

# DC1-5 AND DC2-5 SERIES

NIDEC CORP/ PWR GENL DIV 48E D ■ 6610921 0000945 & ■

B-15-11

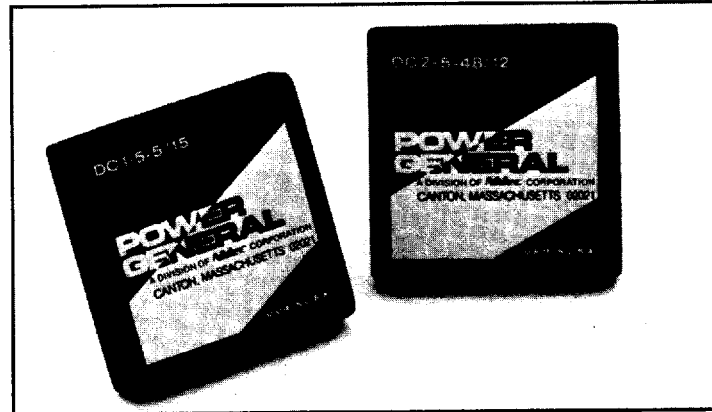
## 5W SINGLE AND DUAL OUTPUT DC-DC CONVERTERS

### FEATURES

- Indefinite Short-Circuit Protection
- 500 VDC Input/Output Isolation
- Pi Input Filter
- Tight Line/Load Regulation
- Continuous Shielding, Copper Case
- Compact 2" x 2" x 0.38" Package
- 5-Year Warranty
- **330,000 Hours Minimum MTBF**

### APPLICATIONS

- Microprocessor-Based Systems
- Portable/Battery Driven Equipment
- Telecommunications Equipment
- Data Communications Equipment



*DC1-5 and DC2-5 models have a copper case with six-sided shielding and are encapsulated with a flame-retardant epoxy.*

### GENERAL SPECIFICATIONS

DC INPUT VOLTAGE .....	See voltage/current rating chart.
INPUT CURRENT .....	See voltage/current rating chart.
REFLECTED RIPPLE CURRENT .....	40 mA <sub>pp</sub> , maximum.
EMI FILTER .....	Pi input filter, standard.
DC OUTPUT .....	See voltage/current rating chart.
OUTPUT VOLTAGE TOLERANCE .....	±0.5 percent.
EFFICIENCY .....	See voltage/current rating chart.
CURRENT LIMIT .....	Pulsed overload.
NOISE & RIPPLE .....	30 mV <sub>pp</sub> , maximum.
LINE/LOAD REGULATION .....	See voltage/current rating chart.
CROSS-REGULATION .....	±0.1 percent, maximum (DC2-5).
ISOLATION VOLTAGE .....	500 VDC, input to output.
ISOLATION CAPACITANCE .....	100 pF, typical.
TRANSIENT RESPONSE .....	50 μs, maximum, to within 1 percent of V <sub>OUT</sub> with 25 percent step load change. (See Note 4.)
FREQUENCY OF OPERATION .....	45-55 kHz.

### ENVIRONMENTAL OPERATING CHARACTERISTICS

TEMPERATURE RANGE .....	-25°C to +70°C, no derating.
TEMPERATURE COEFFICIENT .....	±0.02 percent/°C.
COOLING .....	Free-air convection.
RELATIVE HUMIDITY .....	0 to 95 percent, non-condensing.
ALTITUDE .....	0 to 10,000 feet.

### STORAGE CHARACTERISTICS

TEMPERATURE RANGE .....	-40°C to +100°C.
RELATIVE HUMIDITY .....	0 to 95 percent, non-condensing.

### RELIABILITY

MEAN TIME BETWEEN FAILURES .....	>330,000 hours, per MIL-HDBK 217E Parts Stress Method. (Ground benign, T <sub>A</sub> =+25°C.)
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# DC1-5 AND DC2-5 SERIES

