

FEATURES

- Industry Standard Footprint
- Short Circuit Protection
- Efficiency to 95%
- Wide Input Range
- 1.8V, 2.5V, 3.3V & 5V Output
- Operating Temperature Range -40°C to 85°C
- SMD Construction

DESCRIPTION

The NGA series is a range of low profile DC-DC converters offering a single regulated output over a wide input voltage range. All parts deliver the full output power up to 85°C without the need for external heatsinking while the synchronous rectification design yields excellent efficiencies up to 95%.

SELECTION GUIDE¹

| | Nominal Input Voltage | Output Voltage | Output Current | | Nominal Input Current @ Full Load | | | Power Consumption @ Shutdown | | | Nominal Efficiency | |
|---------------------|-----------------------|----------------|----------------|-----------|-----------------------------------|---------------------|---------------------|------------------------------|---------------------|---------------------|---------------------|---------------------|
| | | | Min Load | Full Load | Min V _{IN} | Nom V _{IN} | Max V _{IN} | Min V _{IN} | Nom V _{IN} | Max V _{IN} | Min V _{IN} | Max V _{IN} |
| Order Code | (V) | (V) | A | A | mA | mA | mA | mW | mW | mW | % | % |
| NGA10S15018S | 15 | 1.8 | 0 | 2.0 | 847 | 280 | 160 | 0.5 | 4.8 | 16.1 | 89 | 81 |
| NGA10S15025S | 15 | 2.5 | 0 | 2.0 | 1142 | 380 | 210 | 0.5 | 4.8 | 16.1 | 92 | 85 |
| NGA10S15033S | 15 | 3.3 | 0 | 2.0 | 1478 | 480 | 269 | 0.5 | 4.8 | 16.1 | 94 | 88 |
| NGA10S15050S | 15 | 5.0 | 0 | 2.0 | 1493 | 705 | 388 | 1.0 | 4.8 | 16.1 | 95 | 92 |

INPUT CHARACTERISTICS¹

| Parameter | Conditions | MIN | TYP | MAX | Units |
|--------------------------|--|------|-----|-----|--------|
| Voltage Range | Continuous operation 1.8, 2.5 & 3.3V output types | 4.75 | 15 | 28 | VDC |
| | Continuous operation 5.0V output types | 7.0 | 15 | 28 | |
| Reflected Ripple Current | 1.8V output types | | 29 | | mA p-p |
| | 2.5V output types | | 49 | | |
| | 3.3V output types | | 48 | | |
| | 5.0V output types | | 99 | | |

OUTPUT CHARACTERISTICS¹

| Parameter | Conditions | MIN | TYP | MAX | Units |
|----------------------------|---|-----|------|------|-------|
| Rated Power | T _A = -40°C to 85°C | | | 10 | W |
| Voltage Set Point Accuracy | | | ±1.5 | ±5.0 | % |
| Line Regulation | Low line to high line, with external input/output capacitors, refer to test circuit | | 0.2 | 0.5 | %/% |
| Load Regulation | 10% load to 100% load, with external input/output capacitors, refer to test circuit | | 1.5 | 2.0 | % |
| Ripple & Noise | BW = DC to 20MHz With external input/output capacitors, refer to test circuit | | 40 | 70 | mVp-p |

ABSOLUTE MAXIMUM RATINGS

| | |
|---|------------|
| Short circuit protection | Continuous |
| Internal power dissipation | 1.1W |
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Input Voltage V _{IN} | 28V |
| Minimum load | 0% |

ENVIRONMENTAL¹

| Parameter | Conditions | MIN | TYP | MAX | Units |
|-------------------------------|------------|-----|-----|-----|-------|
| Operation | | -40 | | 85 | °C |
| Storage | | -50 | | 125 | °C |
| PCB Temperature above Ambient | | | 40 | | °C |

TERMINOLOGY

TRANSIENT RESPONSE

Time for V_{OUT} to be within 1% of V_{NOM} where $V_{NOM} = \frac{V_{OUT\ 25\%} + V_{OUT\ 75\%}}{2}$

OVER-SHOOT/UNDER-SHOOT

MAX deviation from final steady state output.

START DELAY

Typical rise time (ms) after control pin high with valid input.

