55MQ2

- **cPCI DC/DC Converter**
- **150 Watts**
- **Quad Outputs**

Features

- High Power Density, Low Profile Packaging
- Full Output Power at +85°C Temperature
- Wedgelock, Plug-in Design
- ESS Screening
- Designed with component derating Per (NAVSO P3641)
- EMI Filtering Designed to MIL-STD-461
- Remote Sensing
- Current Share
- Utilizes Standard PCI 47 Pin Connector and I/O per PICMG 2.11
- Transient Protection per MIL-STD-704A through F
- Mil-Std-1275AT

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Description

NAI's **55MQ2** is a high power density, low profile, 28VIN DC/DC switch mode converter. The **55MQ2** is ideally suited for cPCI airborne, shipboard and ground applications. Higher power applications are addressed utilizing multiple units with current share feature.

Electrical Specifications

DC Input Characteristics:

Input	16 to 36 VDC; 50 VDC maximum with no damage
EMI/RFI Characteristics	Designed to meet the requirements of MIL-STD-461E; CE102
Input Transient Protection	Per MIL-STD-704B through E (standard) Mil-Std 704A (***optional*** see table 4) Per Mil-Std 1275AT (***optional*** see table 4)

DC Output Characteristics:

Output Power	150 Watts Typical, See Table 2
Output Voltage	See ordering information, output channel codes; sheet 3
Efficiency	80% for typical configuration
Line Regulation	Within 0.1% for low to high line changes at constant load
Load Regulation	0.1% for 0 to 100% of rated load at nominal input line
PARD (Noise and Ripple)	50 mV p-p maximum (20 MHz bandwidth)

Load Transient Recovery	Output voltage returns to regulation limits within 0.5 msec (typical), half to full load
Load Transient Under/Overshoot	0.35 V max from nominal output voltage set point for 3.3 & 5.0 outputs, other outputs 5%.
Short Circuit Protection	Continuous Short circuit protection, with automatic recovery
Voltage Tracking	Programmable

DC Output Characteristics (Continued):

Current Limiting	120% ±10% typical
OverVoltage Protection	Automatic electronic shutdown if voltage exceeds 125% ±10%
Remote Error Sensing	Compensates for up to 0.5-volt drop on +5v output leads
Current Share (V1 through V3)	Increased system wattage or redundancy by connecting 2 or more units outputs together
Isolation Voltage	500 VDC input to output and input to case; 100 VDC output to case.
Insulation Resistance	50 Megohm at 50 VDC

