

SPECIFICATION

For

SWITCHING POWER SUPPLY

M/N: MPE-F063 (12V / 5A)

Peak Power Enhanced Thin Model

Revision History

Version	Revise Date	Change Items
Rev. 01	Aug. 08. 2023	Established.
Rev. 02	Feb. 27. 2024	Changed Safety.

MPE-F063

60W AC / DC



FEATURES

- ✓ 120W Peak power for 3s at 230Vac ~ 264Vac.
- ✓ 60W with convection-cooled.
- ✓ size 2 x 4 inch, high 20mm.
- ✓ Wide operating temperature -20~70°C.
- ✓ High efficiency up to 90%.
- ✓ No-load power consumption < 0.1W.
- ✓ Class II, also class I with optional functional ground connected.
- ✓ IEC 62368-1, EN 62368-1, BS EN 62368-1 approved.
- ✓ Design to meet IEC 60335-1.
- ✓ Meets EMI CISPR / FCC class B.
- ✓ 5,000m operation altitude.



Models & Ratings

Model Number	Wattage (Rated / Max)	Output Voltage	Min. Current	Rated Current	Peak Current (for 3s)
MPE-F063	60 W	+12 V	0 A	5 A (Note1)	10 A (Note1)

Output Power: 60W with convection cooling, Peak 120W.

Note:

1. See the following performance curves for the detail.
2. Model no. coding:

M P E - F 0 6 3 - X

①

①	X=	Connector Type
	blank	JST Type Connector or equivalent

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	85	115 / 230	264	VAC	Continuous input range.
Input Frequency	47	60 / 50	63	Hz	AC input.
Input Current			1.5 / 0.75	A	Nominal AC Input Voltage (115VAC / 230VAC), Max load.
Inrush Current			55 / 110	A	Nominal AC Input Voltage (115VAC/230VAC), one cycle at 25°C cold start.
No-load power consumption			0.1	W	Nominal AC Input Voltage (230VAC/50Hz).
Switching Frequency		65		KHz	
Input Protection	One non-user serviceable internally located AC input line fuse. Fuse : 3.15A / 250V * 1pcs				