NGA SERIES

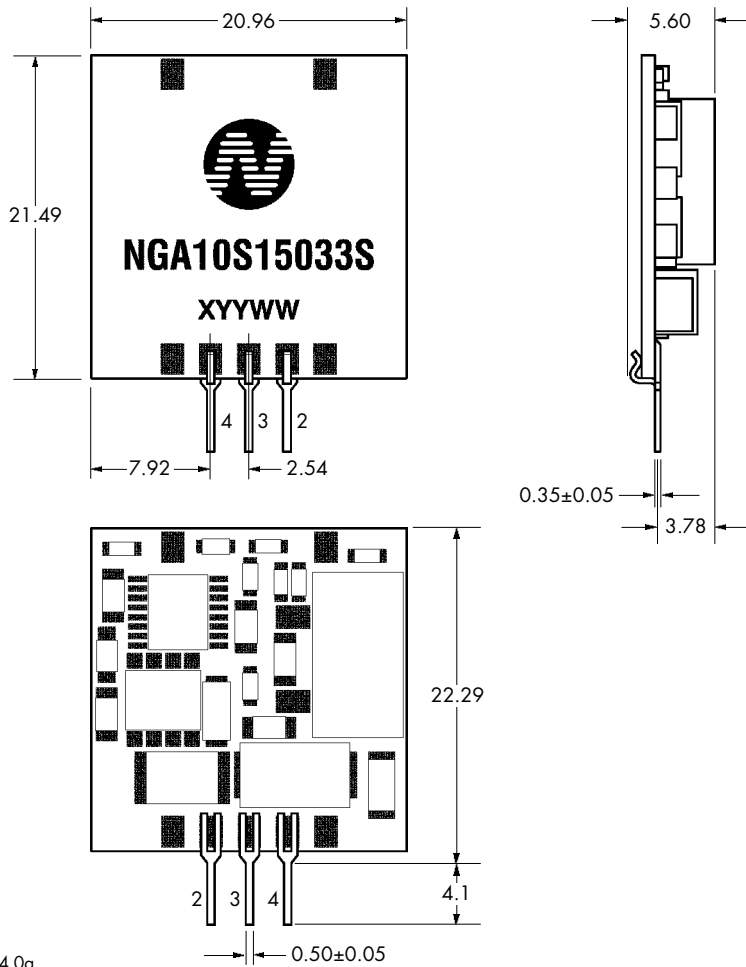
Non-Isolated Wide Input DC-DC Converters

GENERAL CHARACTERISTICS¹

| Parameter | Conditions | MIN | TYP | MAX | Units |
|---------------------------------------|--|-----|---------|-----|--------|
| Switching Frequency | | 270 | 300 | 330 | kHz |
| Transient Response MAX Over-Shoot | 50% load change, 1.8V output types | | 90(160) | | mV(μs) |
| | 50% load change, 2.5V output types | | 84(145) | | |
| | 50% load change, 3.3V output types | | 83(130) | | |
| | 50% load change, 5.0V output types | | 75(40) | | |
| Transient Response MAX Under-Shoot | 50% load change, 1.8V output types | | 64(160) | | mV(μs) |
| | 50% load change, 2.5V output types | | 86(145) | | |
| | 50% load change, 3.3V output types | | 84(120) | | |
| | 50% load change, 5.0V output types | | 74(80) | | |
| Under Voltage Lock Out | 1.8, 2.5 & 3.3V output types | | 4.0 | | V |
| | 5.0V output types | | 5.0 | | |
| Start Delay | V _{IN} MIN to V _{IN} MAX | | 100 | | ms |

MECHANICAL DIMENSIONS

3 Pin SIP Package Style



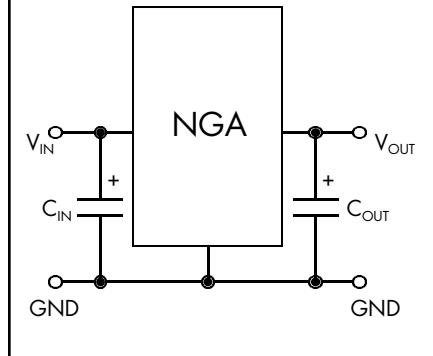
APPLICATION NOTES

EXTERNAL CAPACITANCE

External capacitors are necessary in order to guarantee stability and full parametric performance over the full line and load range. All parts have been tested and characterised using the following values and test circuit.

| Value ¹ | |
|--------------------|------------------|
| C _{IN} | C _{OUT} |
| 100μF, 50V | 100μF, 10V |

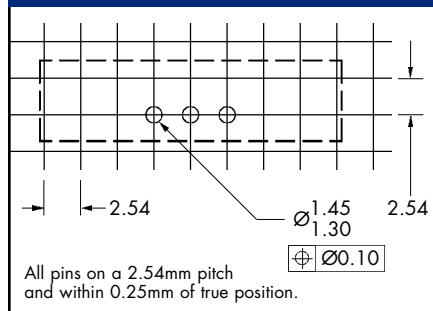
TEST CIRCUIT



PIN CONNECTIONS

| Pin Number | | |
|-----------------|-----|------------------|
| 2 | 3 | 4 |
| V _{IN} | GND | V _{OUT} |

RECOMMENDED FOOTPRINT DETAILS



¹ Specifications typical at T_A = 25°C, nominal input voltage and rated output current unless otherwise specified.

Unless otherwise stated all dimensions in mm ±0.25mm.

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