

4-6.5 Watt HYBRID

RAD HARD DC-DC CONVERTERS

FULL FEATURE SERIES 2690R



Features

- Specifically designed for redundant or individual space applications
- Completely self contained Thick Film Hybrid DC-DC Converter
- No external filter caps required
- Fully isolated design
- For MIL-STD 704/1275 applications
- T²L inhibit function
- Power on soft start
- 200 kHz operation for low ripple and fast response time
- RAD hard, 10⁵ total dose
- Built-in EMI input filter meets MIL-STD 461C requirements CEO3, CEO7, CS01, CS02 and CS06
- Short circuit and overvoltage protection with externally selectable wiring option which yields latching/non-latching option
- Non-latching reset interval is externally programmable by choosing a capacitor to select the time constant.
- Capability of external synch for switching frequencies
- Built-in test capability with T²L interface
- "S" level configuration available

Specifications

INPUT: 28VDC nominal
Range: 16 VDC to 50 VDC continuous
Survives 80 V transients

OUTPUT: Voltage & Current (see chart)
REGULATION: (see chart)

RIPPLE: 50 mV peak-to-peak, typical
ISOLATION:

Input to case: 500 VDC
Input to output: 500 VDC*
(* inputs shorted to case, outputs shorted together)

ENVIRONMENT:
Full power from -55°C to +85°C T_{case}
Linearly derates to zero from 85°C to 115°C
Storage temperature: -55°C to +150°C
Shock: 50G
Acceleration: 500G
Vibration: 30G
WEIGHT: 35 grams
DIMENSIONS: 2.12" x 1.12" x 0.375"
(without flange)

| | | SINGLE OUTPUT DEVICES | | | | | | | | |
|-----------------|--|-----------------------|------|--------|------------------|------|-------|--------------------|-------|--------|
| | | 2690R-S03.3 (6.5W) | | | 2690R-S05 (6.5W) | | | 2690R-S05.2 (6.5W) | | |
| PARAMETER | CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX |
| Output Voltage | — | +3.2 | +3.3 | +3.4 | +4.9 | +5.0 | +5.1 | -5.1 | -5.2 | -5.3 |
| Output Current | V _{in} = 16-50 VDC | — | — | 1.97 A | — | — | 1.3 A | — | — | 1.25 A |
| Efficiency | P _{out} = Max Rated Load | 65% | 69% | — | 72% | 75% | — | 72% | 75% | — |
| Line Regulation | P _{out} = Max Rated Load V _{in} = 16-50 VDC | — | 7 mV | 20 mV | — | 7 mV | 20 mV | — | 10 mV | 20 mV |
| Load Regulation | P _{out} = 0-6.5 W | — | 5 mV | 20 mV | — | 5 mV | 20 mV | — | 10 mV | 20 mV |
| Output Ripple | Full Load BW 2 MHz mV _{rms} | — | 30 | 50 | — | 30 | 50 | — | 30 | 65 |

| | | SINGLE OUTPUT DEVICES | | | | | | | | |
|-----------------|--|-----------------------|-------|--------|------------------|-------|--------|------------------|-------|--------|
| | | 2690R-S12 (6.5W) | | | 2690R-S15 (6.5W) | | | 2690R-S28 (6.5W) | | |
| PARAMETER | CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX |
| Output Voltage | — | +11.9 | +12.0 | +12.1 | +14.9 | +15.0 | +15.1 | +27.8 | +28.0 | +28.2 |
| Output Current | V _{in} = 16-50 VDC | — | — | 541 mA | — | — | 433 mA | — | — | 232 mA |
| Efficiency | P _{out} = Max Rated Load | 80% | 82% | — | 81% | 83% | — | 82% | 84% | — |
| Line Regulation | P _{out} = Max Rated Load V _{in} = 16-50 VDC | — | 10 mV | 20 mV | — | 10 mV | 20 mV | — | 10 mV | 20 mV |
| Load Regulation | P _{out} = 0-6.5 W | — | 10 mV | 20 mV | — | 10 mV | 20 mV | — | 10 mV | 20 mV |
| Output Ripple | Full Load BW 2 MHz mV _{rms} | — | 30 | 65 | — | 30 | 65 | — | 30 | 65 |

| | | DUAL OUTPUT DEVICES | | | | | | | | |
|------------------|--|---------------------|-------|--------|------------------|-------|--------|------------------|-------|--------|
| | | 2690R-D05 (5W) | | | 2690R-D12 (6.5W) | | | 2690R-D15 (6.5W) | | |
| PARAMETER | CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX |
| Output Voltage | +I _{out} = -I _{out} | +4.9 | +5.0 | +5.1 | +11.9 | +12.0 | +12.1 | +14.9 | +15.0 | +15.1 |
| Output Current* | V _{in} = 16-50 VDC | 35 mA | — | 500 mA | 40 mA | — | 270 mA | 32 mA | — | 217 mA |
| Efficiency | P _{out} = Max Rated Load | 72% | 75% | — | 81% | 84% | — | 82% | 85% | — |
| Line Regulation | P _{out} = Max Rated Load V _{in} = 16-50 VDC | — | 10 mV | 25 mV | — | 10 mV | 25 mV | — | 10 mV | 25 mV |
| Load Regulation* | P _{out} = .5-5 or .65-6.5W | — | 20 mV | 50 mV | — | 20 mV | 50 mV | — | 20 mV | 50 mV |
| Output Ripple | Full Load BW 2 MHz mV _{rms} | — | 50 | 85 | — | 50 | 85 | — | 50 | 85 |

Notes: * Up to 90% full power available from either output if rated output power is not exceeded; † Balanced load conditions.

| | | TRIPLE OUTPUT DEVICES | | | | | | | | |
|-----------------|--|-----------------------|-------|-------|----------------|-------|-------|--------|-----|-----|
| | | 2690R-T12 (4W) | | | 2690R-T15 (4W) | | | | | |
| PARAMETER | CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX |
| Output Voltage | +I _{out} = -I _{out} | MAIN | +4.9 | +5.0 | +5.1 | +4.9 | +5.0 | +5.1 | | |
| | | DUAL | +11.9 | +12.0 | +12.1 | +14.9 | +15.0 | +15.1 | | |
| Output Current | V _{in} = 16-50 VDC | MAIN | 60 mA | — | 500 mA | 60 mA | — | 500 mA | | |
| | | DUAL | — | — | ±105 mA | — | — | ±83 mA | | |
| Efficiency | P _{out} = Max Rated Load | 68% | 70% | — | 68% | 70% | — | | | |
| Line Regulation | P _{out} = Max Rated Load V _{in} = 16-50 VDC | MAIN | — | 0.1% | 0.2% | — | 0.1% | 0.2% | | |
| | | DUAL | — | 0.25% | 0.4% | — | 0.25% | 0.4% | | |
| Load Regulation | P _{out} = .4-4 W | MAIN | — | 0.2% | 0.4% | — | 0.2% | 0.4% | | |
| | | DUAL | — | 0.25% | 0.4% | — | 0.25% | 0.4% | | |
| Output Ripple | Full Load BW 2 MHz mV _{rms} | MAIN | — | — | 80 | — | — | 80 | | |
| | | DUAL | — | — | 30 | — | — | 30 | | |

We can modify these units to meet your custom converter requirements.

MODULAR DEVICES INC

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