Output

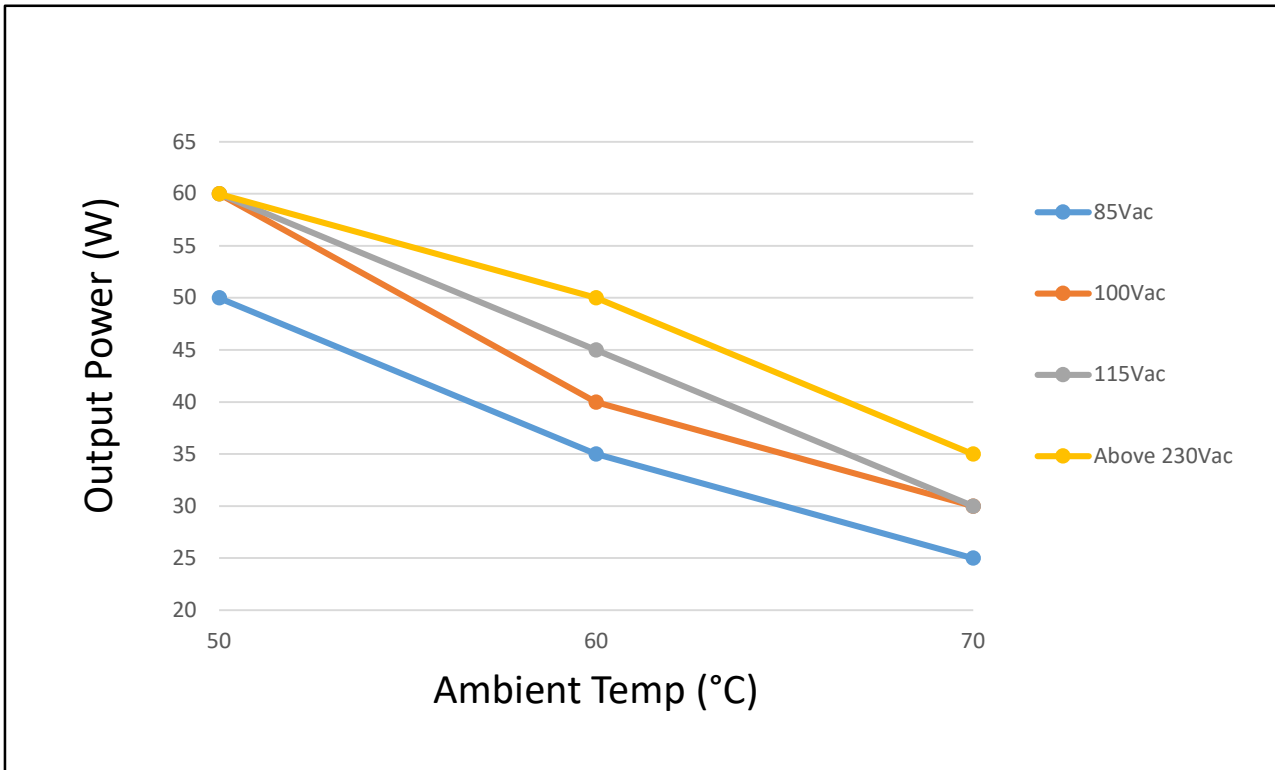
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage		+12 V		Vdc	
Efficiency		90		%	At input 230VAC, rated load, above 1hr. warm up.
Initial Set Accuracy			±1.0	%	Initial setting accuracy is adjusted at input 115VAC and output at 60% rated load.
Start Up Delay			0.5	Sec	Time required for initial output voltage stabilization.
Hold Up Time	10 / 28			mS	Nominal AC Input Voltage (115VAC/230VAC), rated load.
Line Regulation		±0.5		%	Less than ±1% at rated load with ±10% changing in input voltage 115VAC.
Load Regulation			±1.0	%	Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load).
Ripple & Noise			120	mV	Measured at rated load and Nominal AC Input Voltage (115VAC/230VAC) by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10µF Electrolytic Capacitor and a 0.1µF Ceramic Capacitor.
Touch Leakage Current			0.25	mA(RMS)	At 264VAC / 63Hz, CLASS II
Overvoltage Protection	For some reason the power supply fails to control itself, the build-in over voltage protection circuit will Latch-off the outputs to prevent damaging external circuits, the trigger point is around 110%~140% of output voltage.				
Short Circuit Protection	Fully protected against output overload and short circuit. Automatic recovery upon of overload condition.				
Characteristic	Minimum	Rated Load	Peak Load	Units	Notes & Conditions
Output Current	0	5	10	A	10A(120W) peak power for 3s at 230Vac~264Vac.

