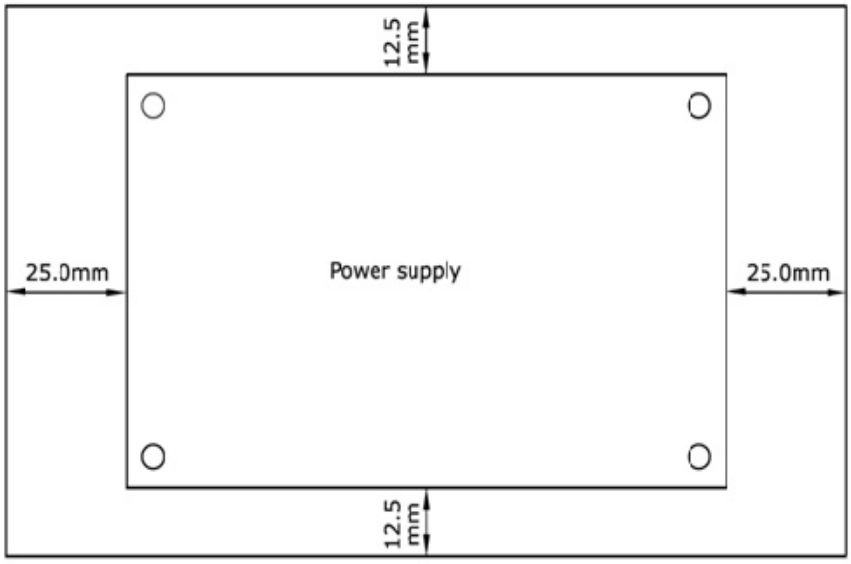
BOTTOM PCB

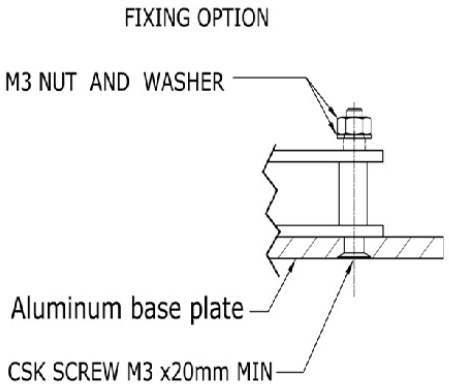
Ident no	Description	Max Temp Allowed (°C)
1	Common Mode Chokes	95
2	Input Bulk Capacitors	90
3	Differential Choke	110
4	Boost Choke	110
5	Output Transformer	125 (for 12V & 15V); 110 (for 24V,30V,48V,58V)
6	Output Capacitor	90
7	Bridge Rectifier	120
8	Aluminium Clad PCB	105
9	Output Rectifiers	110

Recommended Conduction Plate & Clearance

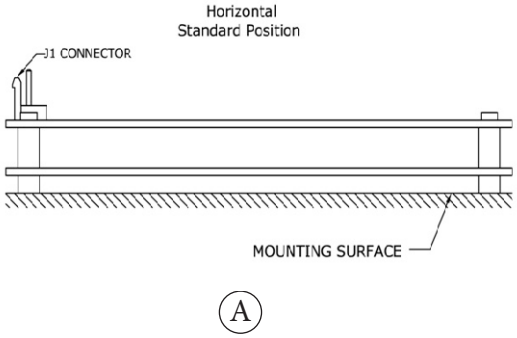
Conduction power rating mentioned in the table is with additional aluminium base plate of 3 mm thickness with 177.8mm(7in) length & 101.6mm(4in) width. Clearance of minimum 15mm above the component height is recommended for better thermal management.



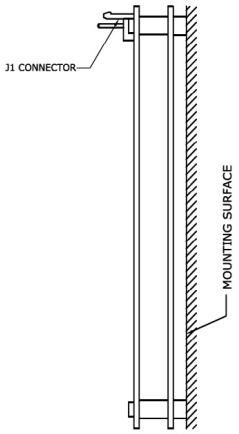




Mounting Option



A



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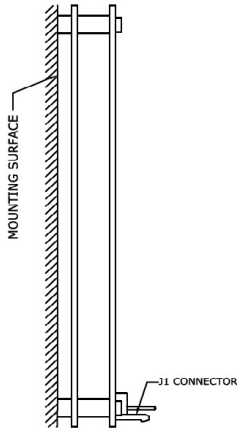

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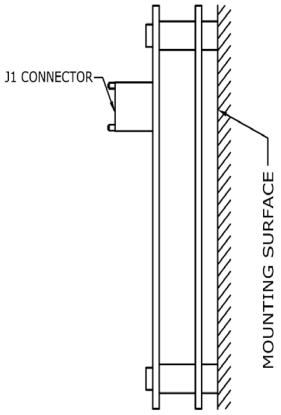