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Model Number	DC Input Voltage			Input Current		DC Output Voltage (V)	Output Current (mA)	Max. Output Power (W)	Line Reg. (LL-HL)	Load Reg. (NL-FL)	Efficiency
	Min. (V)	Nom. (V)	Max. (V)	No Load (mA)	Full Load (mA)						
DC1-5-5/5	4.75	5.0	5.5	175	1500	5.0	1000	5.0	0.1%	0.1%	67%
DC1-5-5/9	4.75	5.0	5.5	175	1550	9.0	600	5.4	0.1%	0.1%	70%
DC1-5-5/12	4.75	5.0	5.5	175	1700	12	500	6.0	0.1%	0.1%	71%
DC1-5-5/15	4.75	5.0	5.5	180	1650	15	400	6.0	0.1%	0.1%	73%
DC1-5-12/5	10.8	12	13.2	60	620	5.0	1000	5.0	0.1%	0.1%	68%
DC1-5-12/9	10.8	12	13.2	60	675	9.0	600	5.4	0.1%	0.1%	68%
DC1-5-12/12	10.8	12	13.2	60	715	12	500	6.0	0.1%	0.1%	69%
DC1-5-12/15	10.8	12	13.2	75	705	15	400	6.0	0.1%	0.1%	71%
DC1-5-24/5	21.6	24	26.4	25	315	5.0	1000	5.0	0.1%	0.1%	67%
DC1-5-24/9	21.6	24	26.4	25	310	9.0	600	5.4	0.1%	0.1%	74%
DC1-5-24/12	21.6	24	26.4	30	335	12	500	6.0	0.1%	0.1%	75%
DC1-5-24/15	21.6	24	26.4	30	350	15	400	6.0	0.1%	0.1%	73%
DC1-5-28/5	25.2	28	30.8	25	260	5.0	1000	5.0	0.1%	0.1%	69%
DC1-5-28/9	25.2	28	30.8	28	275	9.0	600	5.4	0.1%	0.1%	73%
DC1-5-28/12	25.2	28	30.8	30	370	12	500	6.0	0.1%	0.1%	71%
DC1-5-28/15	25.2	28	30.8	30	300	15	400	6.0	0.1%	0.1%	73%
DC1-5-48/5	43.2	48	52.8	18	165	5.0	1000	5.0	0.1%	0.1%	63%
DC1-5-48/9	43.2	48	52.8	18	160	9.0	600	5.4	0.1%	0.1%	73%
DC1-5-48/12	43.2	48	52.8	20	175	12	500	6.0	0.1%	0.1%	73%
DC1-5-48/15	43.2	48	52.8	20	170	15	400	6.0	0.1%	0.1%	75%
DC2-5-5/12	4.75	5.0	5.5	200	1850	±12	250	6.0	0.1%	0.1%	65%
DC2-5-5/15	4.75	5.0	5.5	210	1850	±15	200	6.0	0.1%	0.1%	65%
DC2-5-12/12	10.8	12	13.2	65	740	±12	250	6.0	0.1%	0.1%	67%
DC2-5-12/15	10.8	12	13.2	65	730	±15	200	6.0	0.1%	0.1%	69%
DC2-5-24/12	21.6	24	26.4	35	355	±12	250	6.0	0.1%	0.1%	70%
DC2-5-24/15	21.6	24	26.4	35	345	±15	200	6.0	0.1%	0.1%	72%
DC2-5-28/12	25.2	28	30.8	32	305	±12	250	6.0	0.1%	0.1%	71%
DC2-5-28/15	25.2	28	30.8	32	305	±15	200	6.0	0.1%	0.1%	74%
DC2-5-48/12	43.2	48	52.8	18	175	±12	250	6.0	0.1%	0.1%	71%
DC2-5-48/15	43.2	48	52.8	18	175	±15	200	6.0	0.1%	0.1%	72%

**Notes:**

1. Converters with ±12V or ±15V output can be used as 24V or 30V supplies.
2. Total output power must not exceed 5 watts.
3. All measurements are at nominal input, full load and +25°C, unless otherwise specified.
4. Maximum deviation from transient response is 150 mV for DC1-5, 10 mV for DC2-5.
5. Peak-to-peak and RMS metering equipment shall have a 20 MHz response with probes and cables maintaining a frequency response of 20 Hz to 20 MHz. Output ripple and spikes are measured directly at the output terminals of the power supply across a 0.1 µF ceramic capacitor without use of the probe ground.

