

32.5-80 Watt Hybrid

Features

- Specifically designed for redundant or individual military or aerospace applications
- Completely self contained Thick Film Hybrid DC-DC Converter
- No external filter caps required
- Fully isolated design
- "Inhibit" 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: 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: 160 grams typical

SINGLE OUTPUT DEVICES		3031-S03.3 (49.5W)			3031-S05 (75W)			3031-S05.2 (78W)			3031-S12 (75W)		
PARAMETER	CONDITION	MIN	TYP	MAX	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	+11.9	+12.0	+12.1
Output current	$V_{in\ min} - V_{in\ max}$	—	—	15A	—	—	15A	—	—	15A	—	—	6.25A
Efficiency	$P_{out} = \text{max rated load}$	67%	70%	—	72%	75%	—	72%	75%	—	79%	83%	—
Line regulation	$P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$	—	10mV	30mV	—	10mV	50mV	—	10mV	50mV	—	20mV	100mV
Load regulation	$P_{out} = 10\% \text{ to F.L.}$	—	10mV	30mV	—	10mV	50mV	—	10mV	50mV	—	20mV	100mV
Output ripple	F.L. BW 2 MHz mV _{pp}	—	30	65	—	40	85	—	40	85	—	60	150

SINGLE OUTPUT DEVICES		3031-S15 (75W)			3031-S28 (70W)				
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX		
Output voltage	—	+14.9	+15.0	+15.1	+27.8	+28.0	+28.2		
Output current	$V_{in\ min} - V_{in\ max}$	—	—	5A	—	—	2.5A		
Efficiency	$P_{out} = \text{max rated load}$	80%	84%	—	79%	83%	—		
Line regulation	$P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$	—	25mV	125mV	—	50mV	250mV		
Load regulation	$P_{out} = 10\% \text{ to F.L.}$	—	25mV	125mV	—	50mV	250mV		
Output ripple	F.L. BW 2 MHz mV _{pp}	—	75	180	—	150	350		

Model No.	Case Style	Pin Count	Mounting
3031	4	12	Solder Sealed PCB Mount with Flange
3031 LF	7	12	Seam Weld PCB Mount with Flange
3031 ZF	9	12	Seam Weld Chassis Mount with Flange
3031 PD	11	12	Solder Sealed Flangeless PCB Stud Mount

3031-SXX output <24 VDC				3031-SXX output ≥24 VDC				3031-DXX				3031-TXX			
Pin 1	bit	Pin 7	+ input	Pin 1	bit	Pin 7	+ input	Pin 1	bit	Pin 7	+ input	Pin 1	bit	Pin 7	+ input
Pin 2	inhibit	Pin 8	main output	Pin 2	inhibit	Pin 8	N/C	Pin 2	inhibit	Pin 8	N/C	Pin 2	inhibit	Pin 8	main output
Pin 3	soft start	Pin 9	main output ret	Pin 3	soft start	Pin 9	N/C	Pin 3	soft start	Pin 9	N/C	Pin 3	soft start	Pin 9	main output ret
Pin 4	sync	Pin 10	+ remote sense	Pin 4	sync	Pin 10	main output	Pin 4	sync	Pin 10	+ dual output	Pin 4	sync	Pin 10	+ dual output
Pin 5	N/C	Pin 11	adjust	Pin 5	N/C	Pin 11	N/C	Pin 5	N/C	Pin 11	dual output ret	Pin 5	N/C	Pin 11	dual output ret
Pin 6	input ret	Pin 12	- remote sense	Pin 6	input ret	Pin 12	main output ret	Pin 6	input ret	Pin 12	- dual output	Pin 6	input ret	Pin 12	- dual output

3031-SXX ZF output <24 VDC				3031-SXX ZF output ≥24 VDC				3031-DXX ZF				3031-TXX ZF			
Pin 1	bit	Pin 7	N/C	Pin 1	bit	Pin 7	N/C	Pin 1	bit	Pin 7	N/C	Pin 1	bit	Pin 7	N/C
Pin 2	inhibit	Pin 8	main output	Pin 2	inhibit	Pin 8	N/C	Pin 2	inhibit	Pin 8	N/C	Pin 2	inhibit	Pin 8	main output
Pin 3	soft start	Pin 9	main output ret	Pin 3	soft start	Pin 9	N/C	Pin 3	soft start	Pin 9	N/C	Pin 3	soft start	Pin 9	main output ret
Pin 4	sync	Pin 10	+ remote sense	Pin 4	sync	Pin 10	main output	Pin 4	sync	Pin 10	+ dual output	Pin 4	sync	Pin 10	+ dual output
Pin 5	+ input	Pin 11	adjust	Pin 5	+ input	Pin 11	N/C	Pin 5	+ input	Pin 11	dual output ret	Pin 5	+ input	Pin 11	dual output ret
Pin 6	input ret	Pin 12	- remote sense	Pin 6	input ret	Pin 12	main output ret	Pin 6	input ret	Pin 12	- dual output	Pin 6	input ret	Pin 12	- dual output

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

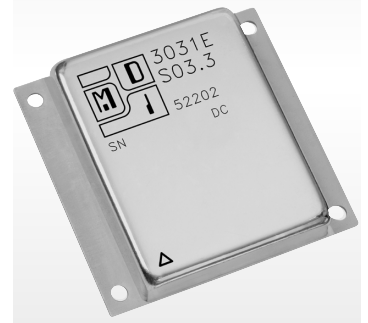
- M** +85°C military
- E** +125°C military

