

ORDERING INFORMATION

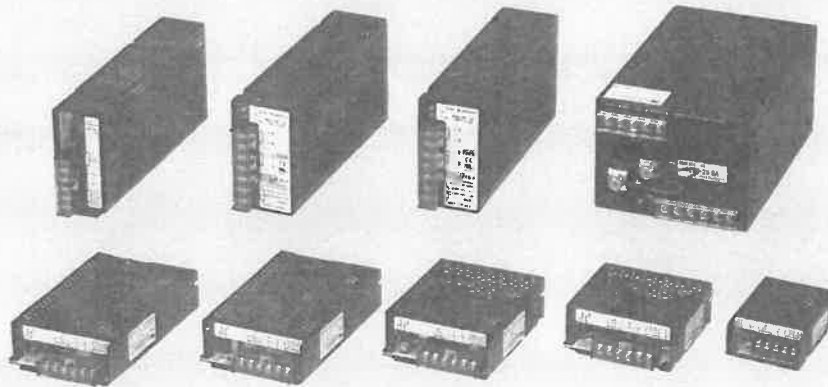
MSF15-05

Series name

Total output wattage

Output voltage combination

- Approved by UL/C-UL, CE
- Over current protection
- Over voltage protection
- Complies with FCC Part15 and EN55022 Class A Limits
- Remote on/off Control (MSF300)
- Remote sensing (MSF150~300)
- Monitor Signal (MSF300)
- 3 years warranty

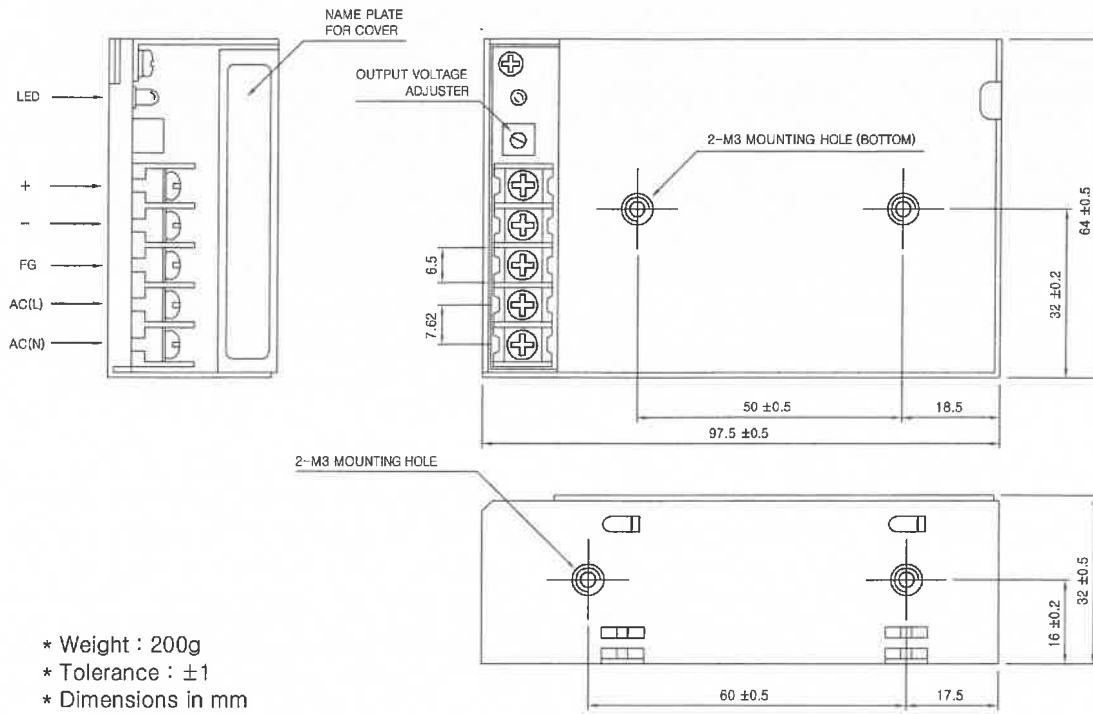


MSF15-S SPECIFICATIONS



MODEL		MSF15-3R3	MSF15-05	MSF15-09	MSF15-12	MSF15-15	MSF15-24
INPUT	VOLTAGE, FREQUENCY	AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input.					
	CURRENT [V]	110V	0.4 (10=100%)				
		220V	0.2 (10=100%)				
	EFFICIENCY [%]	110V	67 typ	67 typ	71 typ	73 typ	75 typ
220V							
INRUSH CURRENT		20A typ (AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start.					
OUTPUT	VOLTAGE [V]	3.3	5	9	12	15	24
	CURRENT [A]	3	3	1.67	1.25	1	0.62
	REGULATION, LINE [mV]	25 Max	25 Max	45 Max	60 Max	75 Max	120 Max
	REGULATION, LOAD [mV]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max
	RIPPLE [mVp-p]	35 Max	50 Max	90 Max	120 Max	150 Max	240 Max
	RIPPLE, NOISE [mVp-p]	85 Max	100 Max	140 Max	170 Max	200 Max	290 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	85 Max	90 Max	162 Max	216 Max	270 Max	432 Max
	RISE TIME [ms]	500 max (AC IN 110V, I _o =100%)					
HOLDING TIME [ms]	20 typ (AC IN 110V, I _o =100%)						
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically					
	OVER VOLTAGE PROTECTION	Works at over 115% of rating (by zener diode clamping)					
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)					
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)					
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)					
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)					
	STORAGE TEMPAND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)					
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis					
	IMPACT	10G for 20ms once on each X, Y and Z axis					
SAFETY	SAFETY REGULATION	-	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits					