Environmental

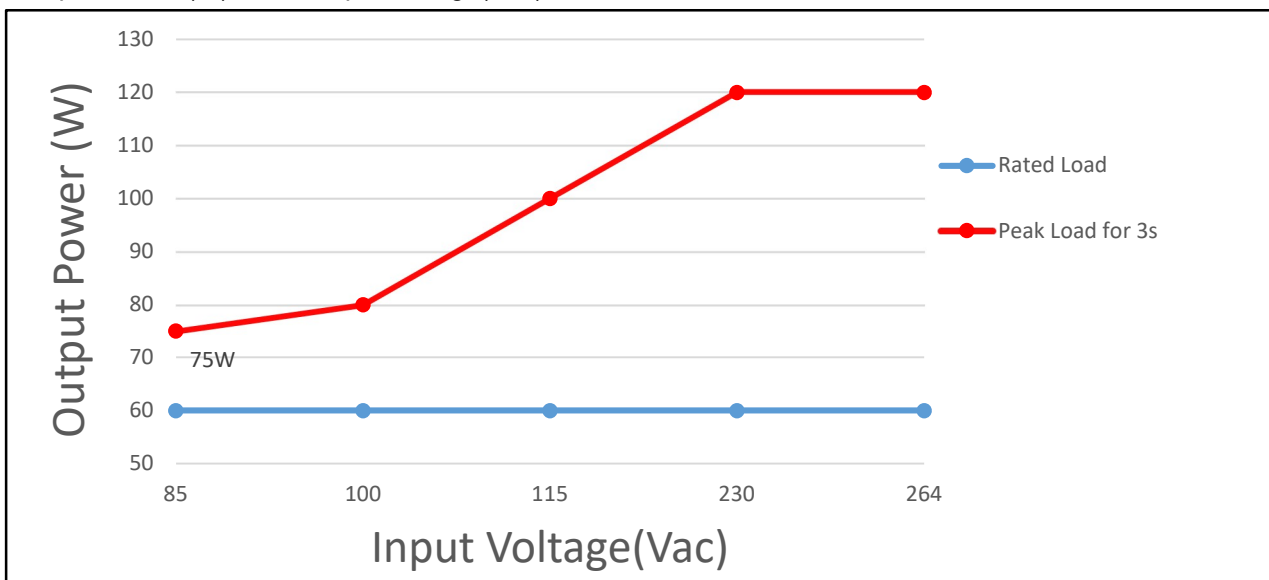
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-20		+70	°C	See the following performance curves for the detail.
Storage Temperature	-40		+85	°C	
Relative Humidity	5		95	%RH	Non-condensing.
Operating Altitude		5000		m	

Derating curve

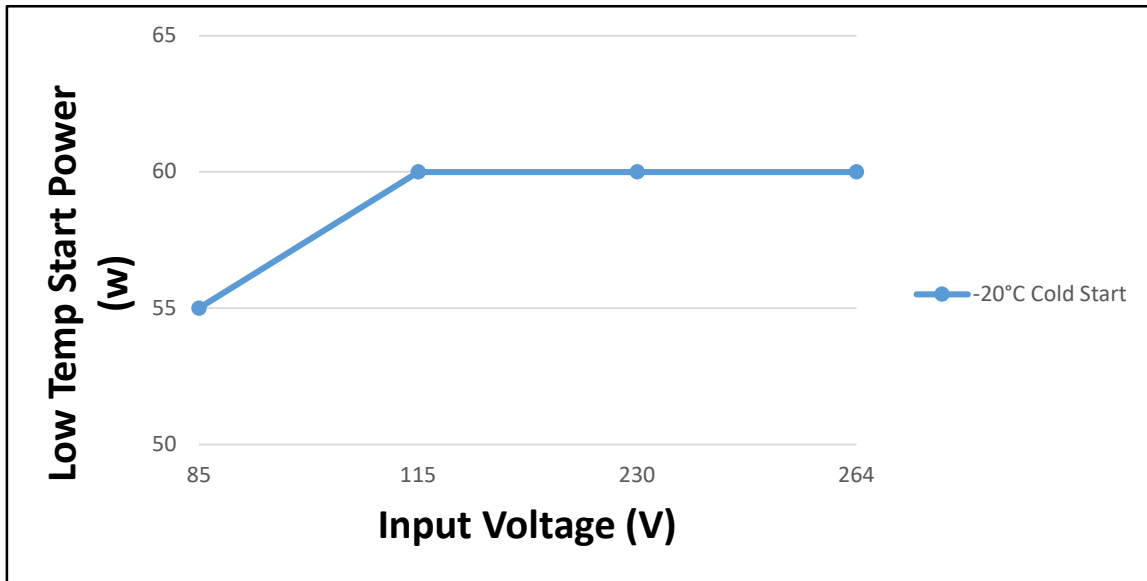
1. Output Power (W) versus Ambient Temp.(°C) Curve