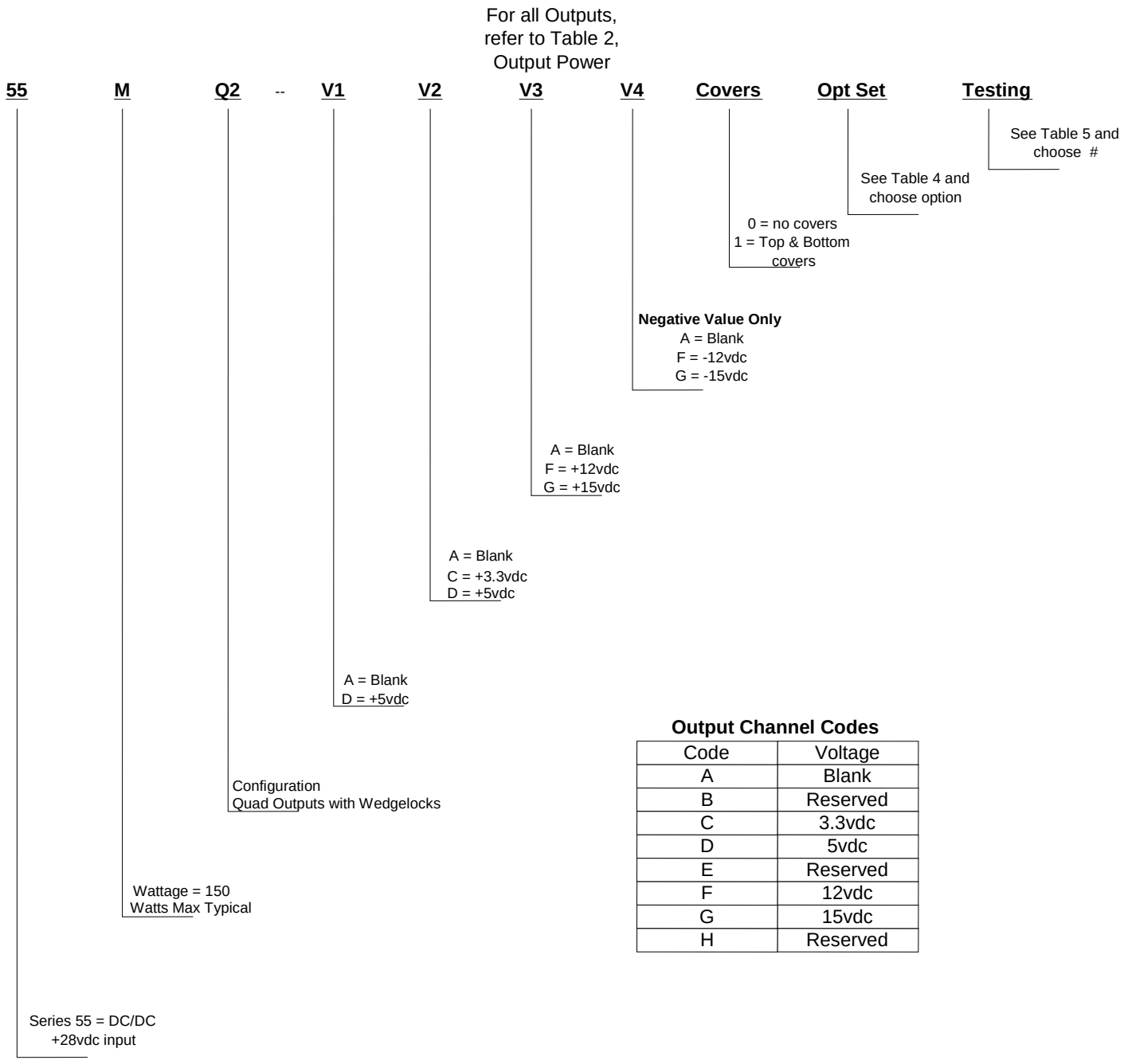
Signal Types

EN#	Enable Signal used to turn on the power supply outputs (per PICMG 2.11)
INH#	Inhibit Signal used to turn off the power supply outputs (per PICMG 2.11)
FAL#	Supply Fail Signal to indicate that power supply has failed (per PICMG 2.11)
OverTemp	OverTemp Shutdown with auto recovery
IPMB Compatible	(per PICMG 2.11)
I^2C Communication	

Physical/Environmental Specifications

Temperature Range	Operating:-55 to +85°C at 100% load (measured at card edge; Storage -55°C to +125°C
Temperature Coefficient	0.01% per °C
Shock	40 G's each axis, MIL-STD-810C, Method 516.2, Proc. 1. Hammer shock MIL-S-901C
Acceleration	6 G's per MIL-STD-810C, Method 513.2, Procedure 11, and 14 G's per Procedure 1
Vibration	Per MIL-STD-810C, Method 514.2, Procedure 1A
Reliability (MTBF)	500,000 hours, ground benign, at 50°C card edge
Humidity	95% at 71°C per MIL-STD-810C, Method 507.1 (non-condensing)
Altitude	60,000 feet per MIL-STD-810C, Method 504.1, Category 6 Equipment
Dimensions	True single slot solution (See Mechanical Outline; page 5)
Salt & Fog	Per MIL-STD-810C, Method 509.1
Sand/Dust/Fungus	Per MIL-STD-810C
Enclosure	Aluminum housing to aluminum baseplate
Finish	Yellow Chemfilm; IAW Mil-C-5541, Class 1A
Covers (optional) Top & Bottom	To support 2 level maintenance; see ordering information on sheet 3
Interface	Connections per Table 2
Weight	1.25 lbs. max