MSF15-S EXTERNAL VIEW



- * Weight : 200g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

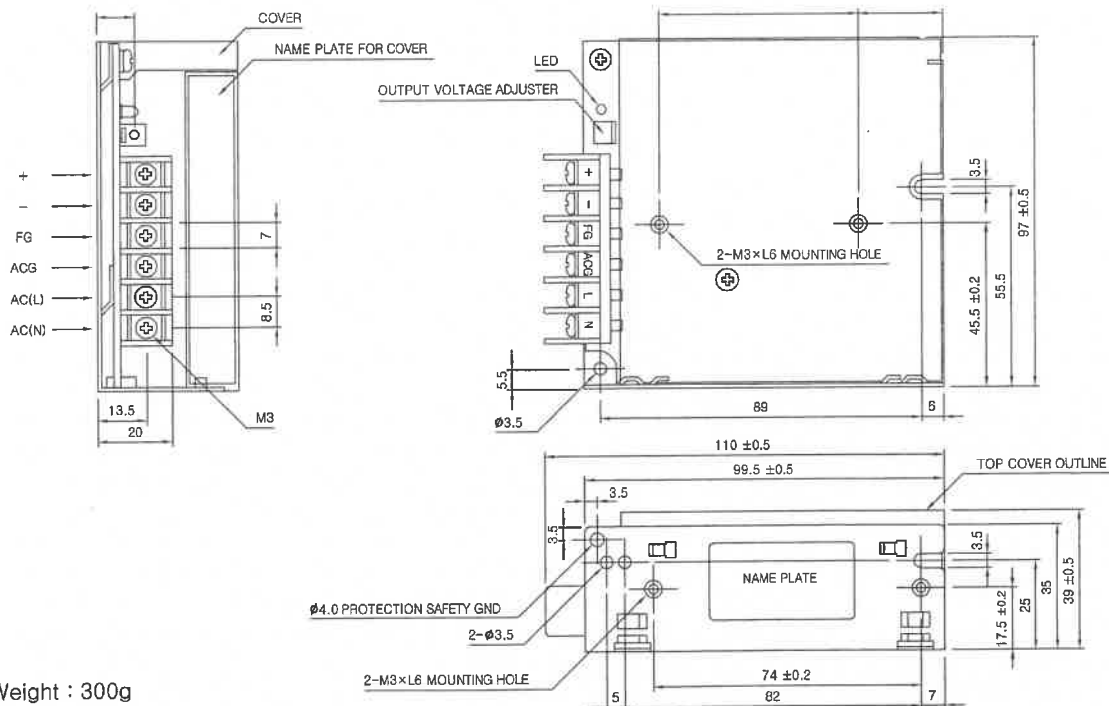
Discrete Semiconductors

MSF25-S SPECIFICATIONS



MODEL		MSF25-3R3	MSF25-05	MSF25-09	MSF25-12	MSF25-15	MSF25-24	MSF25-48
INPUT	VOLTAGE, FREQUENCY	AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input.						
	CURRENT [A]	110V	0.6 (I _c =100%)					
		220V	0.3 (I _c =100%)					
	EFFICIENCY [%]	110V	60 typ	70 typ	70 typ	75 typ	75 typ	75 typ
220V								
INRUSH CURRENT		20A typ (ACIN 110V, I _c =100%), 40A typ (ACIN 220, I _c =100%) Ta=(25°C of cold start).						
OUTPUT	VOLTAGE [V]	3.3	5	9	12	15	24	48
	CURRENT [A]	5	5	2.7	2	1.6	1	0.5
	REGULATION, LINE [mV]	25 Max	25 Max	45 Max	60 Max	75 Max	120 Max	240 Max
	REGULATION, LOAD [mV]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE [mVp-p]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE, NOISE [mVp-p]	100 Max	100 Max	140 Max	170 Max	200 Max	290 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	50 Max	75 Max	135 Max	180 Max	225 Max	360 Max	720 Max
	RISE TIME [ms]	500 max (AC IN 110V, I _c =100%)						
	HOLDING TIME [ms]	20 typ (AC IN 110V, I _c =100%)						
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically						
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%)						
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)						
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)						
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)						
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis						
	IMPACT	10G for 20ms once on each X, Y and Z axis						
SAFETY	SAFETY REGULATION	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits						

MSF25-S EXTERNAL VIEW



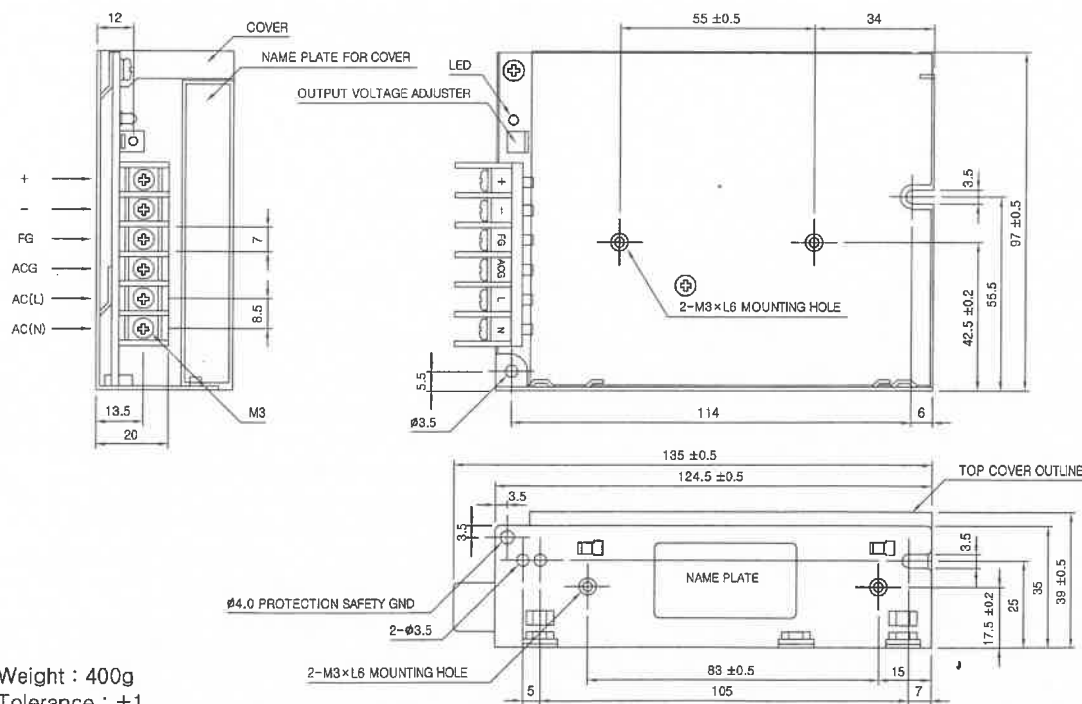
- * Weight : 300g
- * Tolerance : ±1
- * Dimensions in mm

