### Features
- **Rad Hard:** TID > 100kRad(Si)
- **2.1 margin:** Operates beyond 200kRad TID
- **No SEE:** LET > 82MeV·cm²/mg
- **Proton Resistant:** No optocouplers used
- **Specifically engineered for 70 VDC satellite bus**
- **Completely self contained Thick Film Hybrid DC-DC Converter**
- **No external filter caps required**
- **Fully isolated design**
- **"Inhibit-not" function**
- **Power on soft start**
- **200 kHz operation for low ripple and fast response time**
- **Built-in EMI input filter meets MIL-STD-461C requirements CE01, CE03, CS01, CS02 and CS06**
- **Short circuit and overvoltage protection**
- **Capability of external sync for switching frequencies**
- **Built-in test capability**

### Specifications

**INPUT:** 70 VDC nominal  
Range: 55 to 90 VDC continuous  

**ISOLATION:**
- Input to case: 500 VDC  
- Input to output: 500 VDC  
- Output to case: 100 VDC  

**ENVIRONMENT:**
- Storage temperature: -55°C to +150°C  
- Shock: 50 G's  
- Acceleration: 500 G's  
- Vibration: 30 G's  

**Grades EU, L, R & S:**  
- Full Power Output at Tcase = +85°C  
- Linearity derates to zero at Tcase = +115°C  

**Grades LE, RE & SE:**  
- Full Power Output at Tcase = +125°C  
- Linearity derates to zero at Tcase = +135°C  

**Grades L & LE:**  
- TID up to 45kRad(Si)  
- No SEE up to 60MeV·cm²/mg  

**WEIGHT:** 160 grams typical

### Table: Model No., Case Style, Pin Count, Mounting

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Case Style</th>
<th>Pin Count</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>8031</td>
<td>4</td>
<td>12</td>
<td>Solder Sealed PCB Mount with Flange</td>
</tr>
<tr>
<td>8031 LF</td>
<td>7</td>
<td>12</td>
<td>Seam Weld PCB Mount with Flange</td>
</tr>
<tr>
<td>8031 ZF</td>
<td>9</td>
<td>12</td>
<td>Seam Weld Chassis Mount with Flange</td>
</tr>
<tr>
<td>8031 PD</td>
<td>11</td>
<td>12</td>
<td>Solder Sealed Flangeless PCB Stud Mount</td>
</tr>
</tbody>
</table>

### Tolerances

All dimensions ±0.01 EXCEPT F = MAX, C = ±0.01/0.02; DRAWINGS IN INCHES.
### DC-DC CONVERTERS

#### PROTON RAD HARD 100K+™ SERIES 8031

**MAGNETICALLY ISOLATED**

#### 70 VDC

**DUAL OUTPUT DEVICES 8031-D05 (75W) 8031-D12 (74.4W) 8031-D15 (75W)**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CONDITION</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>+I_{out} = -I_{out}</td>
<td>+4.9</td>
<td>+5.0</td>
<td>+5.1</td>
<td>+11.9</td>
<td>+12.0</td>
<td>+12.1</td>
<td>+14.9</td>
<td>+15.0</td>
<td>+15.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-4.9</td>
<td>-5.0</td>
<td>-5.1</td>
<td>-11.9</td>
<td>-12.0</td>
<td>-12.1</td>
<td>-14.9</td>
<td>-15.0</td>
<td>-15.1</td>
</tr>
<tr>
<td>Output current*</td>
<td>V_{in} min — V_{in} max</td>
<td>±266mA</td>
<td>—</td>
<td>±7.5A</td>
<td>±158mA</td>
<td>—</td>
<td>±3.1A</td>
<td>±127mA</td>
<td>—</td>
<td>±2.5A</td>
</tr>
<tr>
<td>Efficiency</td>
<td>P_{out} = max rated load</td>
<td>72%</td>
<td>75%</td>
<td>—</td>
<td>77%</td>
<td>81%</td>
<td>—</td>
<td>78%</td>
<td>82%</td>
<td>—</td>
</tr>
<tr>
<td>Line regulation</td>
<td>V_{out} — V_{out}</td>
<td>±10mV</td>
<td>±50mV</td>
<td>±20mA ±100mV</td>
<td>±20mV ±125mV</td>
<td>±25mV ±125mV</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load regulation†</td>
<td>P_{out} = 10% to FL.</td>
<td>±10mV</td>
<td>±50mV</td>
<td>±20mA ±100mV</td>
<td>±25mV ±125mV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output ripple</td>
<td>F.L. BW 2 MHz mVpp</td>
<td>—</td>
<td>40</td>
<td>85</td>
<td>—</td>
<td>60</td>
<td>150</td>
<td>—</td>
<td>75</td>
<td>180</td>
</tr>
</tbody>
</table>