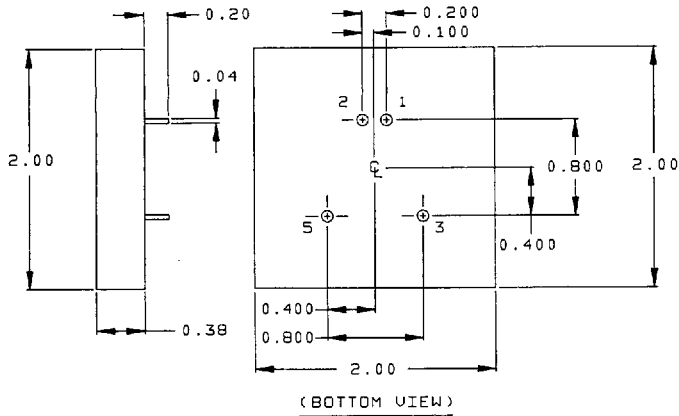
# DC1-5 AND DC2-5 SERIES

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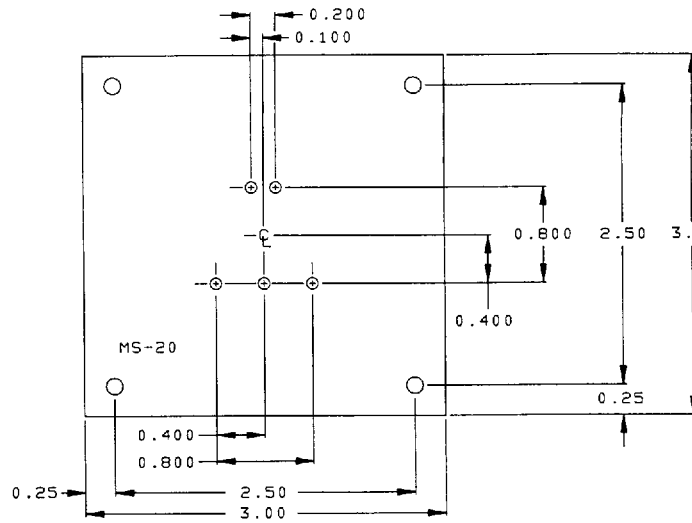
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## MECHANICAL OUTLINE AND PIN CONFIGURATION

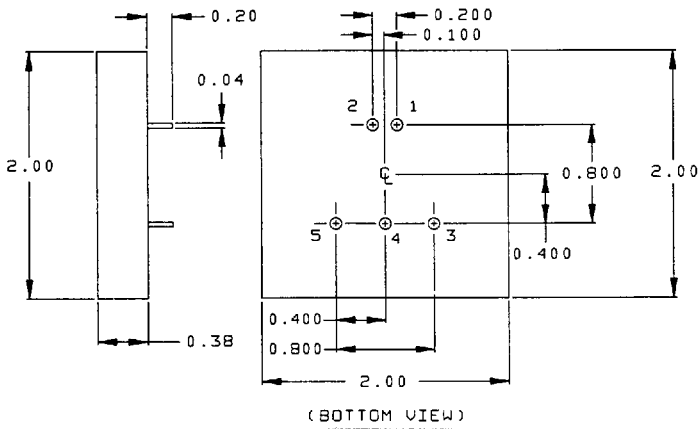
### DC1-5 CASE



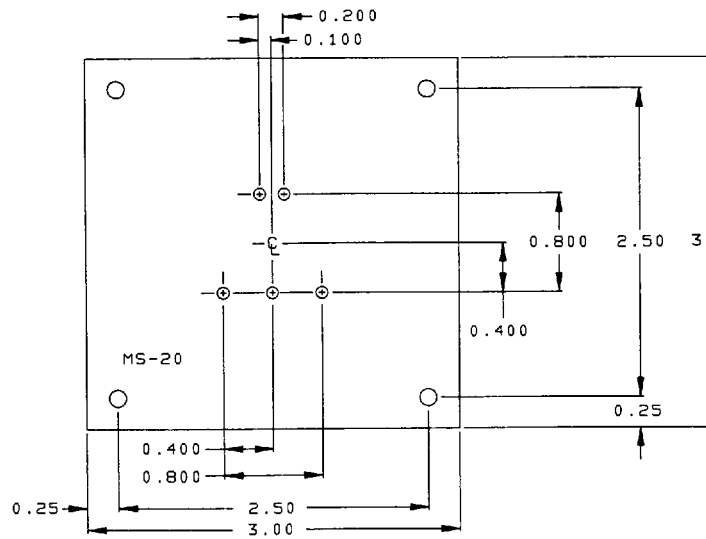
### OPTIONAL SOCKET



### DC2-5 CASE



### OPTIONAL SOCKET



#### Notes:

1. Dimensions shown are in inches.
2. Tolerance = 0.00 ±0.02.  
0.000 ±0.005.
3. Module weight = 1.6 oz (0.045 kg).

#### Socket Notes:

1. Socket mounting holes are 0.014" (3.56 mm) in diameter.
2. G10 board thickness is 0.09 inches (2.29 mm).
3. Receptacles extend 0.31 inches (7.87 mm) below surface of socket board.

### PIN-OUT

Single Output		Dual Output	
Pin	Designation	Pin	Designation
1	+V IN	1	+V IN
2	-V IN	2	-V IN
3	+V OUT	3	+V OUT
4	N/A	4	COMMON
5	-V OUT	5	-V OUT