MSF35-S SPECIFICATIONS



MODEL		MSF35-3R3	MSF35-05	MSF35-09	MSF35-12	MSF35-15	MSF35-24	MSF35-48
INPUT	VOLTAGE, FREQUENCY	AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input.						
	CURRENT [A]	110V	0.8 (I _o =100%)		1.0 (I _o =100%)			
		220V	0.4 (I _o =100%)		0.5 (I _o =100%)			
	EFFICIENCY [%]	110V	60 typ	70 typ	70 typ	75 typ	75 typ	75 typ
220V								
INRUSH CURRENT		20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) Ta=(25°C of cold start).						
OUTPUT	VOLTAGE [V]	3.3	5	9	12	15	24	48
	CURRENT [A]	7	7	3.9	3	2.4	1.5	0.75
	REGULATION, LINE [mV]	25 Max	25 Max	45 Max	60 Max	75 Max	120 Max	240 Max
	REGULATION, LOAD [mV]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE [mVp-p]	80 Max	80 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE, NOISE [mVp-p]	120 Max	120 Max	140 Max	170 Max	200 Max	290 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	75 Max	75 Max	135 Max	180 Max	225 Max	360 Max	720 Max
	RISE TIME [ms]	1500 max (AC IN 110V, I _o =100%)						
	HOLDING TIME [ms]	16 typ (AC IN 110V, I _o =100%)						
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically						
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115~160%)						
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)						
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)						
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)						
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis						
	IMPACT	10G for 20ms once on each X, Y and Z axis						
SAFETY	SAFETY REGULATION	UL,C-UL,CE	UL,C-UL,CE	-	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits						

MSF35-S EXTERNAL VIEW



- * Weight : 400g
- * Tolerance : ±1
- * Dimensions in mm

General Information
Switching Mode Power Supply
DC-DC Converter
Noise Filter
Solid State Relay
AC FAN Motor
Power Module
Discrete Semiconductors

MSF50-S SPECIFICATIONS



MODEL		MSF50-3R3	MSF50-05	MSF50-09	MSF50-12	MSF50-15	MSF50-24	MSF50-48
INPUT	VOLTAGE, FREQUENCY	AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input.						
	CURRENT [A]	110V	1.4 (I _o =100%)					
		220V	0.7 (I _o =100%)					
	EFFICIENCY [%]	110V	63 typ	70 typ	73 typ	75 typ	75 typ	78 typ
220V								
INRUSH CURRENT		20A typ(ACIN 110V, I _o =100%), 40A typ(ACIN 220V, I _o =100%) at cold start.						
OUTPUT	VOLTAGE [V]	3.3	5	9	12	15	24	48
	CURRENT [A]	10	10	5.5	4.2	3.4	2.1	1
	REGULATION, LINE [mV]	25 Max	25 Max	45 Max	60 Max	75 Max	120 Max	240 Max
	REGULATION, LOAD [mV]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE [mVp-p]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE, NOISE [mVp-p]	100 Max	100 Max	140 Max	170 Max	200 Max	290 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	50 Max	75 Max	135 Max	180 Max	225 Max	360 Max	720 Max
	RISE TIME [ms]	1000 max (AC IN 110V, I _o =100%)						
	HOLDING TIME [ms]	16 typ (AC IN 110V, I _o =100%)						
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically						
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%)						
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)						
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)						
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)						
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis						
	IMPACT	10G for 20ms once on each X, Y and Z axis						
SAFETY	SAFETY REGULATION	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits						

MSF60-S SPECIFICATIONS



MODEL		MSF60-3R3	MSF60-05	MSF60-09	MSF60-12	MSF60-15	MSF60-24	MSF60-48
INPUT	VOLTAGE, FREQUENCY	AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input.						
	CURRENT [A]	110V	1.7 (I _o =100%)					
		220V	0.85 (I _o =100%)					
	EFFICIENCY [%]	110V	67 typ	72 typ	75 typ	78 typ	78 typ	80 typ
220V								
INRUSH CURRENT		20A typ(ACIN 110V, I _o =100%), 40A typ(ACIN 220V, I _o =100%) at cold start.						
OUTPUT	VOLTAGE [V]	3.3	5	9	12	15	24	48
	CURRENT [A]	12	12	6.6	5	4	2.5	1.3
	REGULATION, LINE [mV]	25 Max	25 Max	45 Max	60 Max	75 Max	120 Max	240 Max
	REGULATION, LOAD [mV]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE [mVp-p]	50 Max	50 Max	90 Max	120 Max	150 Max	240 Max	480 Max
	RIPPLE, NOISE [mVp-p]	100 Max	100 Max	140 Max	170 Max	200 Max	290 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	50 Max	75 Max	135 Max	180 Max	225 Max	360 Max	720 Max
	RISE TIME [ms]	1000 max (AC IN 110V, I _o =100%)						
	HOLDING TIME [ms]	16 typ (AC IN 110V, I _o =100%)						
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically						
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%)						
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)						
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)						
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)						
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)						
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis						
	IMPACT	10G for 20ms once on each X, Y and Z axis						
SAFETY	SAFETY REGULATION	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE	UL,C-UL,CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits						

MSF80-S SPECIFICATIONS



MODEL		MSF80-3R3	MSF80-05	MSF80-09	MSF80-12	MSF80-15
INPUT	VOLTAGE, FREQUENCY	AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable.				
	CURRENT [A]	110V	2.5 (I _o =100%)			
		220V	1.4 (I _o =100%)			
	EFFICIENCY [%]	110V	70 typ	80 typ	81 typ	81 typ
220V						
INRUSH CURRENT		20A typ (AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start.				
OUTPUT	VOLTAGE [V]	3.3	5	9	12	15
	CURRENT [A]	20	20	11.1	8.3	6.7
	REGULATION, LINE [mV]	25 Max	25 Max	45 Max	60 Max	75 Max
	REGULATION, LOAD [mV]	50 Max	50 Max	90 Max	120 Max	150 Max
	RIPPLE [mVp-p]	50 Max	50 Max	90 Max	120 Max	150 Max
	RIPPLE, NOISE [mVp-p]	100 Max	100 Max	140 Max	170 Max	200 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	50 Max	75 Max	135 Max	180 Max	225 Max
	RISE TIME [ms]	500 max (AC IN 110V, I _o =100%)				
HOLDING TIME [ms]		16 typ (AC IN 110V, I _o =100%)				
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically				
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating				
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)				
ENVIRONMENT	OPERATING TEMP AND HUMID	0 ~ +50°C, 20 ~ 90% RH(Non condensing)				
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)				
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis				
	IMPACT	10G for 20ms once on each X, Y and Z axis				
SAFETY	SAFETY REGULATION	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits				

