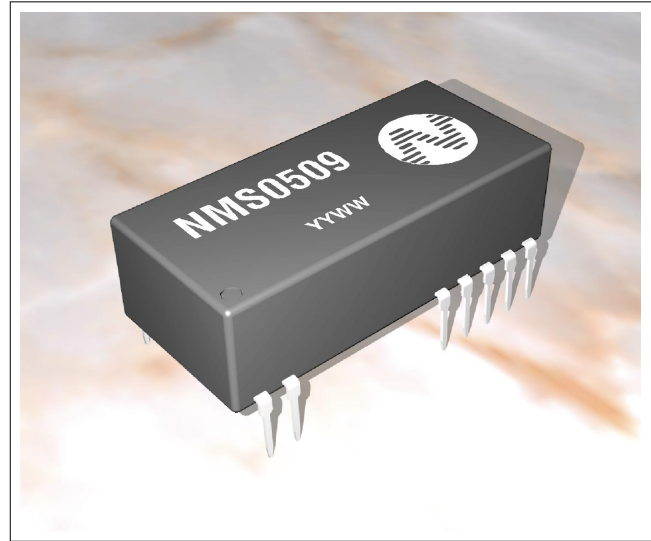


features

- BS EN 60950 Certified
- 6kVDC Isolation
- Dual Output
- Low Profile Package
- Efficiency to 80%
- Power Density 0.65W/cm³
- 5V & 12V Input
- 5V, 9V, 12V and 15V Output
- Footprint 4.75 cm²
- UL 94V-0 Package Material
- No Heatsink Required
- Internal SMD Construction
- Toroidal Magnetics
- No External Components Required
- MTTF up to 1.0 Million Hours
- Custom Solutions Available

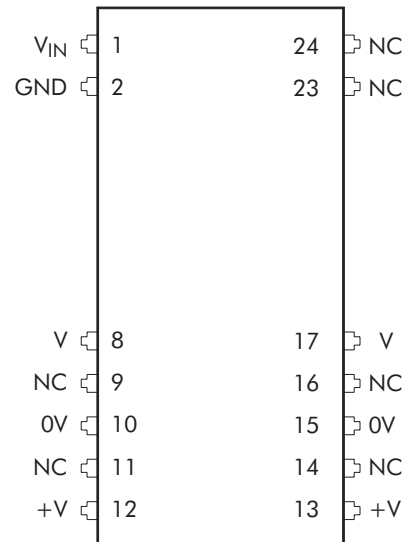
description

The NMS Series of DC-DC Converters are fully certified to BS EN 60950, this makes them ideal for all Telecom and safety applications where approved isolation is required. The low profile package allows mounting in rack systems without risk of touching other boards. The output configuration allows all of the rated power to be drawn from a single pin provided the total load does not exceed 2 Watts. The devices feature low noise and low isolation capacitance suitable for applications in high noise environments, eg heavy electrical machine interface.



pin connections

24 Pin DIL (top view)



BS EN 60950 CERTIFIED

Certified to meet BS EN 60950, BS EN 41003
Certificate number 7789 applies.

NMS SERIES

6kVDC Isolated 2W Dual Output

absolute maximum ratings over operating free air* temperature range

| | |
|---|----------------|
| Input voltage V_{IN} NMS05 types | 7V |
| Input voltage V_{IN} NMS12 types | 15V |
| Output power total | 2W |
| Short-circuit duration | 1s |
| Isolation voltage (flash tested for 1 second) | 6000VDC |
| Operating free air temperature range | 0 C to 70 C |
| Storage temperature range | -55 C to 150 C |
| Lead temperature 1.5mm from case for 10 seconds | 300 C |

electrical specifications

measured at T_A 25 C, at nominal input voltage

| | |
|--|---------------------|
| Input voltage range NMS05 types | 5V \pm 10 |
| Input voltage range NMS12 types | 12V \pm 10 |
| Line voltage regulation (10 to 100 full load) | 1.2 % of V_{IN} |
| Load voltage regulation (10 to 100 full load) | 15 max. |
| Input reflected ripple (20M Band limited) | 300mV p-p max. |
| Output ripple (20M Band limited) | 150mV p-p max. |
| Insulation resistance at 500VDC | 1000M Ω min. |
| Efficiency at full load, 5V output type | 70 typical, 65 min. |
| Efficiency at full load, 9V,12V and 15V output types | 75 typical, 70 min. |
| Temperature drift (V_{OUT} vs T) | 0.2 % per C max. |
| Temperature rise above ambient at full load | 20 C |
| Weight NMS05 12 types (typical) | 6 grams |
| Switching frequency at full load (typical) | 35k |
| No load power consumption (typical) NMS05 types | 350mW |
| No load power consumption (typical) NMS12 types | 250mW |