55MQ2 Ordering Information



Output Channel Codes

Code	Voltage
A	Blank
B	Reserved
C	3.3vdc
D	5vdc
E	Reserved
F	12vdc
G	15vdc
H	Reserved

Table 2 Available output power

V1	V2	V3	V4	Total Power
20A	10A	4A	1A	150 watts*note

***Note: Total output power is limited to 150 watts total**

Table 3. Pinout Designations

Pin # [1]	Staging # [2]	Signal Name	Description
1-4	M	V1	V1 Output
5-12	M	RTN	V1 and V2 Return
13-18	M	V2	V2 Output
19	M	RTN	V3 Return
20	M	V3	V3 Output
21	M	V4	V4 Output
22	M	RTN	Signal Return
23	M	RESERVED	Reserved
24	M	RTN	V4 Return
25	M	GA0	Geographic Address Bit 0
26	M	RESERVED	Reserved
27	S	EN#	Enable
28	M	GA1	Geographic Address Bit 1
29	M	V1ADJ	V1 Adjust
30	M	V1 SENSE	V1 Remote Sense
31	M	GA2	Geographic Address Bit 2
32	M	V2ADJ	V2 Adjust
33	M	V2 SENSE	V2 Remote Sense
34	M	S RTN	Sense Return
35	M	V1 SHARE	V1 Current Share
36	M	V3 SENSE	V3 Remote Sense
37	M	IPMB_SCL [3]	Reserved for System Management Bus
38	M	OverTemp	OverTemp Warning
39	M	INH#	Inhibit
40	M	IPMB_SDA [3]	Reserved for System Management Bus
41	M	V2 SHARE	V2 Current Share
42	M	FAL#	Fail Signal
43	M	IPMB_PWR [3]	Reserved for System Management Bus
44	M	V3 SHARE	V3 Current Share
45	L	CGND	Chassis Ground (safety ground)
46	M	+DC IN	+DC Input
47	M	-DC IN	-DC Input

[1] Pin numbers illustrated are of the female backplane connector

[2] L = Long length pins (first mate, last break), M = Medium length pins, S = Short length pins (last mate, first break)

[3] These signals are to be defined by PICMG 2.9 Secondary System Management Bus

Connector Positronics PCIH47M400A1

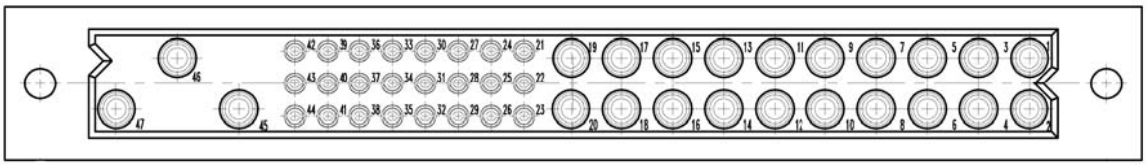


Table 4. Option Sets

Option #	Description
1	Mil-Std 704A Compliant (in place of Mil-Std 704B through E); 80Vdc maximum input with no damage
2	Mil-Std 1275AT: Includes operation during 6vdc starting disturbance (at reduced power), reverse polarity protection, 100 VDC maximum input with no damage

