

# NFS25 Series

## Dual and triple output

- 5.0 x 3.0 x 1.2 inch package (1U applications)
- Industry standard package
- Overvoltage and short circuit protection
- 25W with free air convection cooling
- EN55022, EN55011 conducted emissions level A
- UL, VDE and CSA safety approvals

The NFS25 series is a 25W universal input AC/DC power supply on a 5 x 3 inch card with a maximum component height of 1.2 inches for use in 1U applications. The NFS25 series is available with a wide range of models in the industry standard 5 x 3 inch footprint and has proven itself to be reliable and versatile product for a wide range of communication and industrial applications. The NFS25 provides 25W of output power with free air convection cooling which can be boosted to 30W with 20CFM of air. Standard features include OVP and short circuit protection. The series, with full international safety approval and the CE mark, meets conducted emissions EN55022 level A. The NFS25 series is designed for use in low power data networking, computer, telecom and industrial applications such as wireless switchers, hubs, POS terminals, PABX's and machine control. This list is not exclusive as the generic feature of the series with industry standard output configurations provide a solution for most high volume applications including many industrial applications.



CE (LVD)

2 YEAR WARRANTY

All specifications are typical at nominal input, full load at 25°C unless otherwise stated

### SPECIFICATIONS

#### OUTPUT SPECIFICATIONS

Output power (See Note 2)	Continuous Peak (60s)	25W 35W
Line regulation LL to HL, FL	Main output (Output 1) Output 2 Output 3	±0.2% max. ±1% max. ±0.2% max.
Total regulation (See Notes 4, 5)	Main output (Output 1) Auxiliary output 2 Auxiliary output 3	±2.0% max. see table see table
Overshoot/undershoot	At turn-on	0%
Transient response	+5V (1.5 to 3A step)	±120mV max. dev. 500µs recovery
Temperature coefficient	All outputs	±0.02%/°C max.
Overvoltage protection	+5V output	6.25V ±0.75V
Output power limit	Primary power limited	60W Pin limit max. 35W Pout limit min.
Short circuit protection		Continuous

#### INPUT SPECIFICATIONS

Input voltage range	Universal input	85 to 264VAC 120 to 370VDC
Input frequency range		47 to 440Hz
Input surge current	110VAC, cold start 230VAC, cold start	15A max. 32A max.
Safety ground leakage current	132VAC, 60Hz 264VAC, 50Hz	0.62mA max. 1mA max.

#### EMC CHARACTERISTICS

Conducted emissions	EN55022, FCC part 15	Level A
Radiated emissions	EN55022, FCC part 15	Level A
ESD air	EN61000-4-2, level 3	Perf. criteria 1
ESD contact	EN61000-4-2, level 4	Perf. criteria 1
Surge	EN61000-4-5, level 3	Perf. criteria 1
Fast transients	EN61000-4-4, level 3	Perf. criteria 1
Radiated immunity	EN61000-4-3, level 3	Perf. criteria 2
Conducted immunity	EN61000-4-6, level 3	Perf. criteria 1

#### GENERAL SPECIFICATIONS

Hold-up time	110VAC input 230VAC input	16ms 80ms
Efficiency	25W output	70% typical
Isolation voltage	Input/output Input/chassis	3000VAC 1500VAC
Switching frequency		Variable
Approvals and standards (See Note 10)		IEC950, IEC1010, EN60950 UL1950, VDE0805 CSA C22.2 No. 950
Weight		280g (9.6oz)
MTBF (See Note 9)	MIL-HDBK-217E, 25°C	170,000 hours

#### ENVIRONMENTAL SPECIFICATIONS

Thermal performance (See Notes 6, 7, 8)	0°C to 50°C ambient, convection cooled 50°C to +70°C ambient convection cooled Peak (0°C to +50°C, max. 60 seconds) Non-operating	25W max. Derate to 50% load 35W -40°C to +85°C
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating Non-operating	10,000 feet max. 30,000 feet max.
Vibration	Random vibration Three orthogonal axes 10 min. test per axis	2.4G rms approx. 5Hz to 500Hz

