

7.5-20 Watt Hybrid

Features

- Completely self contained Thick Film Hybrid DC-DC Converter
- For MIL-STD-704/1275 applications
- Built-in EMI input filter meets MIL-STD-461C requirements CE01, CE03, CS01, CS02 and CS06
- "Inhibit-not" function
- Short circuit protection
- Fully isolated, input to output
- Single, dual or triple outputs
- 200 kHz operation for low ripple and fast response time
- No external filter caps required
- Full hermetic package

Specifications

INPUT: 28 VDC nominal
 Range: 16 to 50 VDC continuous
 18 to 50 VDC full power
 Survives 80 V transients/MIL-STD-704A

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
 Grade M:

Full Power Output at $T_{case} = +85^{\circ}C$

Linearly derates to zero at $T_{case} = +115^{\circ}C$
 Grade E:

Full Power Output at $T_{case} = +125^{\circ}C$

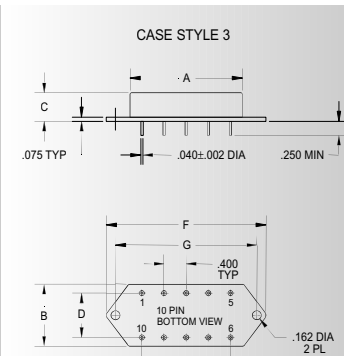
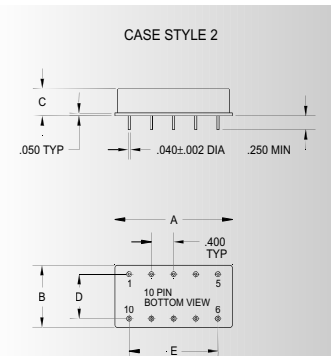
Linearly derates to zero at $T_{case} = +135^{\circ}C$

WEIGHT: 55 grams typical

| SINGLE OUTPUT DEVICES | | 3011-S02 (8W) | | | 3011-S02.5 (10W) | | | 3011-S03.3 (13.2W) | | | 3011-S05 (20W) | | |
|-----------------------|--|---------------|------|------|------------------|------|------|--------------------|------|------|----------------|------|------|
| PARAMETER | CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX |
| Output voltage | — | +1.9 | +2.0 | +2.1 | +2.4 | +2.5 | +2.6 | +3.2 | +3.3 | +3.4 | +4.9 | +5.0 | +5.1 |
| Output current | $V_{in\ min} - V_{in\ max}$ | — | — | 4A | — | — | 4A | — | — | 4A | — | — | 4A |
| Efficiency | $P_{out} = \text{max rated load}$ | 56% | 61% | — | 61% | 66% | — | 66% | 69% | — | 71% | 74% | — |
| Line regulation | $P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$ | — | 10mV | 30mV | — | 10mV | 30mV | — | 10mV | 30mV | — | 10mV | 50mV |
| Load regulation | $P_{out} = 10\%$ to F.L. | — | 10mV | 30mV | — | 10mV | 30mV | — | 10mV | 30mV | — | 10mV | 50mV |
| Output ripple | F.L. BW 2 MHz mV _{pp} | — | 25 | 50 | — | 30 | 60 | — | 30 | 60 | — | 40 | 85 |

| SINGLE OUTPUT DEVICES | | 3011-S05.2 (20W) | | | 3011-S12 (20W) | | | 3011-S15 (20W) | | | 3011-S28 (20W) | | |
|-----------------------|--|------------------|------|-------|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| PARAMETER | CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX |
| Output voltage | — | +5.1 | +5.2 | +5.3 | +11.9 | +12.0 | +12.1 | +14.9 | +15.0 | +15.1 | +27.8 | +28.0 | +28.2 |
| Output current | $V_{in\ min} - V_{in\ max}$ | — | — | 3.85A | — | — | 1.67A | — | — | 1.33A | — | — | 714mA |
| Efficiency | $P_{out} = \text{max rated load}$ | 71% | 74% | — | 78% | 82% | — | 79% | 83% | — | 78% | 82% | — |
| Line regulation | $P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$ | — | 10mV | 50mV | — | 20mV | 100mV | — | 25mV | 125mV | — | 50mV | 250mV |
| Load regulation | $P_{out} = 10\%$ to F.L. | — | 10mV | 50mV | — | 20mV | 100mV | — | 25mV | 125mV | — | 50mV | 250mV |
| Output ripple | F.L. BW 2 MHz mV _{pp} | — | 40 | 85 | — | 60 | 150 | — | 75 | 180 | — | 150 | 350 |

| Model No. | Case Style | Pin Count | Mounting |
|-----------|------------|-----------|-------------------------------------|
| 3011 | 2 | 10 | Solder Sealed Flangeless PCB Mount |
| 3011 F | 3 | 10 | Solder Sealed PCB Mount with Flange |



TOLERANCES: ALL DIMENSIONS ±0.01 EXCEPT F = MAX, C = +0.01/-0.02; DRAWINGS IN INCHES.