MSF80-S SPECIFICATIONS



MODEL		MSF80-24	MSF80-28	MSF80-36	MSF80-48
INPUT	VOLTAGE, FREQUENCY	AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47~440Hz) User Selectable.			
	CURRENT [A]	110V	2.5 (I _o =100%)		
		220V	1.4 (I _o =100%)		
	EFFICIENCY [%]	110V	82 typ	82 typ	82 typ
220V					
INRUSH CURRENT		20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start.			
OUTPUT	VOLTAGE [V]	24	28	36	48
	CURRENT [A]	4.2	3.5	2.8	2.1
	REGULATION, LINE [mV]	120 Max	140 Max	180 Max	240 Max
	REGULATION, LOAD [mV]	240 Max	280 Max	360 Max	480 Max
	RIPPLE [mVp-p]	240 Max	280 Max	360 Max	480 Max
	RIPPLE, NOISE [mVp-p]	290 Max	330 Max	410 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	360 Max	420 Max	540 Max	720 Max
	RISE TIME [ms]	500 max (AC IN 110V, I _o =100%)			
HOLDING TIME [ms]		16 typ (AC IN 110V, I _o =100%)			
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically			
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating			
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	INPUT-CASE, FG	AC2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	OUTPUT-CASE, FG	AC500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)			
ENVIRONMENT	OPERATING TEMP AND HUMID	0 ~ +50°C, 20 ~ 90% RH(Non condensing)			
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)			
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis			
	IMPACT	10G for 20ms once on each X, Y and Z axis			
SAFETY	SAFETY REGULATION	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits			

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

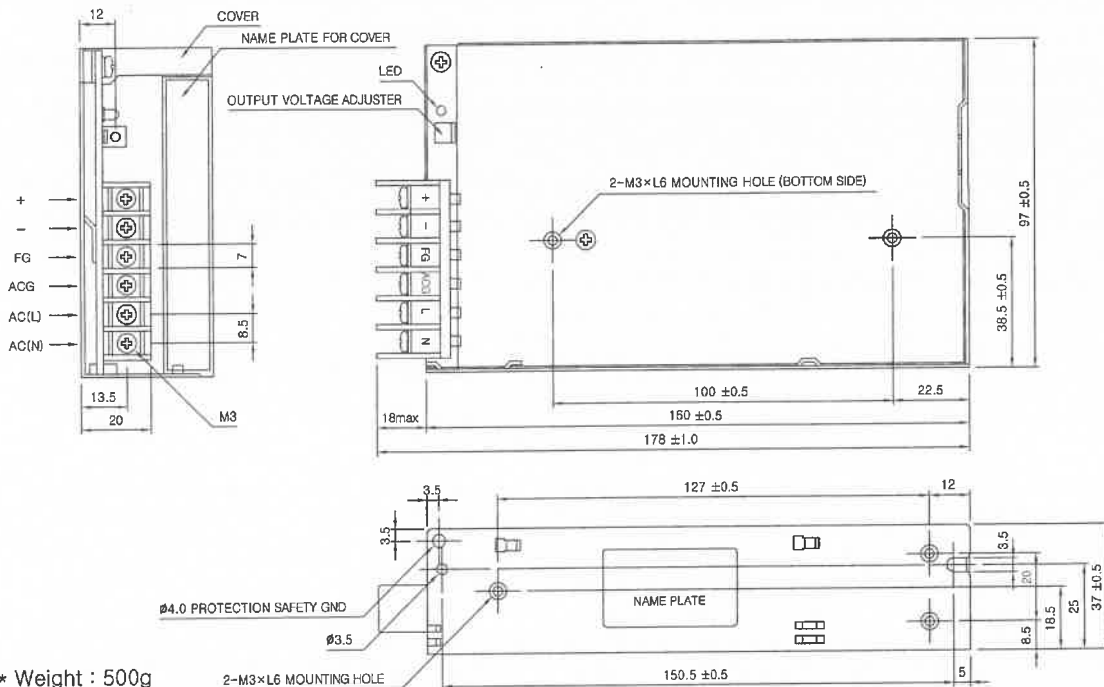
Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