*free air - requires a minimum of 10mm air space around the component.

selection guide

5V and 12V input types

| Part Number | Output Voltage V | Output Current | | Package Style |
|-------------|---------------------|----------------|-----------|------------------|
| | | Eac | Output mA | |
| NMS 05 | ±5 | | 200 | 1 |
| NMS 09 | ±9 | | 111 | |
| NMS 12 | ±12 | | 83 | |
| NMS 15 | ±15 | | 67 | |

typical isolation capacitance (pF)

| Part Number | Output Voltage V | | | |
|-------------|------------------|-----|-----|-----|
| | 05 | 09 | 12 | 15 |
| NMS05 | 1.8 | 1.9 | 2.0 | 2.1 |
| NMS12 | 1.9 | 2.0 | 2.1 | 2.2 |

typical common mode rejection ratio (dB)

| Part Number | Output Voltage V | | | |
|-------------|------------------|------|------|------|
| | 05 | 09 | 12 | 15 |
| NMS05 | 68.1 | 67.9 | 67.8 | 67.7 |
| NMS12 | 67.9 | 67.3 | 67.1 | 66.8 |

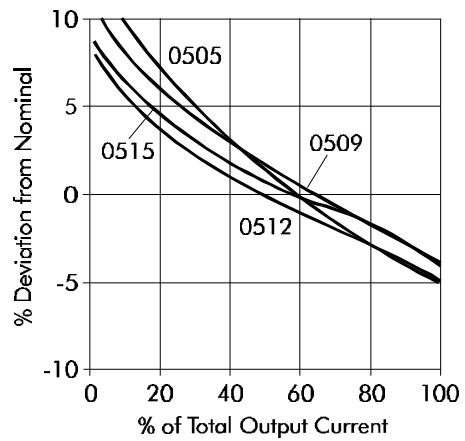
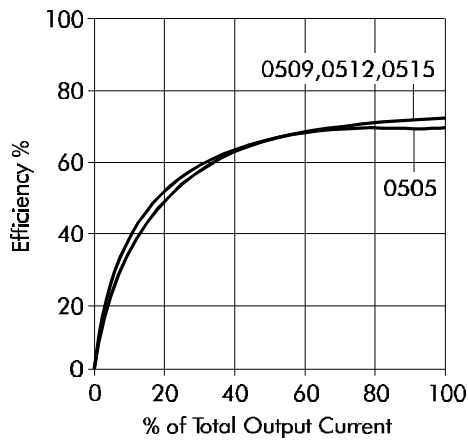
Note II data taken at T 25 C.

NMS SERIES

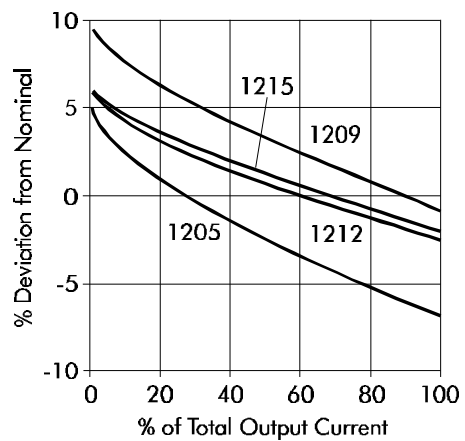
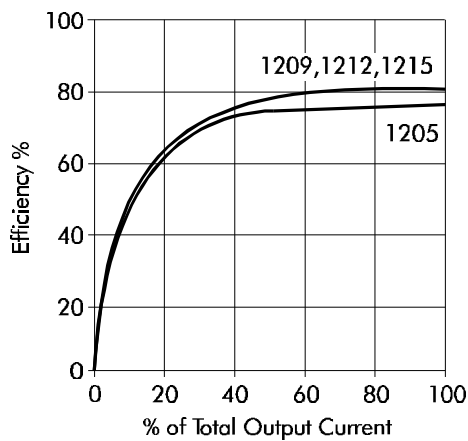
6kVDC Isolated 2W Dual Output