2. Output Power (W) versus Input Voltage(Vac) Curve



3. Low Temp cold Start (W) versus Input Voltage(VAC) Curve



EMC: Emissions

Phenomenon	Standard	Class	Notes & Conditions
Conducted	BS EN 55022 / BS EN 55032 CISPR 22 & FCC Part 15	B	Mounting holes should be connected to Ground to conform the EMI limit (Class II refers to Note 1).
Radiated	BS EN 55022 / BS EN 55032 CISPR 22 & FCC Part 15	B	
Harmonic Current	EN 61000-3-2	A	AC Input : 230VAC, Load : 60W
Voltage Flicker	EN 61000-3-3	PASS	

Note:

- For Class II radiation, recommend to add a 4 turns core at input. (part#: EROCORE A8I280200160)

EMC: Immunity

Phenomenon	Standard	Criteria	Notes & Conditions
ESD	BS IEC 61000-4-2	A	±8KV air discharge, ±6KV contact discharge
Radiated	BS IEC 61000-4-3	A	10V/m
EFT	BS IEC 61000-4-4	A	±2KV Line & PE
Surges	BS IEC 61000-4-5	A	L-N:±1KV, L/N-PE:±2KV
Conducted	BS IEC 61000-4-6	A	10V
Power Magnetic	BS IEC 61000-4-8	A	30A/m
Dips and Interruptions	BS IEC 61000-4-11	A / B A / B A / B B	DIP: >95%, 0.5 cycle ^(Note 2) DIP: 30%, 25 cycles ^(Note 2) DIP: 60%, 5 cycles ^(Note 2) INT: >95%, 250 cycles

Note:

- As a build-in type power supply, the power supply needs to be installed in a suitable enclosure to pass the EMI/EMC tests.
The final assembly has to comply with the valid EMI/EMC and safety.
- The test result of input 240Vac / 100Vac is criteria A / B.
- The mounting holes should be connected to each other to conform the EMI limit.

