60W AC/DC Switching Power Supply
Model: TN19-0060-XX-1 Series



FEATURES

- Universal 90 - 264VAC input voltage.
- Operating ambient temperature range: -20°C to +70°C.
- Output short circuit, over-current, over-voltage protection.
- 60W with natural air convection cooled.
- Operating altitude up to 5000m.
- 2" x 4" x 1.06" with low profile size.
- Safety according to IEC 62368-1.
- High efficiency (more than 89%)

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Models & Ratings

Model No.	Cooling Method	Output Voltage/ Current	Peak Current	Output Voltage Range (V)	Efficiency (%) Typ.	External Cap. Load (μF)
TN19-0060-12-1	Conduction Cooling	12V / 5.0A	10.4A(125W)	11.4 - 12.6	87	-
TN19-0060-24-1	Conduction Cooling	24V / 2.5A	5.2A(125W)	22.8 - 25.2	88	-
TN19-0060-48-1	Conduction Cooling	48V / 1.25A	2.6A(125W)	45.6 - 50.4	89	-

Model Name Description

T N 1 9 - 0 0 6 0 - XX - 1

- VV
①

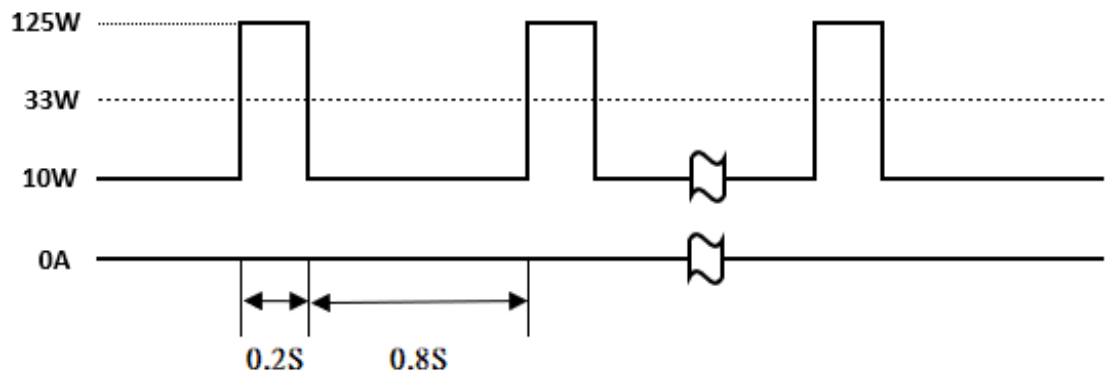
① VV : Output Voltage or Series Model
12 : 12V Output.
24 : 12V Output.
48 : 48V Output.

Efficiency

Efficiency is measured at 100% load, 230VAC input, 25°C ambient temperature, after a 15-minute warm-up.

Peak current

During peak load testing, the output transient voltage deviation must not exceed 5%.



Under any conditions, the total power of the product should not exceed the rated power.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		90	100 - 240	264	VAC
Input Frequency	-		47	50 - 60	63	Hz
Input Current	100VAC		-	-	1.4	Arms
Inrush Current	115VAC	At 25°C, Cold start	-	-	30	A peak
	230VAC		-	-	60	
Earth Leakage Current	264VAC		-	-	0.5	mA

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage	See Models and Ratings table	12	-	48	VDC
Minimum Load	-	0	-	-	A
Line Regulation	100% load	-	±1	-	%
Load Regulation	Output from 0 - 100% load	-	±1	-	%
Ripple & Noise	20MHz bandwidth	-	-	1	%
Turn On Time	115VAC/60Hz rated load from input AC turn on	-	-	3	S
Rise Time	10% to 90% of output voltage	-	-	100	mS
Hold Up Time	115VAC 100% load	16	-	-	mS
	230VAC 100% load	40			mS
Short Circuit Protection	Output shut down and auto recovery	-	-	-	-
Over Current Protection	Output shut down and auto recovery	210	-		%
Over Voltage Protection	Output shut down and latch off, manual reset (Re-power on)	110	-	130	%

Ripple & Noise :

Please refer to Figure A to measure Vo, line regulation, load regulation, and ripple voltage. The output voltage is measured at the power supply output terminal.

Ripple and noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a C1: 0.1µF ceramic or film capacitor and C2: 47µF low ESR electrolytic capacitor parallel, After 20 min warm up.