MSF50, 60, 80-S EXTERNAL VIEW



- * Weight : 500g
- * Tolerance : ±1
- * Dimensions in mm

MSF100-S SPECIFICATIONS



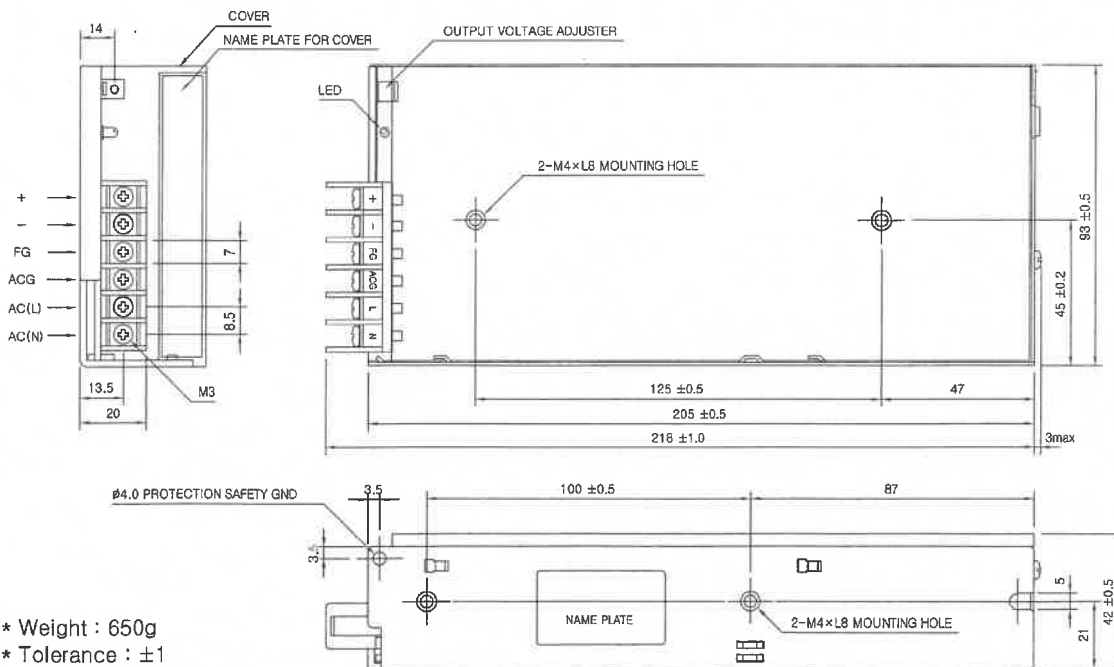
MODEL		MSF100-3R3	MSF100-05	MSF100-09	MSF100-12	MSF100-15
INPUT	VOLTAGE, FREQUENCY	AC100-120V / 200-240V (AC85 ~ 132V / 170 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable.				
	CURRENT [A]	110V	2.5 (I _c =100%)			
		220V	1.4 (I _c =100%)			
	EFFICIENCY [%]	110V	70 typ	80 typ	81 typ	81 typ
	220V					
	INRUSH CURRENT	20A typ (ACIN 110V, I _c =100%), 40A typ(ACIN 220V, I _c =100%) at cold start.				
OUTPUT	VOLTAGE [V]	3.3	5	9	12	15
	CURRENT [A]	20	20	11.1	8.3	6.7
	REGULATION, LINE [mV]	25 Max	25 Max	45 Max	60 Max	75 Max
	REGULATION, LOAD [mV]	50 Max	50 Max	90 Max	120 Max	150 Max
	RIPPLE [mVp-p]	50 Max	50 Max	90 Max	120 Max	150 Max
	RIPPLE, NOISE [mVp-p]	100 Max	100 Max	140 Max	170 Max	200 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	50 Max	75 Max	135 Max	180 Max	225 Max
	RISE TIME [ms]	500 max (AC IN 110V, I _c =100%)				
	HOLDING TIME [ms]	16 typ (AC IN 110V, I _c =100%)				
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically				
	OVER VOLTAGE PROTECTION	Works at 115 ~140% of rating				
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)				
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)				
	STORAGE TEMPAND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)				
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis				
	IMPACT	10G for 20ms once on each X, Y and Z axis				
SAFETY	SAFETY REGULATION	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits				

MSF100-S SPECIFICATIONS



MODEL		MSF100-24	MSF100-28	MSF100-36	MSF100-48
INPUT	VOLTAGE, FREQUENCY	AC100-120V / 200-240V (AC85 ~ 132V / 170 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable.			
	CURRENT [A]	110V	2.5 (I _o =100%)		
		220V	2.5 (I _o =100%)		
	EFFICIENCY [%]	110V	82 typ	82 typ	82 typ
220V					
INRUSH CURRENT		20A typ(ACIN 110V, I _o =100%), 40A typ(ACIN 220V, I _o =100%) at cold start.			
OUTPUT	VOLTAGE [V]	24	28	36	48
	CURRENT [A]	4.2	3.5	2.8	2.1
	REGULATION, LINE [mV]	120 Max	140 Max	180 Max	240 Max
	REGULATION, LOAD [mV]	240 Max	280 Max	360 Max	480 Max
	RIPPLE [mVp-p]	240 Max	280 Max	360 Max	480 Max
	RIPPLE, NOISE [mVp-p]	290 Max	330 Max	410 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C [mV]	360 Max	420 Max	540 Max	720 Max
	RISE TIME [ms]	500 max (AC IN 110V, I _o =100%)			
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically			
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating			
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)			
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)			
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)			
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis			
	IMPACT	10G for 20ms once on each X, Y and Z axis			
SAFETY	SAFETY REGULATION	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits			

MSF100-S EXTERNAL VIEW



- * Weight : 650g
- * Tolerance : ±1
- * Dimensions in mm

General Information
 Switching Mode Power Supply
 DC-DC Converter
 Noise Filter
 Solid State Relay
 AC FAN Motor
 Power Module
 Discrete Semiconductors