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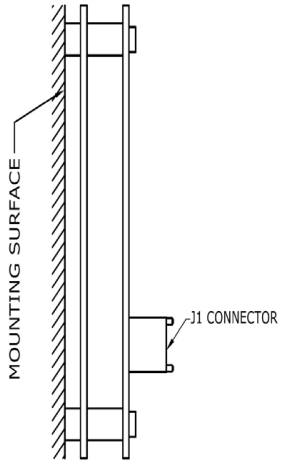

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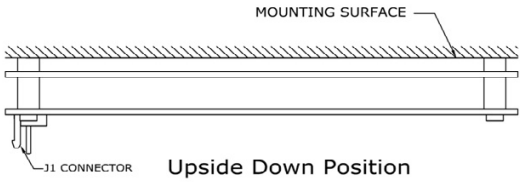
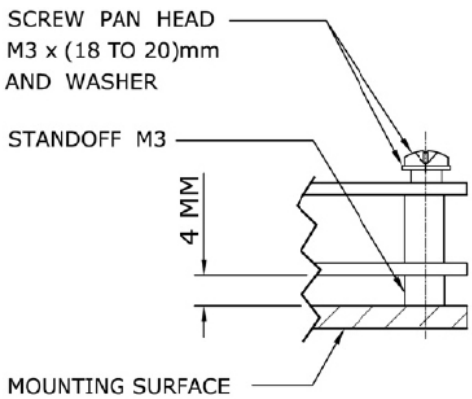
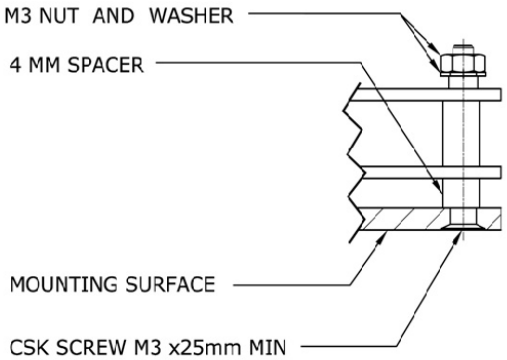


