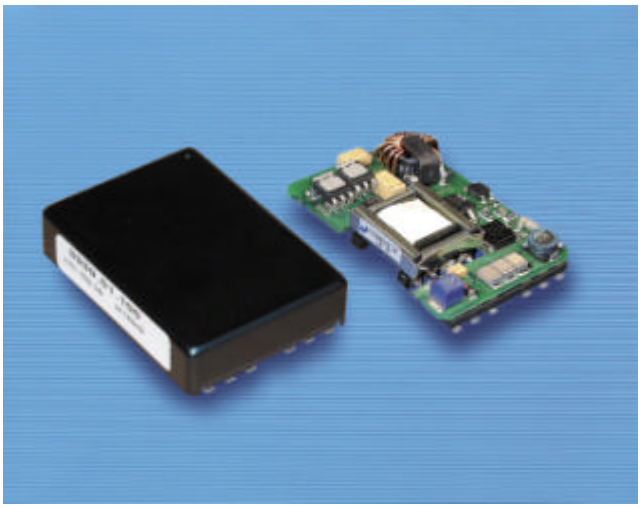
PRELIMINARY

Release 0.A

NGM14.5 - 48V3.3V SMT Version

14.5W High Efficiency Low Power DC-DC Converter SMT Version



Features

- Wide Input Voltage Range (19.2 – 72 Vdc)
- Output 3.3V 4.4A
- Compact Size 57.25L x 40.6W x 12.9H (mm)
- Total weight 32g. (1.13oz.)
- High Efficiency, typically 86% at 48V Input
- Low Ripple and Noise
- Input to Output Isolation at 1500Vdc
- Output Current limiting: hiccup mode
- Metal Baseplate
- Fixed Frequency (270 KHz)
- Synchronization to External Secondary Clock
- Input Undervoltage Lockout (UVLO)
- Operating Range Temperature -40/+85°C with no derating
- No Forced Cooling Needed
- UL, CSA, CE Approvals Pending

Description and Applications

The NGM14.5 DC/DC Converter SMT Version is part of NG Series, which rapresents the Magnetek's Family of High Efficiency Low Power DC-DC Converters.
These Modules feature high reliability, high efficiency and a widely varying range of input voltages (from 19.2 to 72Vdc) with the possibility of a careful regulation of output voltage, so they are ideally suited for Telecommunications, Industrial and Computer applications.
The compact size of these units make them ideal for inclusion in original design of systems which demand small size, low cost and high reliability.
The standard feature set includes the clock input for synchronization to an external secondary clock, while the case ground pin is optional.

Specifications

(Typical value standard at nominal input line, full load, 25°C ambient temperature unless otherwise specified)

Electrical Specifications	Output Specifications		
	Output Voltage (Vo)		3.3V
	Output Current (Io)	Vimin…..Vimax	0-4.4A
	Voltage Accuracy		+/-0.5%
	Start-up Overshoot		1% max
	Load Regulation	Low Load to Full Load	+/-1.0%
	Line Regulation	Low Line to High Line	+/-0.5%
	Admissible Capacitive Load		2000μF
	Ripple and Noise Voltage	Vimin…Vimax; Io=Ionom (20MHz BW) See Note 1	20mVpk-pk
	Temperature Coefficient (Tc)	ΔVo/ΔT	< 0.02%/°C
	Switching Frequency	Fixed	270kHz
	Transient Response Deviation Settling Time	Io=1.5A to 4A to 1.5A dIo/dt= 1A/μs, Vin=48V (response within+/-1%Vo) See Note 2	 +/- 100mV max 100μs max

Electrical Specifications	Input Specifications		
	Nominal Input Voltage (Vinom)		48Vdc
	Input Voltage Range	Io=0…Ionom See Note 3	19.2-72Vdc
	Maximum Input Current (Iimax)	Vi=19.2V; Io=Iomax See Note 4	795mA
	Input Reflected Ripple Current	Io=0…Ionom	30mApk-pk
	Inrush Current		< $1A^2$sec
	No Load Input Current	Vimin…..Vimax., Io=0	40mA
	Rise Time	Vinom, Io=Ionom Resistive Load Capacitive Load (2000μF)	 8ms 12ms