MSF150-S SPECIFICATIONS



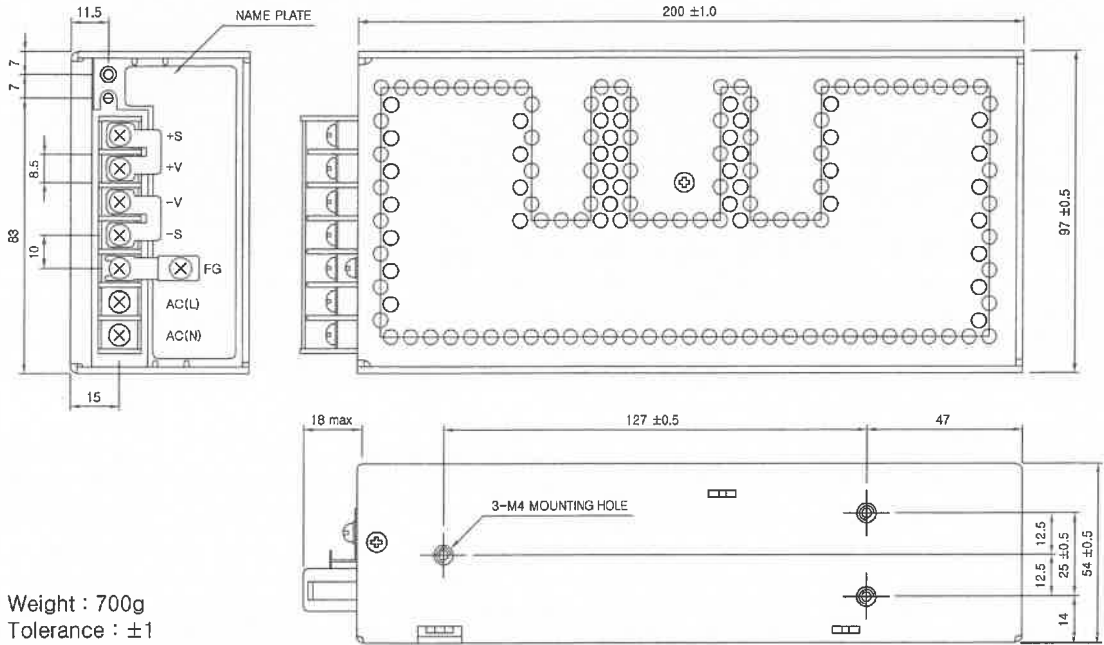
MODEL		MSF150-3R3	MSF150-05	MSF150-12	MSF150-15	
INPUT	VOLTAGE, FREQUENCY		AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable			
	CURRENT	[A]	3.2 (I _o =100%)			
		110V	1.7 (I _o =100%)			
	EFFICIENCY	[%]	75 typ	75 typ	75 typ	75 typ
110V						
INRUSH CURRENT		15A typ(AC IN 110V, I _o =100%), 30A typ(AC IN 220V, I _o =100%) at cold start.				
OUTPUT	VOLTAGE	[V]	3.3	5	12	15
	CURRENT	[A]	30	29	12	10
	REGULATION, LINE	[mV]	25 Max	25 Max	60 Max	75 Max
	REGULATION, LOAD	[mV]	50 Max	50 Max	120 Max	150 Max
	RIPPLE	[mVp-p]	50 Max	50 Max	120 Max	150 Max
	RIPPLE, NOISE	[mVp-p]	100 Max	100 Max	170 Max	200 Max
	TEMPERATURE DRIFT 0~+50°C	[mV]	50 Max	75 Max	180 Max	225 Max
	RISE TIME	[ms]	800 max (AC IN 110V, I _o =100%)			
	HOLDING TIME	[ms]	15 typ (AC IN 110V, I _o =100%)			
PROTECTION CIRCUIT	OVER CURRENT PROTECTION		Works at over 110% of rating and recovers automatically			
	OVER VOLTAGE PROTECTION		Works at 115 ~ 140% of rating			
ELECTRICALLY ISOLATED	INPUT-OUTPUT		AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	INPUT-CASE, FG		AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	OUTPUT-CASE, FG		AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)			
ENVIRONMENT	OPERATING TEMP AND HUMID		-10 ~ +50°C, 20 ~ 90% RH(Non condensing)			
	STORAGE TEMP AND HUMID		-20 ~ +75°C, 20 ~ 90% RH(Non condensing)			
	VIBRATION		10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis			
	IMPACT		10G for 20ms once on each X, Y and Z axis			
SAFETY	SAFETY REGULATION		UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE		Complied with FCC Part15 and EN55022 Class A Limits			

MSF150-S SPECIFICATIONS



MODEL		MSF150-24	MSF150-28	MSF150-36	MSF150-48	
INPUT	VOLTAGE, FREQUENCY		AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable			
	CURRENT	[A]	3.2 (I _o =100%)			
		110V	1.7 (I _o =100%)			
	EFFICIENCY	[%]	75 typ	75 typ	75 typ	75 typ
110V						
INRUSH CURRENT		15A typ(AC IN 110V, I _o =100%), 30A typ(AC IN 220V, I _o =100%) at cold start).				
OUTPUT	VOLTAGE	[V]	24	28	36	48
	CURRENT	[A]	6	5.5	4.1	3.2
	REGULATION, LINE	[mV]	120 Max	140 Max	180 Max	240 Max
	REGULATION, LOAD	[mV]	240 Max	280 Max	360 Max	480 Max
	RIPPLE	[mVp-p]	240 Max	280 Max	360 Max	480 Max
	RIPPLE, NOISE	[mVp-p]	290 Max	330 Max	410 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C	[mV]	360 Max	420 Max	540 Max	720 Max
	RISE TIME	[ms]	800 max (AC IN 110V, I _o =100%)			
	HOLDING TIME	[ms]	15 typ (AC IN 110V, I _o =100%)			
PROTECTION CIRCUIT	OVER CURRENT PROTECTION		Works at over 110% of rating and recovers automatically			
	OVER VOLTAGE PROTECTION		Works at 115 ~ 140% of rating			
ELECTRICALLY ISOLATED	INPUT-OUTPUT		AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	INPUT-CASE, FG		AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	OUTPUT-CASE, FG		AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)			
ENVIRONMENT	OPERATING TEMP AND HUMID		-10 ~ +50°C, 20 ~ 90% RH(Non condensing)			
	STORAGE TEMP AND HUMID		-20 ~ +75°C, 20 ~ 90% RH(Non condensing)			
	VIBRATION		10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis			
	IMPACT		10G for 20ms once on each X, Y and Z axis			
SAFETY	SAFETY REGULATION		UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE		Complied with FCC Part15 and EN55022 Class A Limits			

MSF150-S EXTERNAL VIEW



- * Weight : 700g
- * Tolerance : ± 1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

