

## KEY FEATURES

- Switching Power Module for PCB Mountable
- Fully Encapsulated Plastic Case
- Universal Input Range 90-305VAC, 47-440 Hz
- Single and Dual Output
- Low Ripple and Noise
- Isolation Class II
- Maximum No-Load Watts < 0.3W
- CE , UL Approval
- 3-Year Product Warranty



LL08W SERIES



## ELECTRICAL SPECIFICATIONS

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

Model No. ( Single Output )	FSP008L UVS3V3P	FSP008L UVS005P	FSP008L UVS008P	FSP008L UVS009P	FSP008L UVS012P	FSP008L UVS014P	FSP008L UVS3015P	FSP008L VS024P										
Max Output Wattage (W)	6.6W	8W	8W	8W	8W	8W	8W	8W										
Input	Voltage									90-305 VAC or 120-430 VDC								
	Frequency (Hz)									47-440 Hz								
	Current (Full load)									190 mA max. (115 VAC) / 120 mA max. (230 VAC)								
	Inrush Current (<500us)									25 A max. (115 VAC) / 45 A max. (230 VAC)								
	Leakage Current									0.25 mA max.								
	External Fuse (recommend)									2 A slow blow type								
Output	Voltage (V.DC.)									3.3V	5V	8V	9V	12V	14V	15V	24V	
	Voltage Accuracy									±2%								
	Current (mA) max									2000	1600	1000	888	666	571	533	335	
	Line Regulation (LL-HL) (typ.)									±0.2%								
	Load Regulation (0-100%) (typ.)									±3%	±2%	±0.5%						
	Minimum Load									0%								
	Maximum Capacitive Load (at 230VAC)									8000uF	8000uF	4000uF	4000uF	1300uF	820uF	820uF	270uF	
	Ripple									3.3S~15S : <100mV max (Vp-p)      24S : <150mV max (Vp-p)								
	Noise									3.3S~15S : <150mV max (Vp-p)      24S : <200mV max (Vp-p)								
	Efficiency									69%	75%	78%	79%	79%	80%	80%	81%	
	Hold-up Time									10 ms min.								
Switching Frequency									132±8 KHz									
Protection	Over Power Protection									Hiccup technique, auto-recovery								
	Over Voltage Protection									Zener diode clamp								
	Short Circuit Protection									Hiccup mode, indefinite (automatic recovery)								
Isolation	Input-Output (V.AC)									3000V								
Environment	Operating Temperature									-40°C...+70°C ( with derating )								
	Storage Temperature									-40°C...+85°C								
	Temperature Coefficient									±0.02%/°C								
	Humidity									95% RH								
	MTBF									>500,000 h @ 25°C (MIL-HDBK-217F)								
Physical	Dimension (L x W x H)									1.48 x 1.11 x 1.08 Inches ( 37.66 x 28.16 x 27.5 mm ) Tolerance ± 0.5 mm								
	Case Material									Plastic resin (flammability to UL 94V-0)								
	Weight									45 g								
	Cooling Method									Free air convection								
Safety	Agency Approvals									CE, UL, cUL								
EMC	EMI (Conducted & Radiated Emission)									EN 55032 class B								
	EMS (Noise Immunity)									EN 55024								