typical characteristics

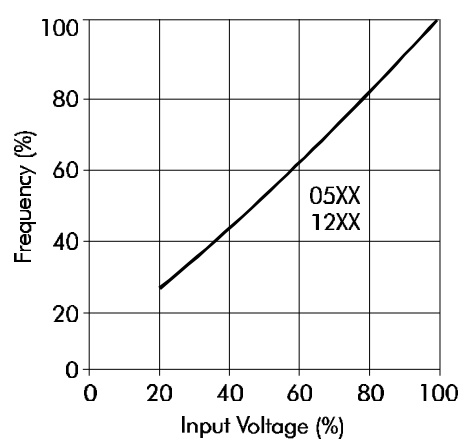
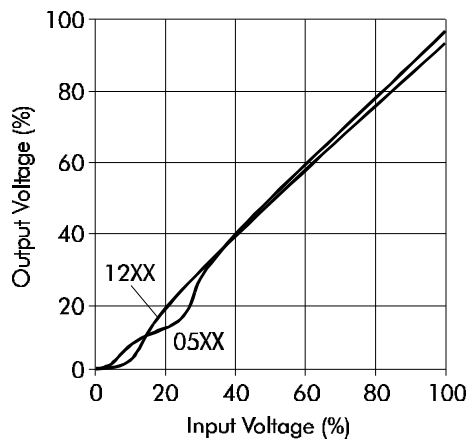
NMS05 series



NMS12 series



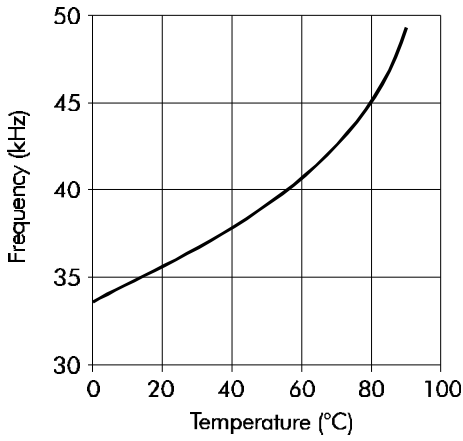
voltage dependency



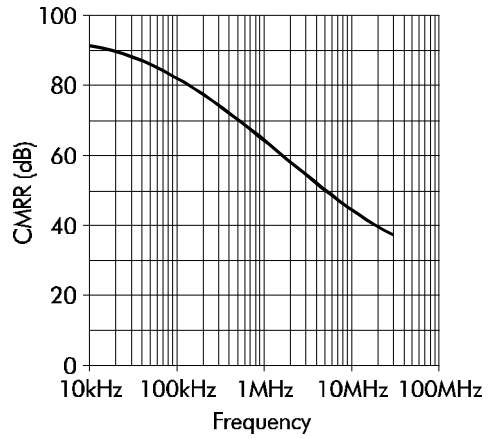
Note: All data taken at T = 25 C.