MSF200-S SPECIFICATIONS



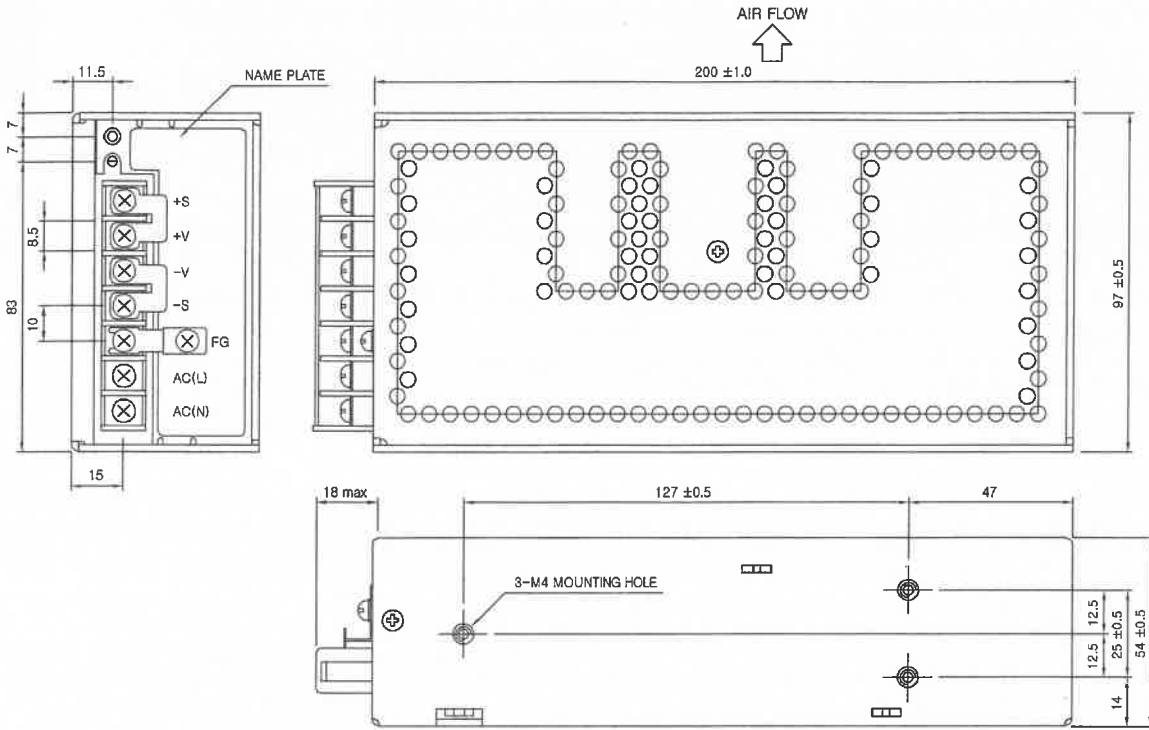
MODEL		MSF200-3R3	MSF200-5	MSF200-12	MSF200-15	
INPUT	VOLTAGE, FREQUENCY		AC100-120V / 200-240V (AC 90 ~ 132V / 180 ~ 264V or AC 255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable			
	CURRENT	[A]	110V	3.4 (I _b =100%)		4.1 (I _b =100%)
			220V	4.1 (I _b =100%)		2.0 (I _b =100%)
	EFFICIENCY	[%]	110V	75 typ		80 typ
220V			75 typ		80 typ	
INRUSH CURRENT		15A typ(AC IN 110V, I _b =100%), 30A typ(AC IN 220V, I _b =100%) at cold start.				
OUTPUT	VOLTAGE	[V]	3.3	5	12	15
	CURRENT	[A]	40	40	17	13
	REGULATION, LINE	[mV]	25 Max	25 Max	60 Max	75 Max
	REGULATION, LOAD	[mV]	50 Max	50 Max	120 Max	150 Max
	RIPPLE	[mVp-p]	50 Max	50 Max	120 Max	150 Max
	RIPPLE, NOISE	[mVp-p]	100 Max	100 Max	170 Max	200 Max
	TEMPERATURE DRIFT 0~+50°C	[mV]	50 Max	75 Max	180 Max	225 Max
	RISE TIME	[ms]	800 max (AC IN 110V, I _b =100%)			
HOLDING TIME		[ms]	15 typ (AC IN 110V, I _b =100%)			
PROTECTION CIRCUIT	OVER CURRENT PROTECTION		Works at over 110% of rating and recovers automatically			
	OVER VOLTAGE PROTECTION		Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%)			
ELECTRICALLY ISOLATED	INPUT-OUTPUT		AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	INPUT-CASE, FG		AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	OUTPUT-CASE, FG		AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)			
ENVIRONMENT	OPERATING TEMP AND HUMID		-10 ~ +50°C, 20 ~ 90% RH(Non condensing)			
	STORAGE TEMP AND HUMID		-20 ~ +75°C, 20 ~ 90% RH(Non condensing)			
	VIBRATION		10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis			
	IMPACT		10G for 20ms once on each X, Y and Z axis			
SAFETY	SAFETY REGULATION		UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE		Complied with FCC Part15 and EN55022 Class A Limits			

MSF200-S SPECIFICATIONS



MODEL		MSF200-24	MSF200-28	MSF200-36	MSF200-48	
INPUT	VOLTAGE, FREQUENCY		AC100-120V / 200-240V (AC 90~ 132V / 180 ~ 264V or AC 225 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable			
	CURRENT	[A]	110V	4.1 (I _b =100%)		
			220V	2.0 (I _b =100%)		
	EFFICIENCY	[%]	110V	80 typ	80 typ	82 typ
220V						
INRUSH CURRENT		15A typ(ACIN 110V, I _b =100%), 30A typ(ACIN 220V, I _b =100%) at cold start.				
OUTPUT	VOLTAGE	[V]	24	28	36	48
	CURRENT	[A]	8.3	7.1	5.5	4.1
	REGULATION, LINE	[mV]	120 Max	140 Max	180 Max	240 Max
	REGULATION, LOAD	[mV]	240 Max	280 Max	360 Max	480 Max
	RIPPLE	[mVp-p]	240 Max	280 Max	360 Max	480 Max
	RIPPLE, NOISE	[mVp-p]	290 Max	330 Max	410 Max	530 Max
	TEMPERATURE DRIFT 0~+50°C	[mV]	360 Max	420 Max	540 Max	720 Max
	RISE TIME	[ms]	800 max (AC IN 110V, I _b =100%)			
HOLDING TIME		[ms]	15 typ (AC IN 110V, I _b =100%)			
PROTECTION CIRCUIT	OVER CURRENT PROTECTION		Works at over 110% of rating and recovers automatically			
	OVER VOLTAGE PROTECTION		Works at 115 ~ 140% of rating			
ELECTRICALLY ISOLATED	INPUT-OUTPUT		AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	INPUT-CASE, FG		AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)			
	OUTPUT-CASE, FG		AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)			
ENVIRONMENT	OPERATING TEMP AND HUMID		-10 ~ +50°C, 20 ~ 90% RH(Non condensing)			
	STORAGE TEMP AND HUMID		-20 ~ +75°C, 20 ~ 90% RH(Non condensing)			
	VIBRATION		10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis			
	IMPACT		10G for 20ms once on each X, Y and Z axis			
SAFETY	SAFETY REGULATION		UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE
	LINE CONDUCTED RF VOLTAGE		Complied with FCC Part15 and EN55022 Class A Limits			