Case Dimensions

Units: inches | millimeters

| Case Style | A | B | C | D | E | F | G |
|------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 2 | 2.130 54.102 | 1.120 28.448 | 0.495 12.573 | 0.800 20.320 | 1.600 40.640 | — — | — — |
| 3 F | 2.130 54.102 | 1.120 28.448 | 0.495 12.573 | 0.800 20.320 | 1.600 40.640 | 2.890 73.406 | 2.550 64.770 |

DC-DC CONVERTERS

SERIES 3011



28 VDC

| DUAL OUTPUT DEVICES | | 3011-D05 (20W) | | | 3011-D12 (20W) | | | 3011-D15 (20W) | | |
|---------------------|--|----------------|-------|-------|----------------|-------|--------|----------------|-------|--------|
| 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 |
| | | -4.9 | -5.0 | -5.1 | -11.9 | -12.0 | -12.1 | -14.9 | -15.0 | -15.1 |
| Output current* | $V_{in min} - V_{in max}$ | ±150mA | — | ±2A | ±125mA | — | ±833mA | ±100mA | — | ±667mA |
| Efficiency | $P_{out} = \text{max rated load}$ | 72% | 76% | — | 78% | 82% | — | 79% | 83% | — |
| Line regulation | $P_{out} = \text{max rated load}$ $V_{in min} - V_{in max}$ | — | ±10mV | ±50mV | — | ±20mV | ±100mV | — | ±25mV | ±125mV |
| Load regulation† | $P_{out} = 10\%$ to F.L. | — | ±10mV | ±50mV | — | ±20mV | ±100mV | — | ±25mV | ±125mV |
| Output ripple | F.L. BW 2 MHz mV _{pp} | — | 40 | 85 | — | 60 | 150 | — | 75 | 180 |

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

| TRIPLE OUTPUT DEVICES | | 3011-T05 (12.5W) | | | 3011-T12 (15W) | | | 3011-T15 (15W) | | |
|-----------------------|--|------------------|------|--------|----------------|-------|--------|----------------|-------|--------|
| PARAMETER | CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX |
| Output voltage | $+I_{out} = -I_{out}$ | +4.9 | +5.0 | +5.1 | +4.9 | +5.0 | +5.1 | +4.9 | +5.0 | +5.1 |
| | | -4.9 | -5.0 | -5.1 | -11.9 | -12.0 | -12.1 | -14.9 | -15.0 | -15.1 |
| Output current | $V_{in min} - V_{in max}$ | 60mA | — | 2A | 30mA | — | 2A | 30mA | — | 2A |
| | | ±15mA | — | ±250mA | ±15mA | — | ±208mA | ±15mA | — | ±167mA |
| Efficiency | $P_{out} = \text{max rated load}$ | 66% | 69% | — | 71% | 74% | — | 71% | 74% | — |
| Line regulation | $P_{out} = \text{max rated load}$ $V_{in min} - V_{in max}$ | — | 10mV | 50mV | — | 10mV | 50mV | — | 10mV | 50mV |
| | | — | 25mV | 50mV | — | 25mV | 50mV | — | 25mV | 50mV |
| Load regulation | $P_{out} = 10\%$ to F.L. | — | 10mV | 50mV | — | 10mV | 50mV | — | 10mV | 50mV |
| | | — | 25mV | 50mV | — | 25mV | 50mV | — | 25mV | 50mV |
| Output ripple | F.L. BW 2 MHz mV _{pp} | — | 40 | 85 | — | 40 | 85 | — | 40 | 85 |
| | | — | — | 50 | — | — | 50 | — | — | 50 |

3011-SXX output <24 VDC

| | | | |
|-------|---------------|--------|--------------|
| Pin 1 | + input | Pin 7 | N/C |
| Pin 2 | inhibit not | Pin 8 | case |
| Pin 3 | output adjust | Pin 9 | N/C |
| Pin 4 | main out ret | Pin 10 | input return |
| Pin 5 | main output | | |
| Pin 6 | N/C | | |

3011-SXX output ≥24 VDC

| | | | |
|-------|--------------|--------|--------------|
| Pin 1 | + input | Pin 7 | N/C |
| Pin 2 | inhibit not | Pin 8 | case |
| Pin 3 | main output | Pin 9 | N/C |
| Pin 4 | N/C | Pin 10 | input return |
| Pin 5 | main out ret | | |
| Pin 6 | N/C | | |

3011-DXX

| | | | |
|-------|---------------|--------|--------------|
| Pin 1 | + input | Pin 7 | N/C |
| Pin 2 | inhibit not | Pin 8 | case |
| Pin 3 | + dual output | Pin 9 | N/C |
| Pin 4 | dual out ret | Pin 10 | input return |
| Pin 5 | - dual output | | |
| Pin 6 | N/C | | |

3011-TXX

| | | | |
|-------|---------------|--------|--------------|
| Pin 1 | + input | Pin 7 | main output |
| Pin 2 | inhibit not | Pin 8 | case |
| Pin 3 | + dual output | Pin 9 | N/C |
| Pin 4 | dual out ret | Pin 10 | input return |
| Pin 5 | - dual output | | |
| Pin 6 | main out ret | | |

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

- M** +85°C military
- E** +125°C military