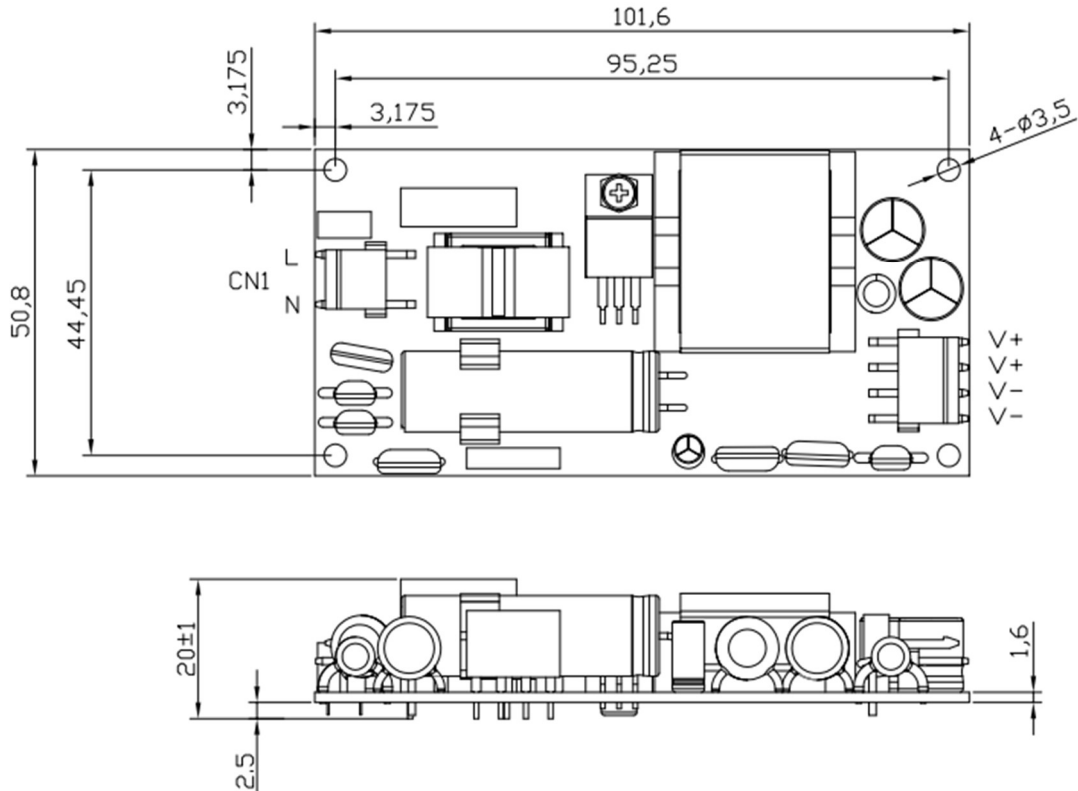
Safety Approvals

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Isolation	IP to OP	3000		VAC	
	IP to GND	1800		VAC	
Safety Agency	Safety Standard				Notes & Conditions
TUV	IEC 62368-1, 3rd Edition, EN 62368-1, 3rd Edition				Designed to meet.
	EN 60335-1				
CB	IEC 62368-1, 3rd Edition				
	IEC 60335-1				
UL/cUL	UL 62368-1, 3rd Edition, CAN/CSA C22.2 No. 62368-1:19, 3rd Edition				
	UL 60335-1				
CE(LVD), UKCA	EN 62368-1, 3rd Edition, BS EN 62368-1, 3rd Edition				Approved.

Mechanical Details

Unit: mm

SIZE : 101.6(L) x 50.8(W) x 20.0 mm, Tolerance +/-1mm.

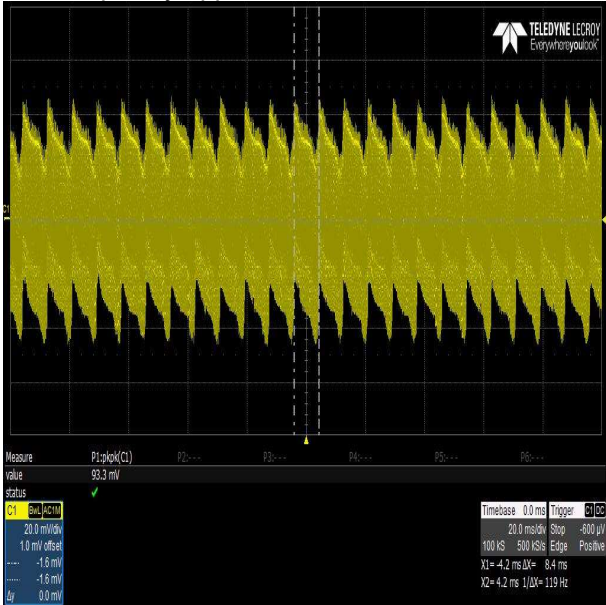


Parameter	Conditions/Description				
Dimension	101.6(L) x 50.8(W) x 37.6(H)mm, Tolerance +/-0.4mm.				
Connector & Pin Assignment	Location	Pin	Assignment	Proposed Housing	Proposed Terminals
	CN1 (Input) JST : B2P3S-VH(LF)(SN)	1	AC in (L)	JST: VHR-3N or equivalent	JST:SVH-21T-P1-1 or equivalent
		2	AC in (N)		
	CN2 (Output) JST : B4PS-VH(LF)(SN)	1	V+		
2		V-			
		3	V-		
		4	V-		