MSF200-S EXTERNAL VIEW



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

MSF300-S SPECIFICATIONS



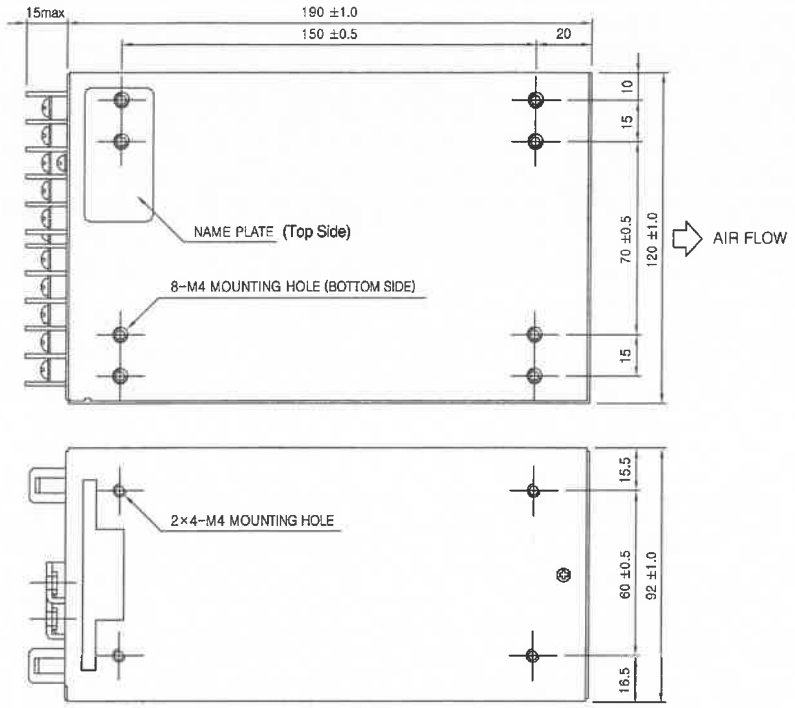
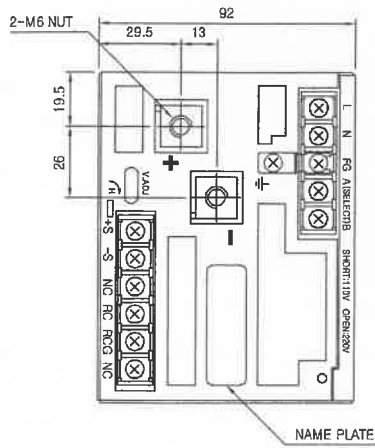
MODEL		MSF300-3R3	MSF300-05	MSF300-12	MSF300-15	
INPUT	VOLTAGE, FREQUENCY	AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable				
	CURRENT [A]	110V	6.5 (I _c =100%)	7.0 (I _c =100%)		
		220V	3.5 (I _c =100%)	3.5 (I _c =100%)		
	EFFICIENCY [%]	110V	73 typ	73 typ	78 typ	80 typ
		220V				
INRUSH CURRENT		30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start.				
OUTPUT	VOLTAGE [V]	3.3	5	12	15	
	CURRENT [A]	60	60	25	20	
	REGULATION, LINE [mV]	25 Max	25 Max	60 Max	75 Max	
	REGULATION, LOAD [mV]	50 Max	50 Max	120 Max	150 Max	
	RIPPLE [mVp-p]	50 Max	50 Max	120 Max	150 Max	
	RIPPLE, NOISE [mVp-p]	100 Max	100 Max	170 Max	200 Max	
	TEMPERATURE DRIFT 0~+50°C [mV]	50 Max	75 Max	180 Max	225 Max	
	RISE TIME [ms]	500 max (AC IN 110V, I _c =100%)				
	HOLDING TIME [ms]	16 typ (AC IN 110V, I _c =100%)				
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically				
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating				
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)				
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)				
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)				
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis				
	IMPACT	10G for 20ms once on each X, Y and Z axis				
SAFETY	SAFETY REGULATION	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits				

MSF300-S SPECIFICATIONS



MODEL		MSF300-24	MSF300-28	MSF300-36	MSF300-48	
INPUT	VOLTAGE, FREQUENCY	AC100-120V / 200~240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable				
	CURRENT [A]	110V	7.0 (I _c =100%)			
		220V	3.5 (I _c =100%)			
	EFFICIENCY [%]	110V	81 typ	82 typ	82 typ	83 typ
		220V				
INRUSH CURRENT		30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start.				
OUTPUT	VOLTAGE [V]	24	28	36	48	
	CURRENT [A]	13	11	8.5	6.5	
	REGULATION, LINE [mV]	120 Max	140 Max	180 Max	240 Max	
	REGULATION, LOAD [mV]	240 Max	280 Max	360 Max	480 Max	
	RIPPLE [mVp-p]	240 Max	280 Max	360 Max	480 Max	
	RIPPLE, NOISE [mVp-p]	290 Max	330 Max	410 Max	530 Max	
	TEMPERATURE DRIFT 0~+50°C [mV]	360 Max	420 Max	540 Max	720 Max	
	RISE TIME [ms]	500 max (AC IN 110V, I _c =100%)				
	HOLDING TIME [ms]	20 typ (AC IN 110V, I _c =100%)				
PROTECTION CIRCUIT	OVER CURRENT PROTECTION	Works at over 110% of rating and recovers automatically				
	OVER VOLTAGE PROTECTION	Works at 115 ~ 140% of rating				
ELECTRICALLY ISOLATED	INPUT-OUTPUT	AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	INPUT-CASE, FG	AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity)				
	OUTPUT-CASE, FG	AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity)				
ENVIRONMENT	OPERATING TEMP AND HUMID	-10 ~ +50°C, 20 ~ 90% RH(Non condensing)				
	STORAGE TEMP AND HUMID	-20 ~ +75°C, 20 ~ 90% RH(Non condensing)				
	VIBRATION	10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis				
	IMPACT	10G for 20ms once on each X, Y and Z axis				
SAFETY	SAFETY REGULATION	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	UL, C-UL, CE	
	LINE CONDUCTED RF VOLTAGE	Complied with FCC Part15 and EN55022 Class A Limits				

MSF300-S EXTERNAL VIEW



- * Weight : 2Kg
- * Tolerance : ±1
- * Dimensions in mm