



# 15W Single Output Medical Grade Switching Power Supply **NFM-15** series



### ■ Features :

- Universal AC input / Full range
- Protections: Short circuit / Over load / Over voltage / Over temperature
- Ultra-miniature size, light weight
- Cooling by free air convection
- Isolation class II
- Medical safety approved (2 x MOPP between primary to secondary)
- No load power consumption<0.5W
- 100% full load burn-in test
- Fixed switching frequency at 67KHz
- High reliability
- Suitable for BF application with appropriate system consideration
- 3 years warranty

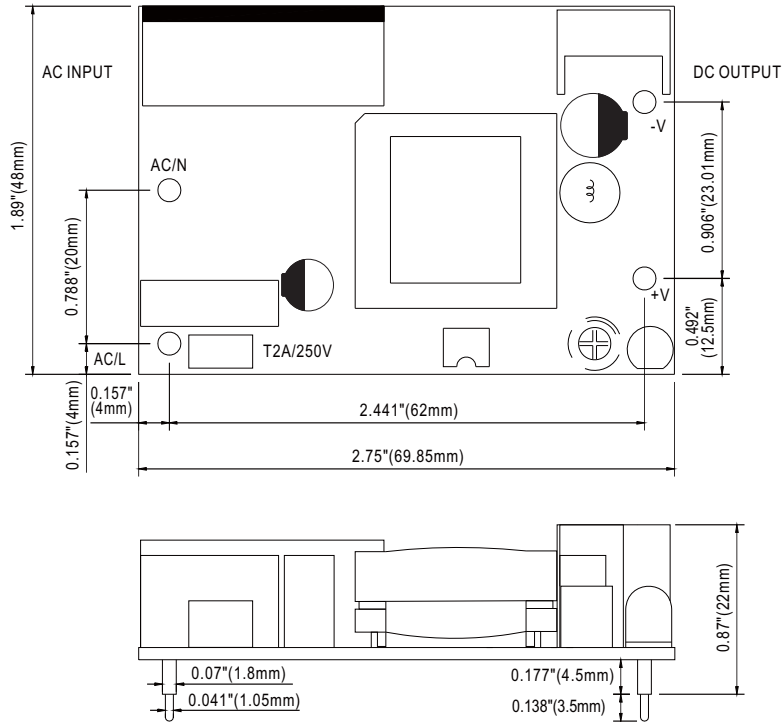


### SPECIFICATION

MODEL	NFM-15-3.3	NFM-15-5	NFM-15-12	NFM-15-15	NFM-15-24	
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V
	RATED CURRENT	3.5A	3A	1.25A	1A	0.63A
	CURRENT RANGE	0 ~ 3.5A	0 ~ 3A	0 ~ 1.25A	0 ~ 1A	0 ~ 0.63A
	RATED POWER	11.55W	15W	15W	15W	15.12W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	150mVp-p	150mVp-p	240mVp-p
	VOLTAGE ADJ. RANGE	3 ~ 3.63V	4.5 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	1000ms, 20ms/230VAC      1000ms, 20ms/115VAC at full load				
HOLD UP TIME (Typ.)	100ms/230VAC      24ms/115VAC at full load					
INPUT	VOLTAGE RANGE	85 ~ 264VAC      120 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 440Hz				
	EFFICIENCY (Typ.)	73%	76%	78%	79%	81%
	AC CURRENT (Typ.)	0.35A/115VAC      0.2A/230VAC				
	INRUSH CURRENT (Typ.)	COLD START 30A/115VAC      50A/230VAC				
	LEAKAGE CURRENT Note.6	Touch current < 80µA/264VAC				
PROTECTION	OVERLOAD	Above 105% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE	3.8 ~ 4.95V	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V
	OVER TEMPERATURE Note.5	Tj 140°C typically (U1) detect on main control IC Protection type : Shut down o/p voltage, recovers automatically after temperature goes down				
ENVIRONMENT	WORKING TEMP.	-20 ~ +70°C (Refer to "Derating Curve")				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes				
SAFETY & EMC (Note 4)	SAFETY STANDARDS	ANSI/AAMI ES60601-1, TUV EN60601-1, IEC60601-1, UL60950-1, EAC TP TC 004 approved				
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP				
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC				
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH				
	EMC EMISSION	Compliance to EN55011(CISPR11), EN55032 (CISPR32) Class B, EN61000-3-2,-3, EAC TP TC 020				
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN60601-1-2, EN61204-3, medical level, criteria A, EAC TP TC 020				
OTHERS	MTBF	499.7Khrs min.      MIL-HDBK-217F (25°C)				
	DIMENSION	70*48*22mm (L*W*H)				
	PACKING	0.065Kg; 120pcs/8.8Kg/0.97CUFT				
NOTE	<ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µf &amp; 47µf parallel capacitor.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.</li> <li>5. The over temperature protection (OTP) is the built-in function of the control IC (U1). The activating level described above is based on the specification provided by the IC manufacturer.</li> <li>6. Touch current was measured from primary input to DC output.</li> <li>7. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</li> </ol>					

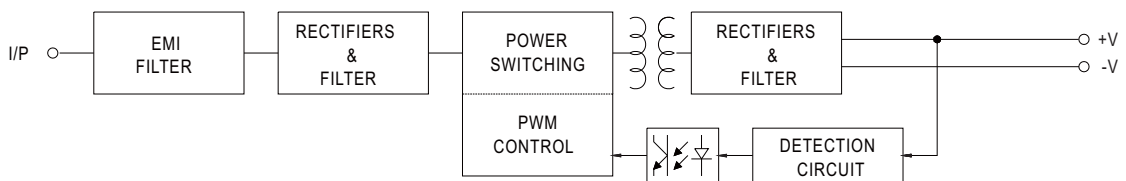
■ Mechanical Specification

Unit:inch(mm)

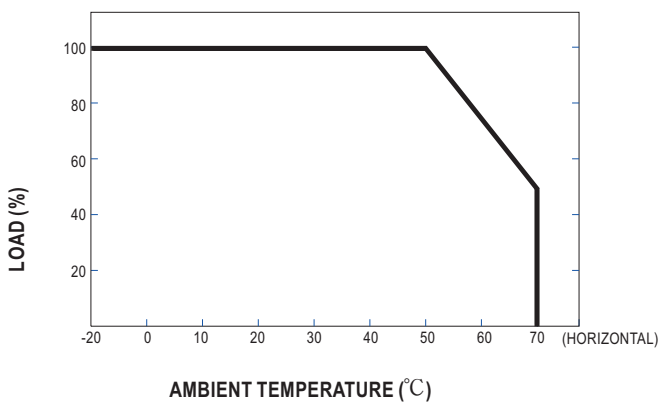


■ Block Diagram

fosc : 67KHz



■ Derating Curve



■ Output Derating VS Input Voltage