Performance

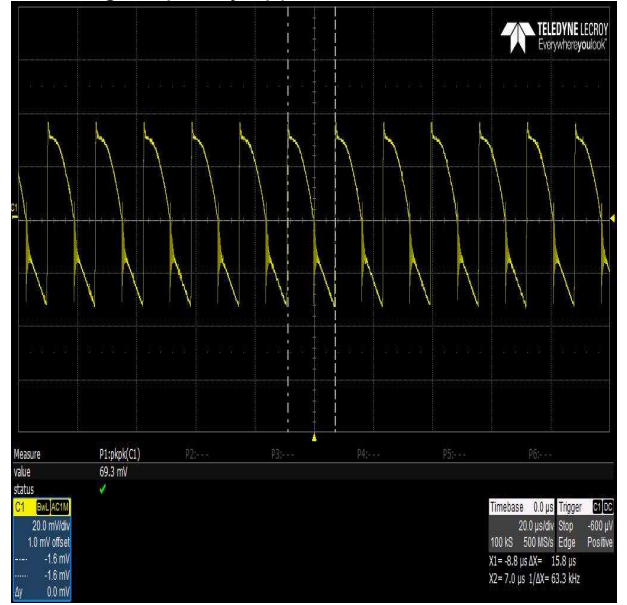
Input voltage : 115Vac

Line frequency ripple rated load



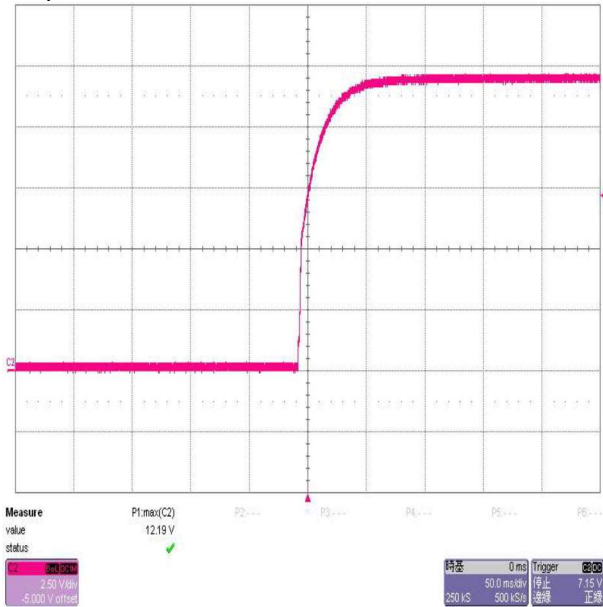
pk-pk:93.3mV 20mV/Div 20ms/Div

Switching frequency ripple rated load



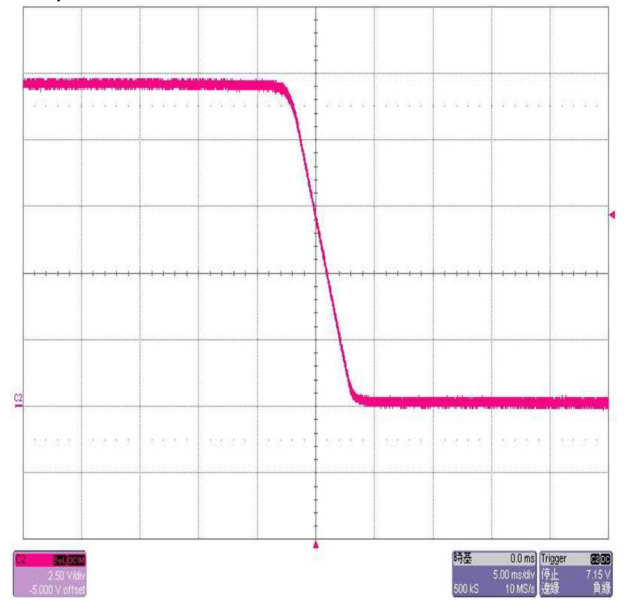
pk-pk:69.3mV 20mV/Div 20us/Div

Output turn on rated load



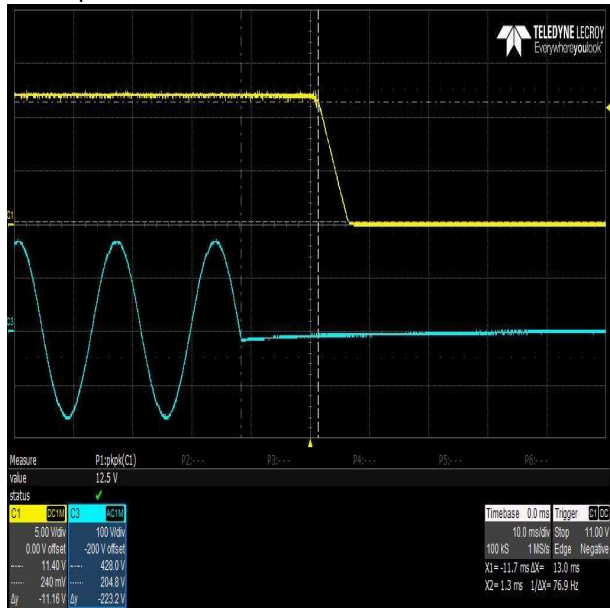