Electrical Specifications	Isolation		
	Isolation Voltage	In/Out In/Case Out/Case See Note 5	1500Vdc 1500Vdc 500Vdc
	Isolation Capacitance		1500pF
	Isolation Resistence		> 10MΩ
	Operating Amb.Temperature	Maximum Rating	-40/+85°C
	Storage Temperature	Maximum Rating	-50/+115°C

General Specifications

Efficiency		86%
Cooling	Free Air Convection	
Thermal Resistance (θ_{jc})	Baseplate to air	< 14°C/W
Case Material	Metal Baseplate and five-sided plastic case	
Weight		32g
MTBF	BELLCORE 332 (40°C case)	1500000hr.
Approvals and Homologations	Pending	EN60955 UL1950 CSA950, CE
Relative Humidity	Non condensing	5% to 95% RH

Protection

Output Current Protection		hiccup mode
Overcurrent Protection Threshold	Vinom	5.5A +/- 10%
Input Undervoltage Protection	See Note 6	

NOTES:

1 Measured with an external capacitance C= C_1+C_2 = 100nF(ceramic) + 10μF (tantalum) –

2 No external output capacitance.

3 The module is provided with hysteretic control of input line between 19.2-72Vdc.

4 CAUTION: To preserve the module's flexibility, internal fusing is not included; however, to achieve the maximum system protection, input fusing is always highly recommended based on inrush current and maximum input current.

5 1500Vdc between input and output pins both in short circuit state
1500Vdc between input short-circuited pins and the "case"
500Vdc between output short-circuited pins and the "case"

