

## KEY FEATURES

- Switching Power Modules for PCB Mounting
- Fully Encapsulated Plastic Case
- Universal Input Range 90-264VAC, 47-440 Hz
- Regulated Output
- Low Ripple and Noise
- Isolation Class II
- CE, CB, UL, cUL, Approvals
- 3-Year Product Warranty



## ELECTRICAL SPECIFICATIONS

Model No. ( Single Output )	MSC-3.3S	MSC-5S	MSC-9S	MSC-12S	MSC-15S	MSC-24S	
Max output wattage ( W )	26.4W	40W	40W	40W	40W	40W	
Output	Voltage (V.DC.)	3.3V	5V	9V	12V	15V	24V
	Current (mA) max	8000	8000	4444	3333	2666	1667
	Voltage set accuracy	±2%	±2%	±2%	±2%	±2%	±2%
	Line regulation (typ.)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	Load regulation (1-100%) (typ.)	1%	1%	1%	1%	1%	1%
	Minimum load	1%	1%	1%	1%	1%	1%
	Efficiency (typ.)	74%	79%	82%	83%	83%	83%
	Maximum Capacitive Load (at 230 VAC)	70000 uF	33000 uF	10000 uF	4000 uF	3000 uF	1200 uF

Model No. ( Dual Output )	MSC-5D		MSC-12D		MSC-15D		
Max output wattage ( W )	40W		40W		40W		
Output	Output 1	Output 2	Output 1	Output 2	Output 1	Output 2	
	Voltage (V.DC.)	+5V	-5V	+12V	-12V	+15V	-15V
	Current (mA) max	4000	4000	1666	1666	1333	1333
	Voltage set accuracy	±2%		±2%		±2%	
	Line regulation (typ.)	0.5%		0.5%		0.5%	
	Load regulation (10-100%) (typ.)	1% (symmetric load)		1% (symmetric load)		1% (symmetric load)	
	Cross regulation (typ.)	5%		5%		5%	
	Minimum load	10%		10%		10%	
	Efficiency (typ.)	80%		83%		83%	
	Maximum Capacitive Load (at 230 VAC)	±6000 uF		±1000 uF		±2000 uF	

Model No. ( Dual Output )	MSC-5S12S		MSC-5S24S		
Max output wattage ( W )	40W		40W		
Output	Output 1	Output 2	Output 1	Output 2	
	Voltage (V.DC.)	5V	12V	5V	24V
	Current (mA) max	5000	1250	5000	625
	Voltage set accuracy	±3%	±5%	±3%	±5%
	Line regulation (typ.)	0.5%	5%	0.5%	5%
	Load regulation (10-100%) (typ.)	2% (symmetric load)	6% (symmetric load)	2% (symmetric load)	6% (symmetric load)
	Cross regulation (typ.)	1%	7%	1%	7%
	Minimum load	25%		25%	
	Efficiency (typ.)	80%		80%	
	Maximum Capacitive Load (at 230 VAC)	15000 uF / 750 uF		15000 uF / 200 uF	

**ELECTRICAL SPECIFICATIONS**

Model No. (Triple Output)	MSC-5S12D			MSC-5S15D		
Max output wattage (W)	40W			40W		
Output	Output 2	Output 3	Output 1	Output 2	Output 3	
	Voltage (V.DC.)	+12	-12	5	+15	-15
	Current (mA) max	600	600	5000	500	500
	Voltage set accuracy	±5%		±3%	±5%	
	Line regulation (typ.)	5%		0.5%	5%	
	Load regulation (25-100%) (typ.) (symmetric load)	7%		3%	7%	
	Cross regulation (typ.)	7%		3%	7%	
	Minimum load	25%			25%	
	Efficiency (typ.)	79%			79%	
Maximum Capacitive Load (at 230 VAC)	±150 uF		18000 uF	±400 uF		

**ELECTRICAL SPECIFICATIONS**

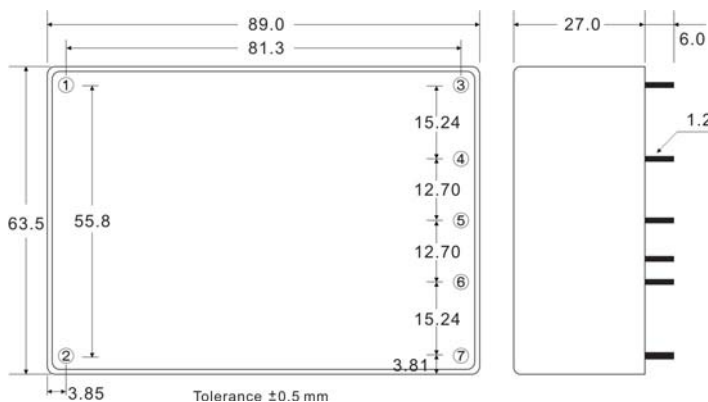
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Input	Voltage	90-264 VAC or 100-375 VDC
	Frequency (Hz)	47-440 Hz
	Current (Full load)	860 mA max. (115 VAC) / 460 mA max. (230 VAC)
	Inrush current (<2ms)	55 A max. (115 VAC) / 95 A max. (230 VAC)
	Leakage Current	< 0.1mA / 264 VAC (Touch Current)
	External fuse (recommend)	3.15 A slow blow type
Output	Ripple & Noise	3.3V : 50mV of Vout others : 1% of Vout
	Hold-up time	18 ms min.
Protection	Over current protection	Above 105% rated output power
	Over voltage protection	Zener diode clamp
	Short circuit protection	Hiccup mode, indefinite (automatic recovery)
	OTP	100°C
Isolation	Input-Output (V.AC)	4000V
Environment	Operating temperature	-25°C...+70°C (Case Temperature max. +95°C)
	Storage temperature	-40°C...+85°C
	Temperature coefficient	0.01%/°C
	Altitude During Operation	5000m
	Humidity	95% RH
	MTBF	200,000 h~400,000 h @ 25°C
Physical	Atmospheric Pressure	540 hPa to 1060 hPa
	Dimensions (L x W x H)	3.5 x 2.5 x 1.06 Inches ( 89.0 x 63.5 x 27.0 mm ) Tolerance ±0.5 mm
	Case Material	Plastic resin (flammability to UL 94V-0)
	Weight	280 g
Safety	Cooling method	Free air convection
	Approval	cUL / UL Standard: ANSI/AAMI ES 60601-1: 2005 , CAN/CSA-C22.2 No. 60601-1:08 CB Standard: IEC 60601-1:2005 (Third Edition) + CORR. 1 (2006) + CORR. 2 (2007) + AM1 (2012) or IEC 60601-1 (2012 reprint)
EMC	Conducted and radiated EMI	EN55011 Conducted & Radiated Class B
	EMS	EN60601-1-2 4th edition