2.5V/Div 50ms/Div

Output turn off rated load



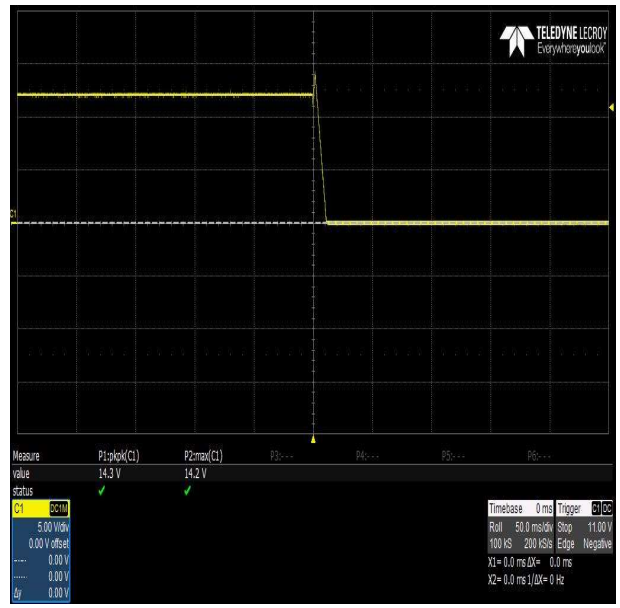
2.5V/Div 50ms/Div

Hold up time rated load



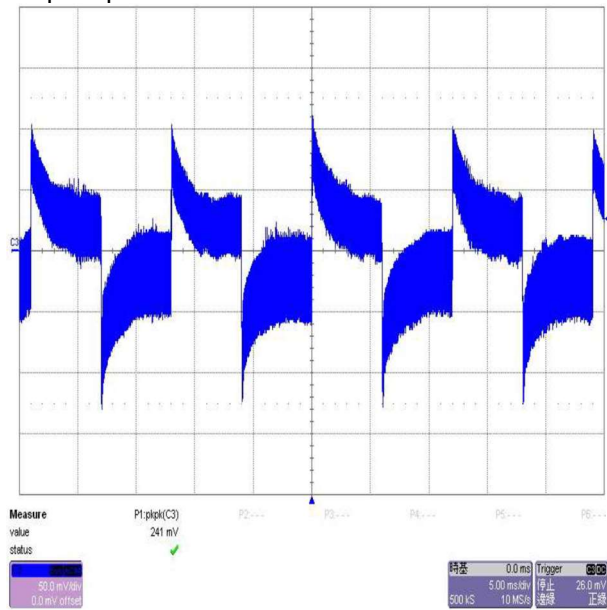
5V/Div 10ms/Div

OVP 60% of rated load



5V/Div 50ms/Div

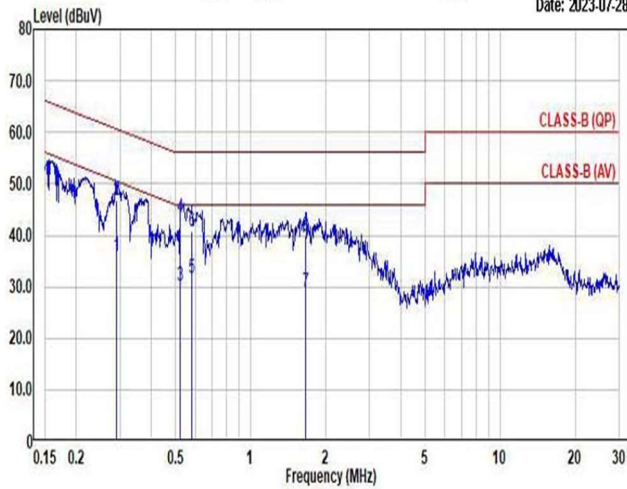
Step response 20%~100% of rated load



50mV/Div 5ms/Div

EMI: EN 55032 "B" (Conduction)