typical characteristics

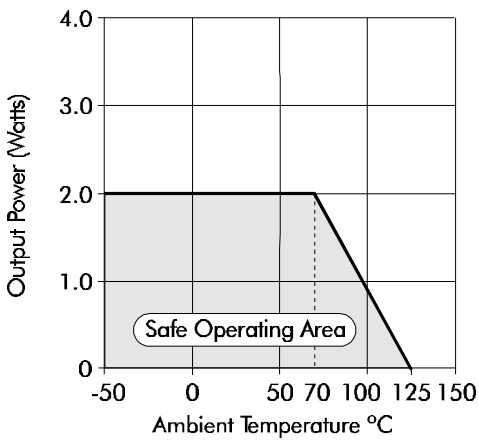
temperature test under full load



CMRR vs frequency

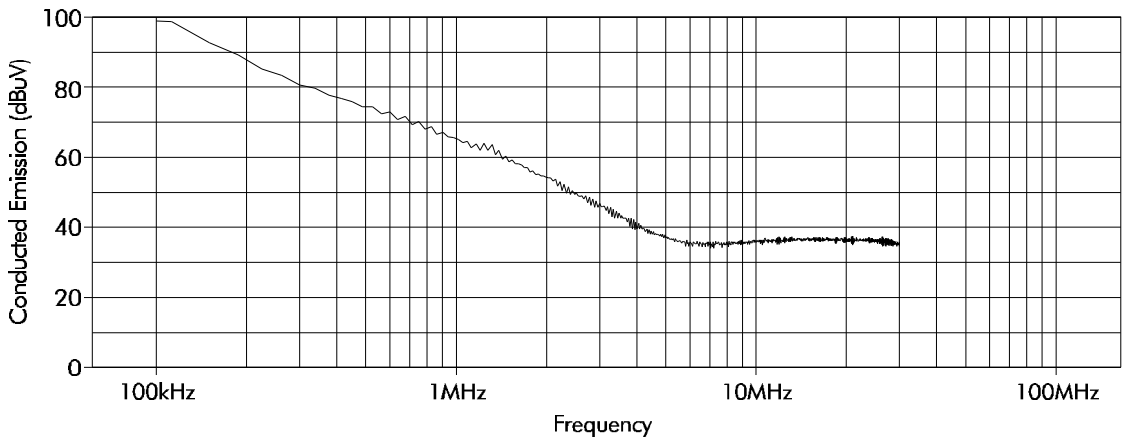


temperature derating grap



See application notes on page 2- 132

NMS05 series spectrum analysis RBW 100kH



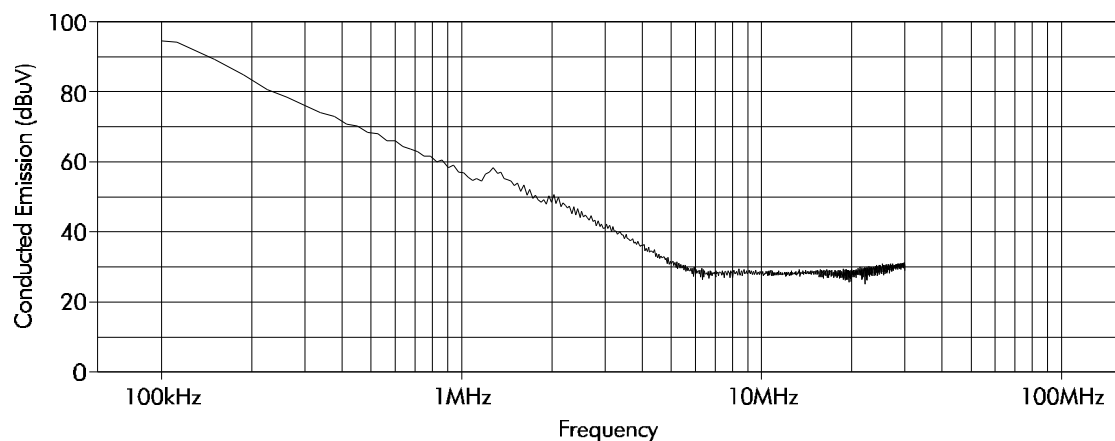
Note II data taken at T 25 C.

NMS SERIES

6kVDC Isolated 2W Dual Output

typical characteristics

NMS12 series spectrum analysis RBW 100kHz



mean time to failure (MTTF) in thousands of hours

| Part Number | -25 C | 25 C | 70 C |
|-------------|-------|------|------|
| NMS0505 | 1084 | 931 | 801 |
| NMS0509 | 383 | 335 | 295 |
| NMS0512 | 185 | 162 | 144 |
| NMS0515 | 100 | 88 | 78 |
| NMS1205 | 426 | 368 | 321 |
| NMS1209 | 248 | 216 | 190 |
| NMS1212 | 146 | 128 | 114 |
| NMS1215 | 87 | 77 | 68 |

Note MTT figures derived from hybrid model of MIL- DB -217 .