**TRIPLE OUTPUT DEVICES 8031-T3.3/5 (32.25W) 8031-T3.3/12 (42.75W) 8031-T3.3/15 (47.25W) 8031-T05 (32.5W) 8031-T12 (43W) 8031-T15 (47.5W)**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CONDITION</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>+I_{out} = -I_{out}</td>
<td>+3.2</td>
<td>+3.3</td>
<td>+3.4</td>
<td>+11.9</td>
<td>+12.0</td>
<td>+12.1</td>
<td>+14.9</td>
<td>+15.0</td>
<td>+15.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+4.9</td>
<td>+5.0</td>
<td>+5.1</td>
<td>+11.9</td>
<td>+12.0</td>
<td>+12.1</td>
<td>+14.9</td>
<td>+15.0</td>
<td>+15.1</td>
</tr>
<tr>
<td>Output current</td>
<td>V_{in} min — V_{in} max</td>
<td>±32mA</td>
<td>—</td>
<td>±2.5A</td>
<td>±40mA</td>
<td>—</td>
<td>±125mA</td>
<td>±40mA</td>
<td>—</td>
<td>±750mA</td>
</tr>
<tr>
<td>Efficiency</td>
<td>P_{out} = max rated load</td>
<td>65%</td>
<td>66%</td>
<td>—</td>
<td>65%</td>
<td>68%</td>
<td>—</td>
<td>65%</td>
<td>68%</td>
<td>—</td>
</tr>
<tr>
<td>Line regulation</td>
<td>V_{out} — V_{out}</td>
<td>—</td>
<td>10mV</td>
<td>50mV</td>
<td>—</td>
<td>10mV</td>
<td>50mV</td>
<td>—</td>
<td>10mV</td>
<td>50mV</td>
</tr>
<tr>
<td>Load regulation†</td>
<td>P_{out} = 10% to FL.</td>
<td>—</td>
<td>10mV</td>
<td>50mV</td>
<td>—</td>
<td>10mV</td>
<td>50mV</td>
<td>—</td>
<td>10mV</td>
<td>50mV</td>
</tr>
<tr>
<td>Output ripple</td>
<td>F.L. BW 2 MHz mVpp</td>
<td>—</td>
<td>30</td>
<td>65</td>
<td>—</td>
<td>30</td>
<td>65</td>
<td>—</td>
<td>40</td>
<td>85</td>
</tr>
</tbody>
</table>

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

---

**Pin 1 bit Pin 7 N/C**
- Pin 1
- Pin 8
- Pin 9
- Pin 10
- Pin 11
- Pin 12

**Pin 2 inhibit not Pin 8 main output**
- Pin 2
- Pin 8

**Pin 3 soft start Pin 9 main output ret**
- Pin 3
- Pin 9

**Pin 4 sync Pin 10 + remote sense**
- Pin 4
- Pin 10

**Pin 5 + input Pin 11 adjust**
- Pin 5
- Pin 11

**Pin 6 input ret Pin 12 - remote sense**
- Pin 6
- Pin 12

Please specify **GRADE LEVEL** for your application. EU grade units will be shipped if no option is specified.

- **EU Engineering Units**
  - RE 100 K+™, +125°C military/aerospace
  - SE 100 K+™, +125°C space

- **R 100 K+™, +85°C military/aerospace**
  - S 100 K+™, +85°C space

- **L 45 K, +85°C military/aerospace**
  - LE 45 K, +125°C military/aerospace

Revised 2015-09-17