6 The latched lockout circuitry turns the module OFF when the input voltage is below the minimum value.

Characteristic Curves

Rise Time

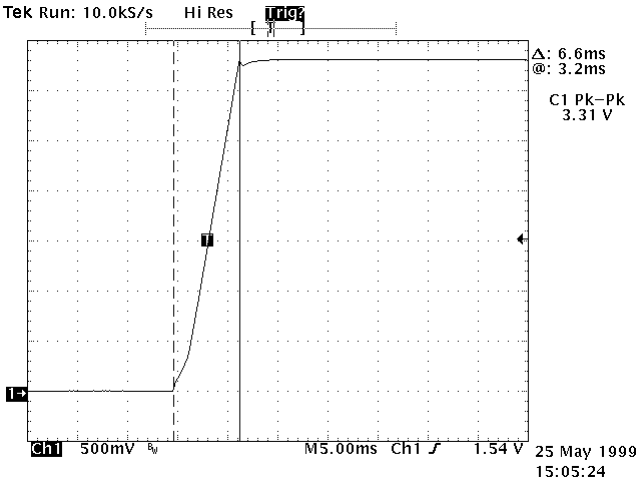


Figure 1. **Clock=open Vin=48V Io=4.4A Ta=25°C Resistive load**

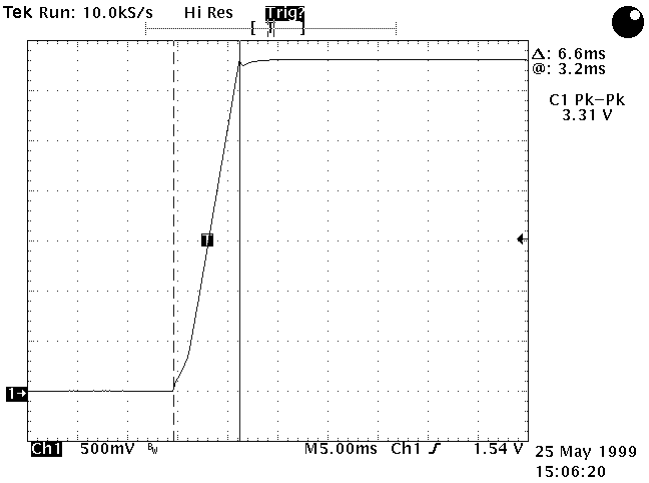


Figure 2. **Clock=open Vin=48V Io=4.4A Ta=25°C Capacitve load 2000μF**

Converter start up time

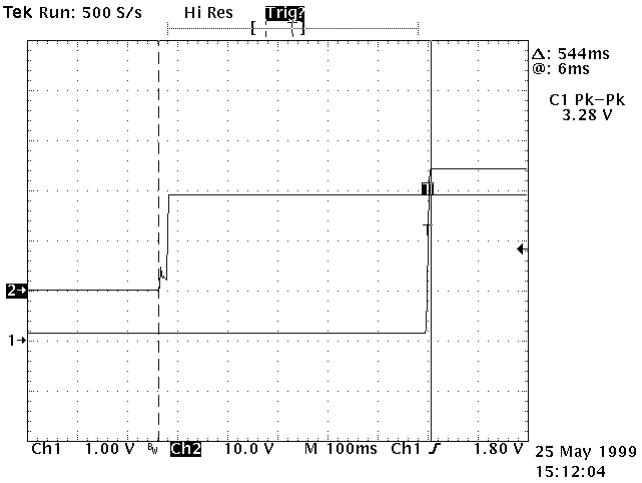


Figure 3. **Clock=open Vin=19.2V Io=4.4A Ta=25°C**

Ripple and noise

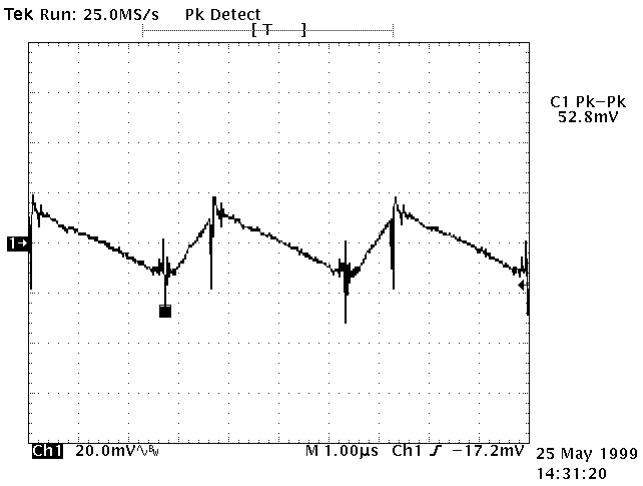


Figure 4. **Clock=open Vin=19.2V Io=4.4A Ta=25°C**

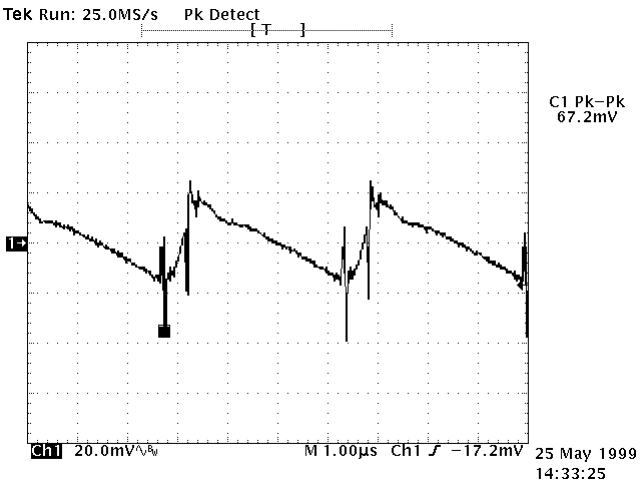


Figure 5. **Clock=open Vin=72V Io=4.4A Ta=25°C**

Transient Response

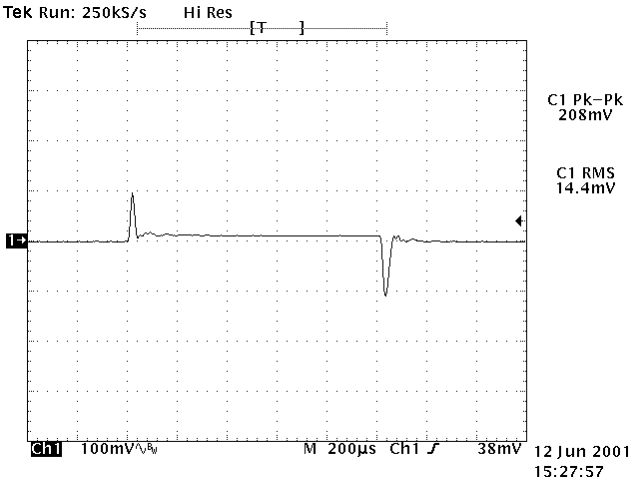


Figure 6: **Output voltage response to step change in load current.**
Io= 1.5A to 4A to 1.5A Freq.=500Hz Vin=19.2V
Ta=25°C