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OUTPUT VOLTAGE	OUTPUT CURRENTS			RIPPLE (3)	TOTAL REGULATION (4)	MODEL NUMBER (D)
	MIN (9)	MAX (1)	PEAK (2)			
+5.1V (I <sub>A</sub> )	0A	2.0A	5.0A	50mV	±2.0%	NFS25-7608 (4)
+12.0V (I <sub>B</sub> )	0A	1.5A	3.0A	120mV	±5.0%	
-12.0V	0A	0.2A	1.0A	120mV	±5.0%	
+5.1V	0A	3.0A	5.0A	50mV	±2.0%	NFS25-7628 (5)
+12.0V	0A	0.2A	1.0A	120mV	±2.0%	
-12.0V	0A	0.2A	1.0A	120mV	±2.0%	
+5.1V (I <sub>A</sub> )	0A	2.0A	5.0A	50mV	±2.0%	NFS25-7629 (4)
+12.0V (I <sub>B</sub> )	0A	1.5A	3.0A	120mV	±5.0%	

## Notes

- Natural convection cooling.
- Peak output current lasting less than 60 seconds with duty cycle less than 5%. During peak loading, outputs may go outside of total regulation limits. Total peak power output is 35 Watts.
- Figure is peak-to-peak. Output noise measurements are made across a 50MHz bandwidth using a 12 inch twisted pair, terminated with a 47µF capacitor.
- Total regulation is defined as the static output regulation at 25°C, including initial tolerance, line voltage within stated limits, load currents within stated limits and output voltages adjusted to their factory settings. Also,  $0.5 \leq I_A / I_B \leq 3$  to maintain stated regulation. This does not apply to the NFS25-7628.
- The NFS25-7628 has separately regulated +12V and -12V outputs. The loading condition in note 4 does not apply.
- Derate linearly from 25 Watts at 50°C to 12.5 Watts at 70°C.
- Derating curve is application specific for ambient temperatures > 50°C, for optimum reliability no part of the heatsink should exceed 120°C and no semiconductor case temperature should exceed 125°C.
- Caution: Allow a minimum of 1 second after disconnecting the power before making thermal measurements.
- A 4 Watt minimum load is required to achieve design MTBF.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.

## PIN CONNECTIONS

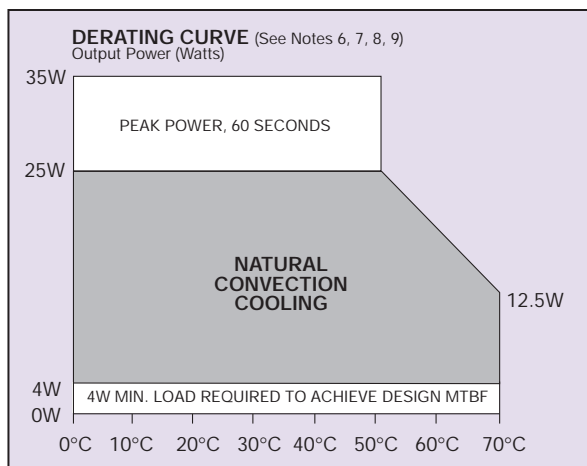
J1	-7608	-7628	-7629
Pin 1	AC Line	AC Line	AC Line
Pin 2	AC Neutral	AC Neutral	AC Neutral
J2			
Pin 1	+12V	+12V	+12V
Pin 2	+5.1V	+5.1V	+5.1V
Pin 3	+5.1V	+5.1V	+5.1V
Pin 4	Return	Return	Return
Pin 5	Return	Return	Return
Pin 6	-12V	-12V	N/C
P1			
Pin 1	Safety Ground		

### AC mating connector

Molex 09-50-3031 or equivalent with Molex 08-50-0105 crimp terminals or equivalent

### DC mating connector

Molex 09-91-0600 or equivalent with Molex 08-50-0164 crimp terminals or equivalent