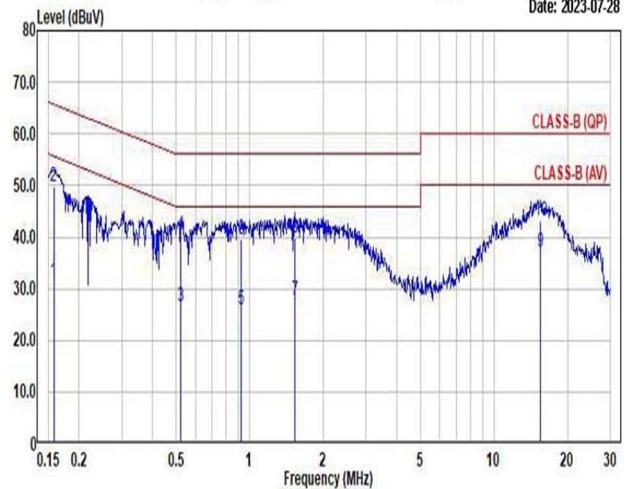
Date: 2023-07-28



230Vac/Rated load

EMI: FCC "B" (Conduction)

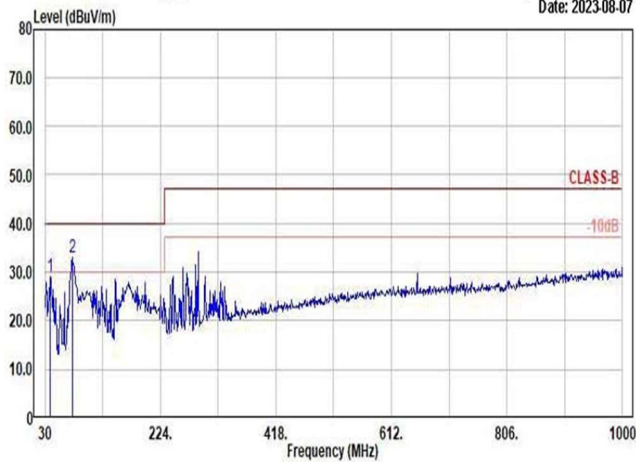
Date: 2023-07-28



115Vac/Rated load

EMI: EN 55032 "B" (Radiation)

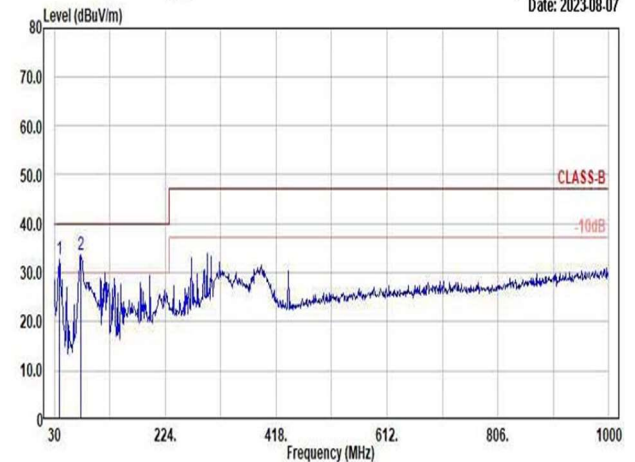
Date: 2023-08-07



230Vac/Rated load

EMI: FCC "B" (Radiation)

Date: 2023-08-07



115Vac/Rated load

Thermal Considerations

In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded.

Temperature should be monitored using J type thermocouples placed on the hottest part of the component (out of any direct air flow). See Mechanical Details for component locations.

Temperature Measurements at max. amb.

Component	Max Temperature
T1	110°C
Q1	130°C
C1B	105°C