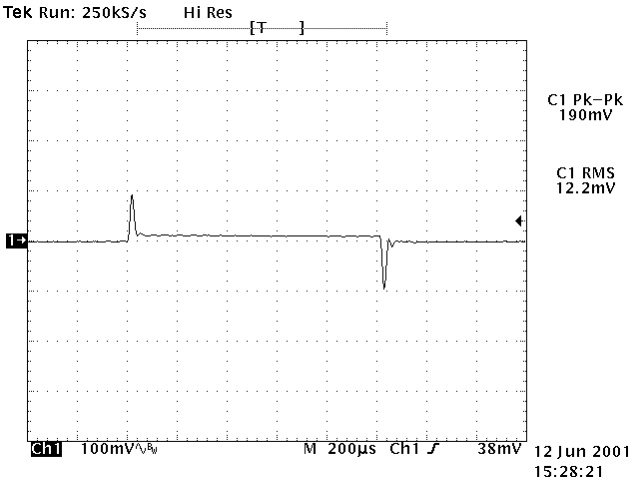


Figure 7: **Output voltage response to step change in load current.**
Io= 1.5A to 4A to 1.5A Freq.=500Hz Vin=48V
Ta=25°C

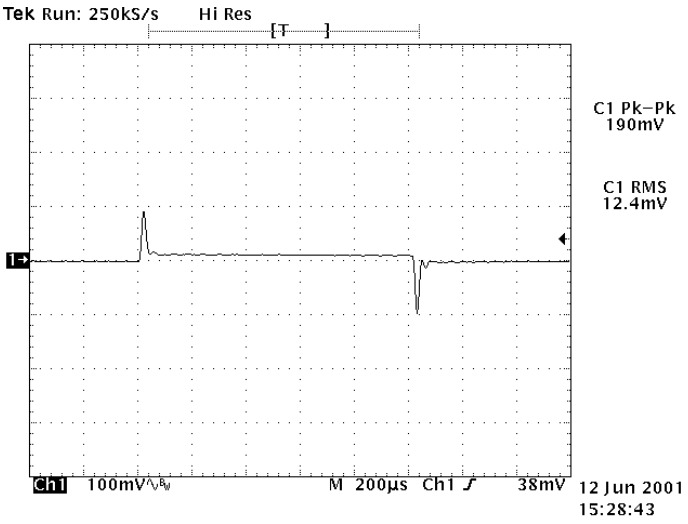
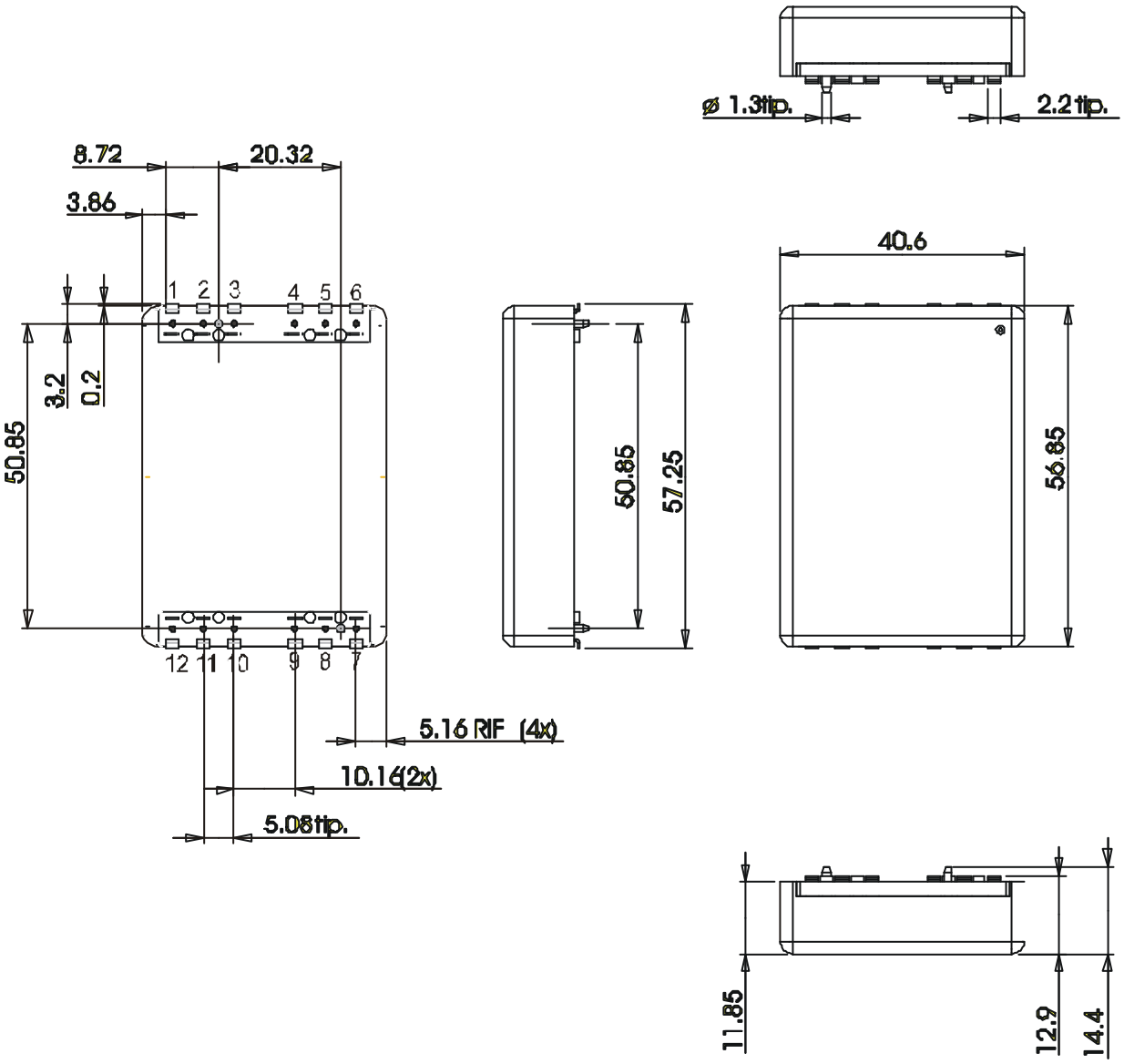
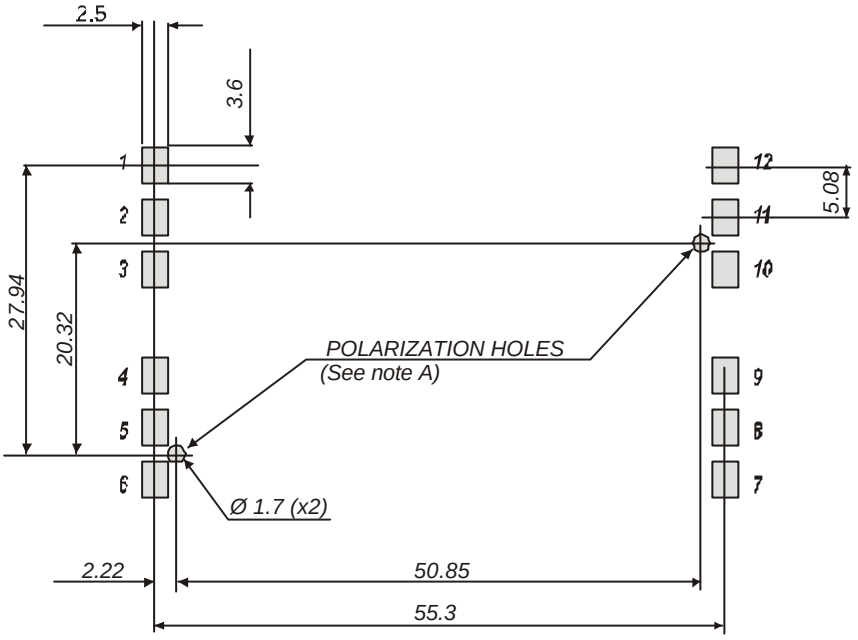


Figure 8: **Output voltage response to step change in load current.**
Io= 1.5A to 4A to 1.5A Freq.=500Hz Vin=72V
Ta=25°C

MECHANICAL DRAWINGS

Dimensions are in inches and (millimeters)
Tolerances: x.xx ± 0.02 in. (0.5mm), x.xxx in.(0.25mm).
Pins: 0.04 in. (1.00mm) Dia





1	NC
2	NC
3	Sync
4	-Vin
5	+Vin
6	NC
7	+Vout
8	+Vout
9	+Vout
10	-Vout
11	-Vout
12	NC

Pad Locations

Note A: To guarantee the right insertion of the module.

For additional information, please contact :

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