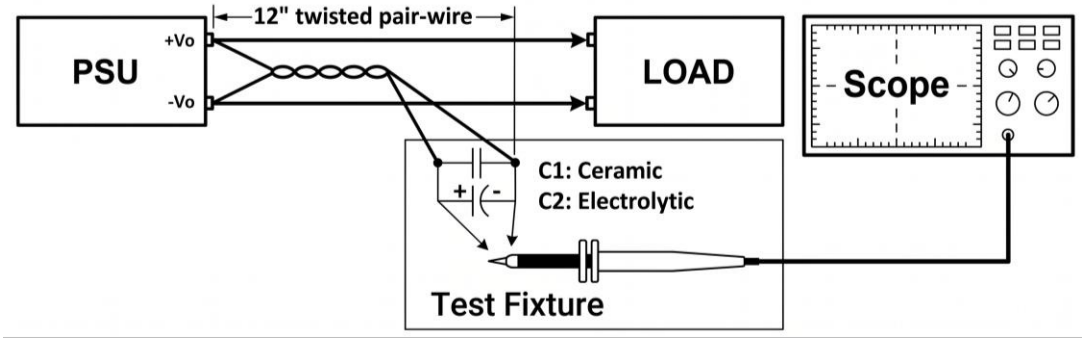


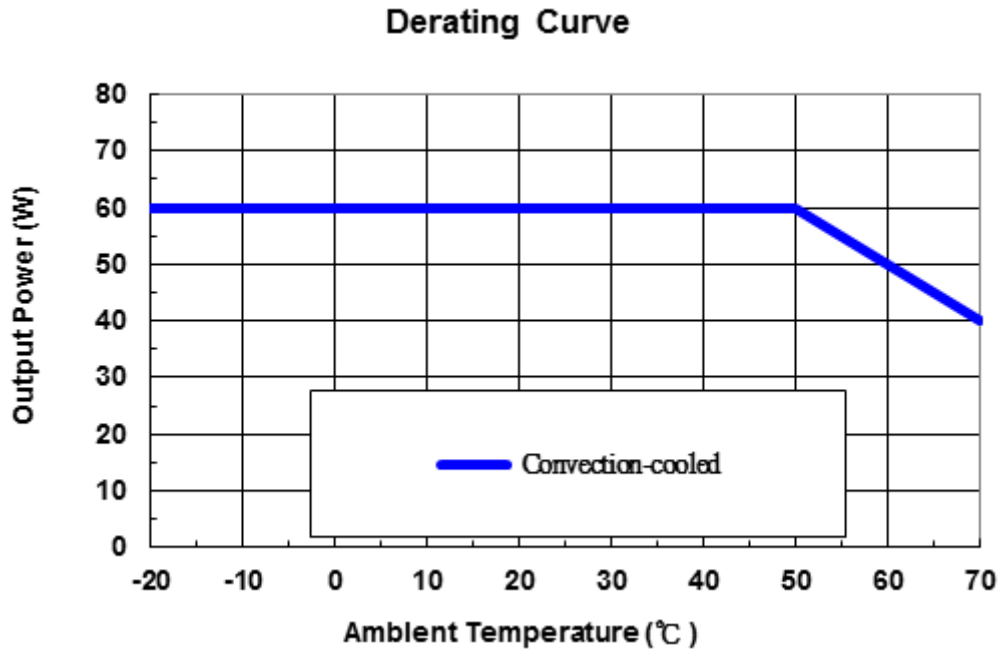
Figure A

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Operating Temperature	Refer to power de-rating curve		-20	-	+70	°C
Storage Temperature	Non-operation		-40	-	+85	
Operating Humidity	Non-condensing		0	-	90	%
Storage Humidity			0	-	90	
Power De-rating		-20°C to +50°C	-	-	-	W/°C
		+50°C to +70°C	1	-	-	
Altitude	Operating altitude		-	-	5000	meter
Dielectric Strength Test	Input - Output		4000	-	-	VDC
	Input - FG		2500	-	-	
Insulation Resistance	Input– FG, 500VDC,		50	-	-	MΩ
Mean Time Between Failure	At 115VAC/50Hz, 100% load, 25°C, Telcordia SR332, issue 4.		1,000,000	-	-	Hrs.
Vibration	Operating：0.5G, 10 - 55Hz, 15 minutes per cycle, 30 minutes for each X, Y and Z axis.					
Shock	Non-operating (package)：20G, half sin-wave, each per axis.					

Power De-rating

The output power de-rates above 50°C @1watts per °C.PSU could start up at -20℃ to 0℃, but some specification parameters like ripple & noise may not be met.



Safety Approvals

Safety Standard	All models	UL/cUL UL 62368-1, 3rd Edition CB IEC 62368-1, 3rd Edition TUV IEC 62368-1, 3rd Edition
Safety Class	-	Class Ⅱ

Electromagnetic Compatibility (EMC)

Emissions	CE	EN55032 (CISPR32) Class B,	
	RE	EN55032 (CISPR32) Class B,	
	Harmonic Current	IEC/EN61000-3-2 Class A	
	Flicker	IEC/EN61000-3-3	
Immunity	ESD	IEC61000-4-2, level 4, Contact +/- 8KV; Air discharge +/- 15KV	Criteria A
	RS	IEC61000-4-3, level 3, 10V/m	Criteria A
	EFT	IEC61000-4-4, level 3, +/- 2KV	Criteria A
	Surge	IEC61000-4-5, level 4, Line to Line +/-2KV; Line to Earth +/- 4KV	Criteria A
	CS	IEC61000-4-6, level 2	Criteria A
	PFMF	IEC61000-4-8, level 1	Criteria A
	DIP	IEC61000-4-11	Criteria B

The power supply should be considered a part of the system component. All EMC tests conducted with the unit installed in a metal enclosure dummy system. The power supply needs to be confirmed for electromagnetic compatibility in conjunction with the terminal equipment.

Dimensions and Recommended Layout

Item	Value	Unit
Weight (Typ.)	134	g
Size (W x L x H)	50.8x101.6x27 (2"x4"x1.1")	mm

Outline Drawing: (Unit: mm, Tolerance: ±1.0 mm)

Outline diagram