## ELECTRICAL SPECIFICATIONS

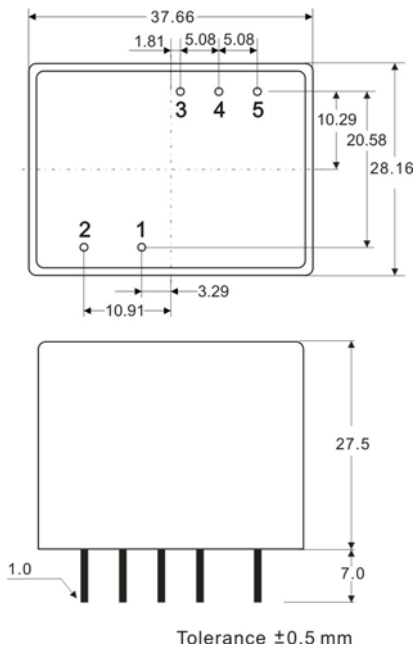
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Model No. ( Dual Output )	FSP008LUV005P	FSP008LUV008P	FSP008LUV012P		
Max Output Wattage (W)	9W	8.5W	8.5W		
Input	Voltage				
	90-305 VAC or 120-430 VDC				
	Frequency (Hz)				
	47-440 Hz				
	Current (Full load)				
	200 mA max. (115 VAC) / 125 mA max. (230 VAC)				
Inrush Current (<500us)					
25 A max. (115 VAC) / 45 A max. (230 VAC)					
Leakage Current					
0.25 mA max.					
External Fuse (recommend)					
2 A slow blow type					
Output	Voltage (V.DC.)		Vo : 5V Vr : 3.3V	Vo : 8V Vr : 5V	Vo : 12V Vr : 5V
	Voltage Accuracy		Vo : ±2% Vr : ±15%	Vo : ±2% Vr : ±10%	
	Current (mA) max		1600 / 310	1000 / 100	666 / 100
	Line Regulation (LL-HL) (typ.)		Vo : ±0.2% Vr : ±3%		
	Load Regulation (10-100%) (typ.)		Vo : ±0.5% Vr : ±5%		
	Minimum Load		25%		
	Maximum Capacitive Load (at 230VAC)		Vo : 4500uF Vr : 3800uF	Vo : 800uF Vr : 3800uF	Vo : 260uF Vr : 3800uF
	Ripple		<100mV max (Vp-p)		
	Noise		<150mV max (Vp-p)		
	Efficiency		73%	78%	79%
	Hold-up Time		10 ms min.		
	Switching Frequency		132±8 KHz		
	Protection	Over Power Protection		Hiccup technique, auto-recovery	
Over Voltage Protection		Zener diode clamp			
Short Circuit Protection		Hiccup mode, indefinite (automatic recovery)			
Isolation	Input-Output (V.AC)		3000V		
Environment	Operating Temperature		-40°C...+70°C ( with derating )		
	Storage Temperature		-40°C...+85°C		
	Temperature Coefficient		±0.02%/°C		
	Humidity		95% RH		
	MTBF		>500,000 h @ 25°C (MIL-HDBK-217F)		
Physical	Dimension (L x W x H)		1.48 x 1.11 x 1.08 Inches ( 37.66 x 28.16 x 27.5 mm ) Tolerance ±0.5 mm		
	Case Material		Plastic resin (flammability to UL 94V-0)		
	Weight		45 g		
	Cooling Method		Free air convection		
Safety	Agency Approvals		CE, UL, cUL		
EMC	EMI (Conducted & Radiated Emission)		EN 55032 class B		
	EMS (Noise Immunity)		EN 55024		

### NOTE

1. Ripple & Noise are measured at 20MHz of bandwidth with 0.1uF & 47uF parallel capacitor.
2. It's necessary Varistor 14S561K at L / N input side in parallel.
3. It's necessary 10R / 15φ thermistor at L input side in series connection.

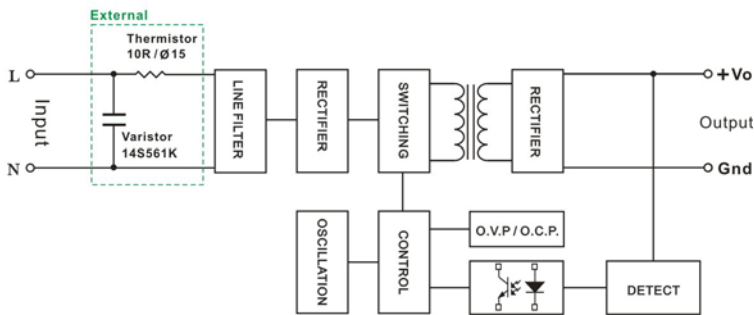
## MECHANICAL DIMENSION ( Top View )



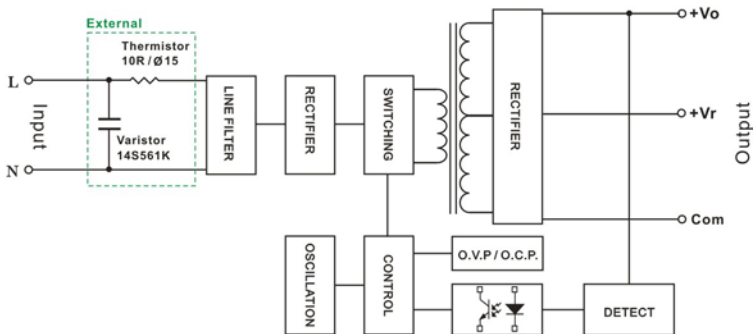
PIN#	Single	Dual
1	AC IN (N)	AC IN (N)
2	AC IN (L)	AC IN (L)
3	NC	+Vr
4	+VO	+VO
5	GND	GND

## BLOCK DIAGRAM

### Single Output



### Dual Output



## DERATING