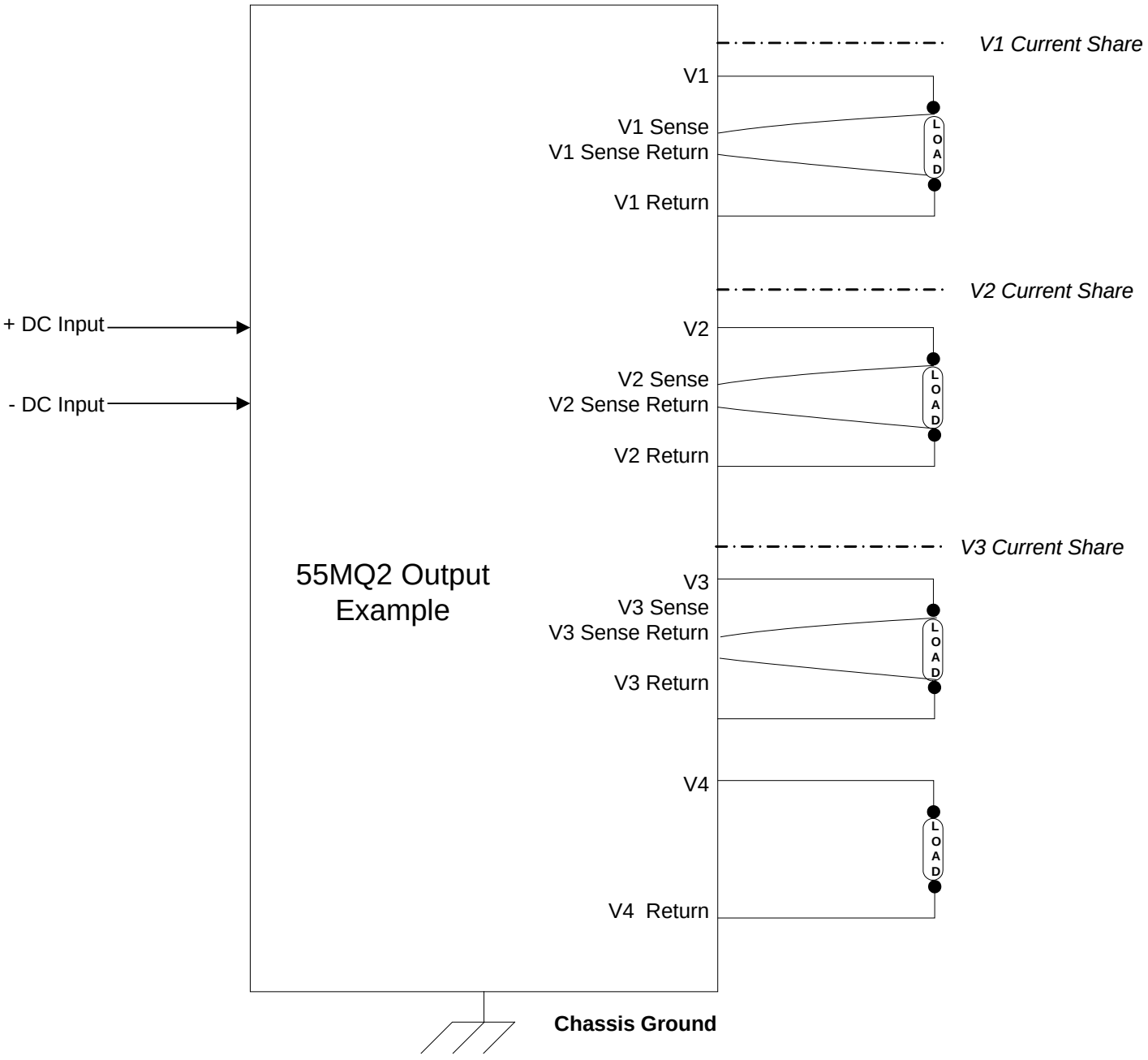
Table 5. Testing Options

Option #	Description
1	Standard Testing, includes ESS Temperature cycling per NAVMAT
2	Optional Testing includes Standard Testing plus 100% vibration testing per NAVMAT. Single axis normal to thermal seating plane.

Connector Specifications

Connector	Part Number - Series
Unit Connector	PCIH47M400A1
Mating Connector	PCI47Fxx

Output Wiring Diagram



Mechanical Layout