**NOTE**

- Ripple & Noise are measured at 20MHz of bandwidth with 0.1uF & 47uF parallel capacitor.
- It's recommended to add Varistor 14S471K at L / N input side in parallel.

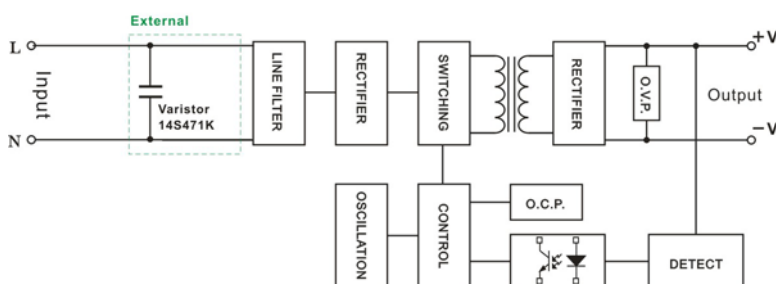
### MECHANICAL DIMENSIONS (Top View)



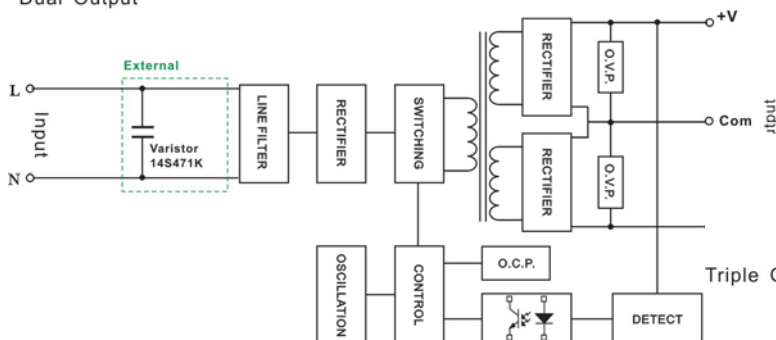
PIN#	Single	Dual	5S/12S 5S/24S	Triple
1	AC IN (L)	AC IN (L)	AC IN (L)	AC IN (L)
2	AC IN (N)	AC IN (N)	AC IN (N)	AC IN (N)
3	+DC OUT	+DC OUT	+OUT2	+DC OUT
4	NO PIN	NO PIN	+OUT1	+5V
5	-DC OUT	COMMON	+OUT2 RTN	COMMON
6	NO PIN	NO PIN	+OUT1 RTN	+5V RTN
7	NOCONNECT	-DC OUT	NO PIN	-DC OUT

### BLOCK DIAGRAM

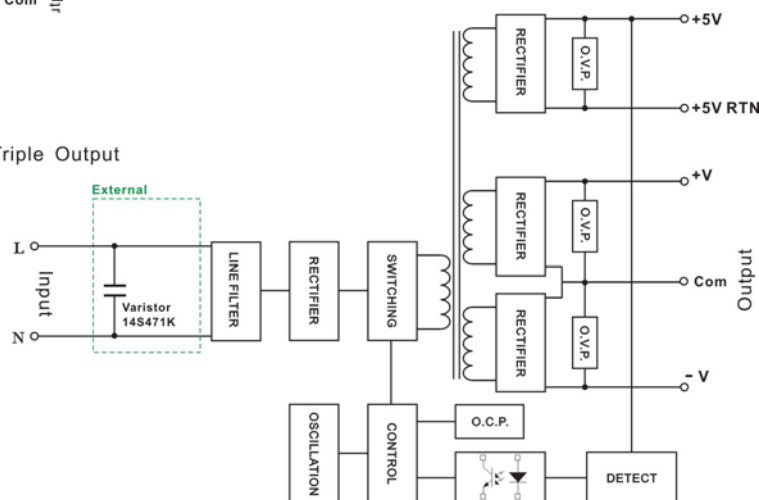
Single Output



Dual Output



Triple Output



### DERATING