F

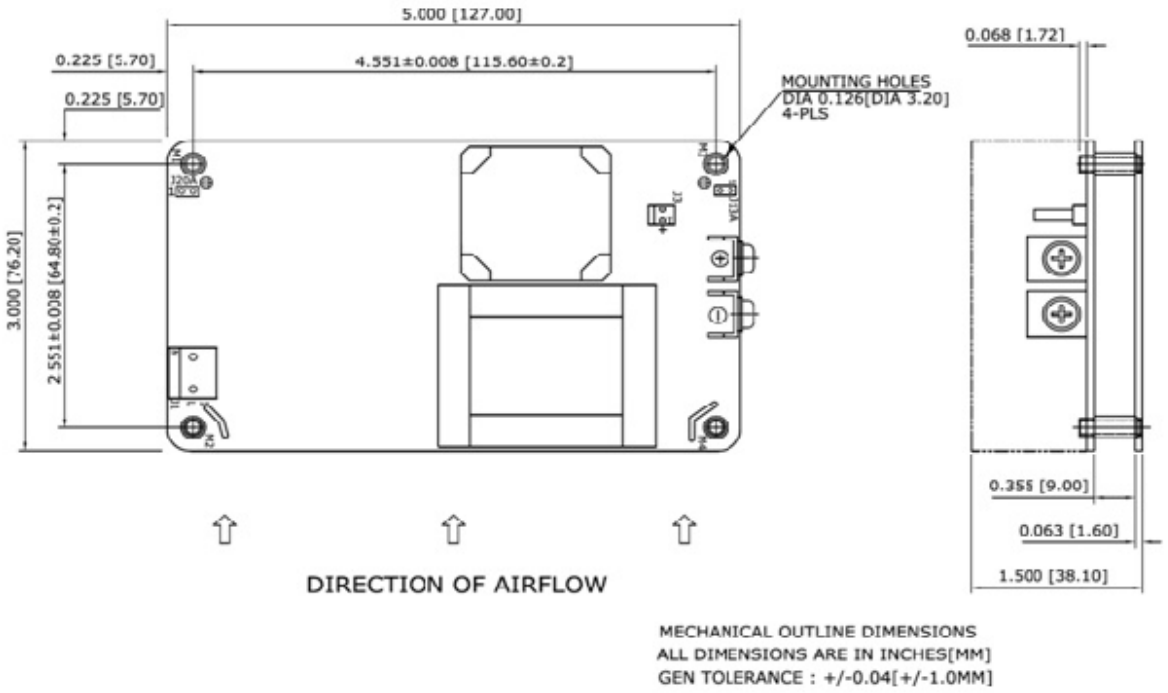
FIXING OPTION-1



FIXING OPTION-2

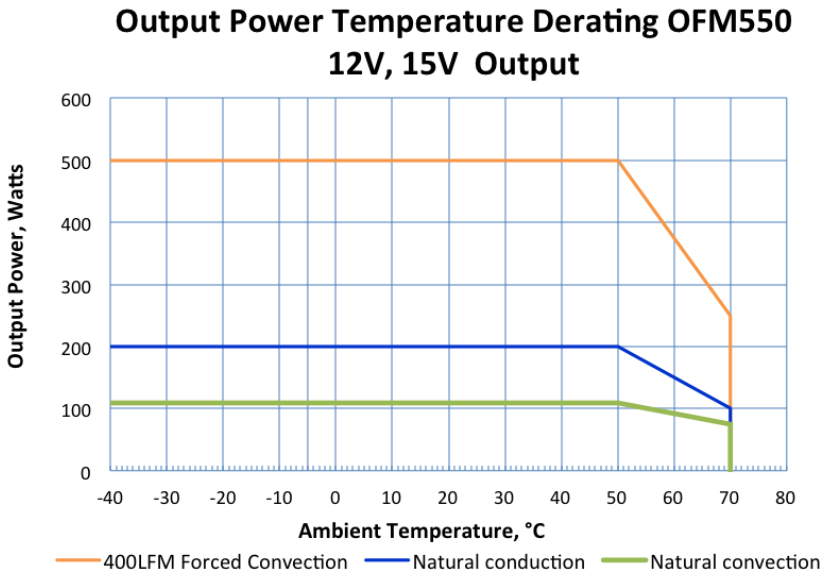


Mechanical Drawing

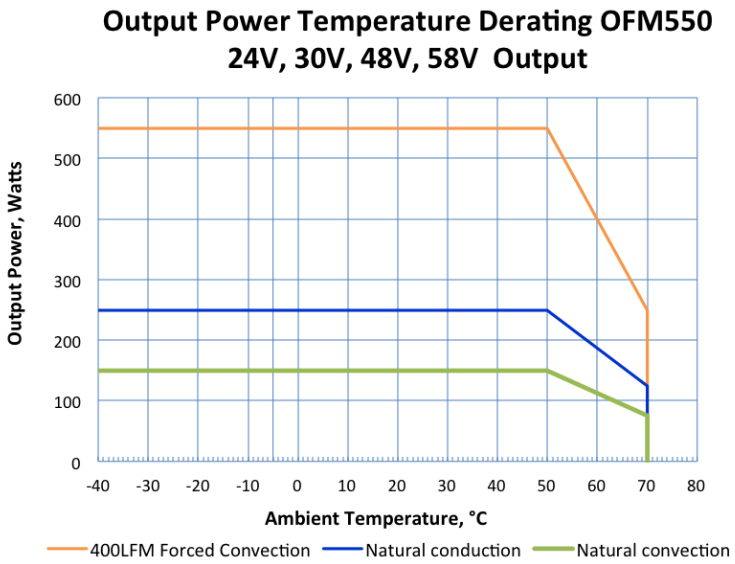


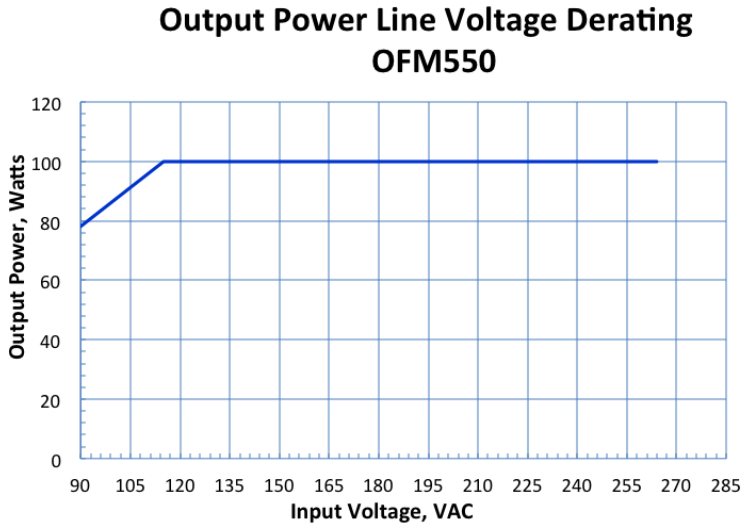
MECHANICAL OUTLINE DIMENSIONS
ALL DIMENSIONS ARE IN INCHES[MM]
GEN TOLERANCE : +/-0.04[+/-1.0MM]

Derating Curve



Derating Curve





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Digital Power Corporation designs and manufactures flexible power supply solutions for the most demanding applications in the defense, healthcare, telecom, and industrial markets. With headquarters in Fremont, California, Digital Power is publically traded on the NYSE (symbol: DPW). The company was founded in 1969 incorporated in California.