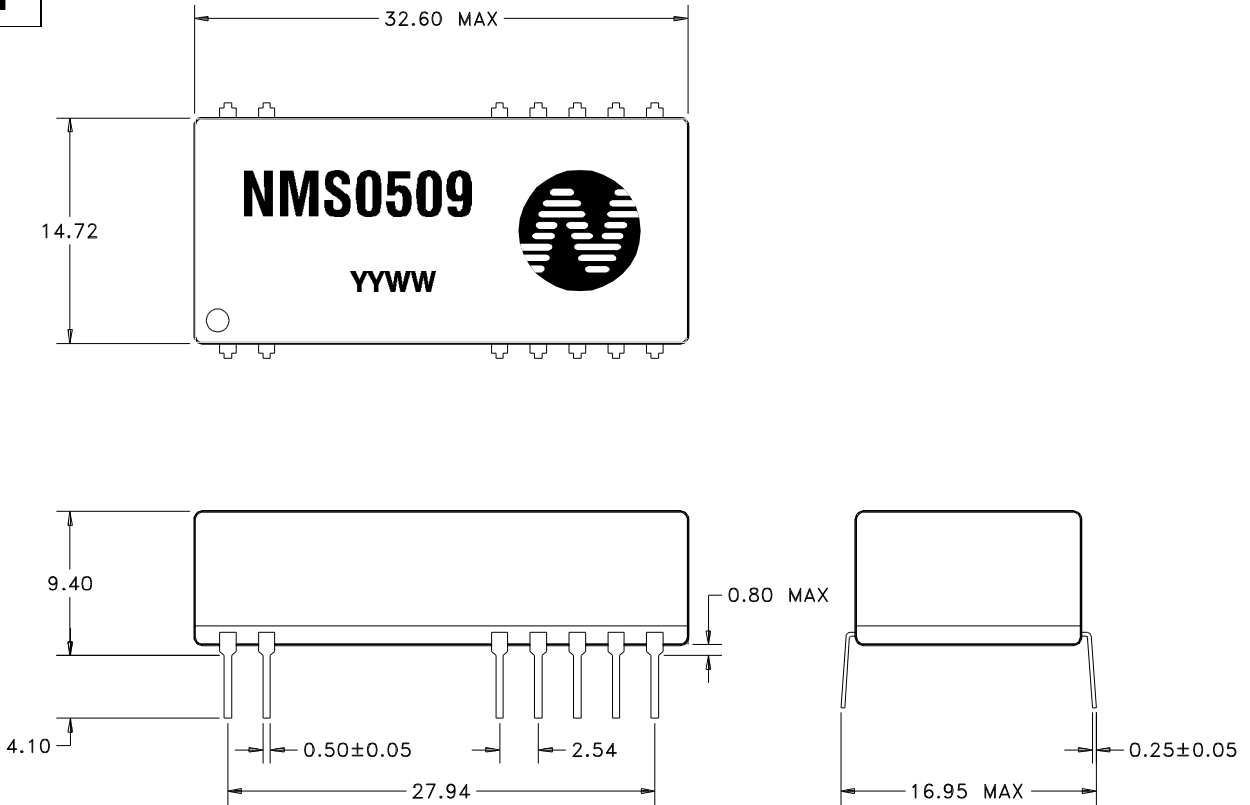
The NMS series of DC-DC Converters was tested by British Standards Institute (BSI) and received certificate number 7789 confirming compliance with BS EN 60950 and BS EN 41003 for supplementary insulation.

EN 60950 is derived from IEC 950 and is equivalent to L 1950 and CS 950 standards.

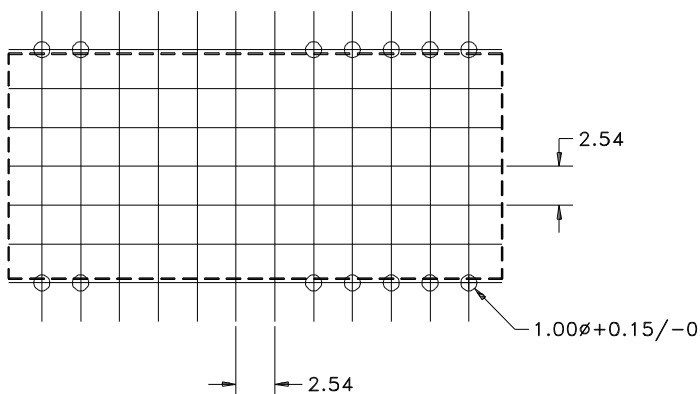
outline dimensions

24 Pin DIL package style

1



recommended footprint details



|| pins on a 2.54mm pitch.

|| dimensions in mm ±0.25