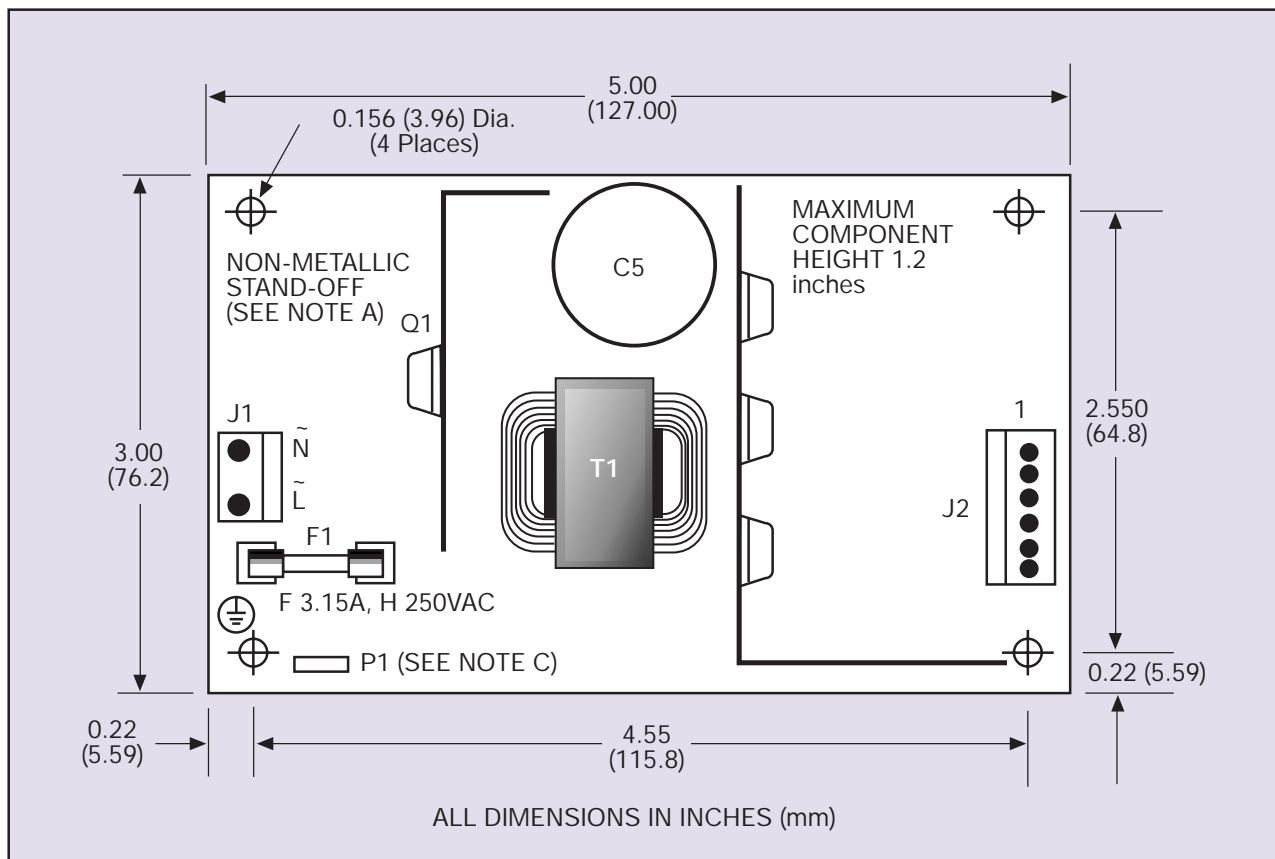
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## Mechanical Notes

- A** In order to meet safety requirements, a non-metallic stand-off is mandatory for one hole as specified in the mechanical drawing above.
- B** The ground pad of the mounting hole near P1 allows system grounding through a metal stand-off.
- C** To improve conducted noise, the ground pad of the mounting hole near the output connector should be connected with the ground pad of the mounting hole near P1. Use metal stand-offs attached to a common metal chassis. This connection also significantly attenuates common mode noise.
- D** A standard L-bracket and cover is available for mounting which contains all screws, connectors and necessary mounting hardware. Order part number 'NFS40 COVER KIT'.



## International Safety Standard Approvals



VDE0805/EN60950/IEC950/IEC1010  
File No. 10401-3336-1044 Licence No. 2559, 1651



UL1950 File No. E136005



CSA C22.2 No. 950 File No. LR41062C

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