DC-DC CONVERTERS

FULL FEATURE SERIES

3031

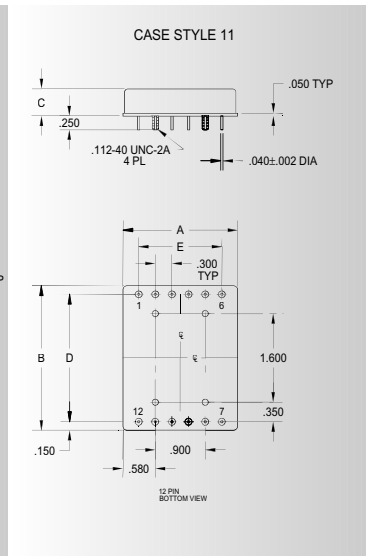
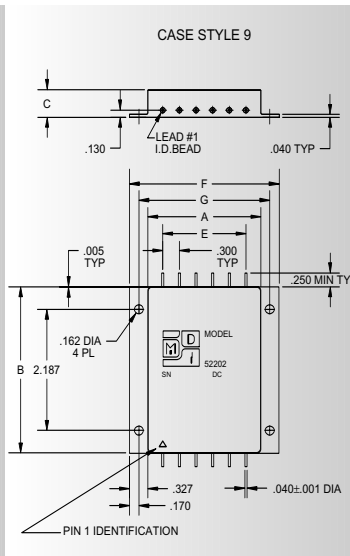
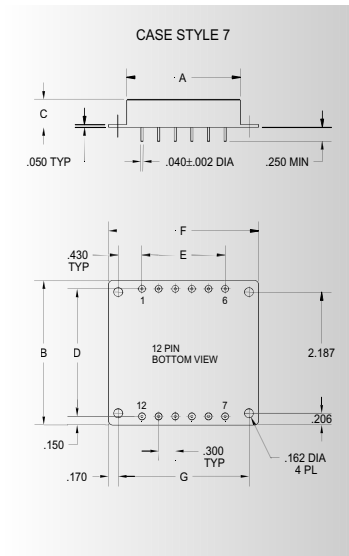
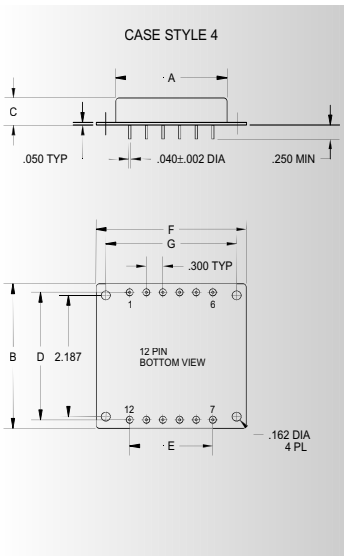
DUAL OUTPUT DEVICES		3031-D05 (75W)			3031-D12 (74.4W)			3031-D15 (75W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	$+I_{out} = -I_{out}$	+4.9	+5.0	+5.1	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1
		-4.9	-5.0	-5.1	-11.9	-12.0	-12.1	-14.9	-15.0	-15.1
Output current*	$V_{in\ min} - V_{in\ max}$	±266mA	—	±7.5A	±158mA	—	±3.1A	±127mA	—	±2.5A
Efficiency	$P_{out} = \text{max rated load}$	73%	77%	—	79%	83%	—	80%	84%	—
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



28 VDC

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

TRIPLE OUTPUT DEVICES		3031-T3.3/5 (32.25W)			3031-T3.3/12 (42.75W)			3031-T3.3/15 (47.25W)			3031-T05 (32.5W)			3031-T12 (43W)			3031-T15 (47.5W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	$+I_{out} = -I_{out}$	+3.2	+3.3	+3.4	+3.2	+3.3	+3.4	+3.2	+3.3	+3.4	+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	+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	-4.9	-5.0	-5.1	-11.9	-12.0	-12.1	-14.9	-15.0	-15.1
Output current	$V_{in\ min} - V_{in\ max}$	750mA	—	7.5A	750mA	—	7.5A	750mA	—	7.5A	90mA	—	5A	90mA	—	5A	90mA	—	5A
		±40mA	—	±750mA	±40mA	—	±750mA	±32mA	—	±750mA	±40mA	—	±750mA	±40mA	—	±750mA	±32mA	—	±750mA
Efficiency	$P_{out} = \text{max rated load}$	67%	70%	—	67%	70%	—	67%	70%	—	67%	70%	—	72%	75%	—	72%	75%	—
Line regulation	$P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV
		—	25mV	50mV	—	25mV	50mV	—	25mV	50mV	—	25mV	50mV	—	25mV	50mV	—	25mV	50mV
Load regulation	$P_{out} = 10\%$ to F.L.	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV
		—	25mV	50mV	—	25mV	50mV	—	25mV	50mV	—	25mV	50mV	—	25mV	50mV	—	25mV	50mV
Output ripple	F.L. BW 2 MHz mV _{pp}	—	30	65	—	30	65	—	30	65	—	40	85	—	40	85	—	40	85
		—	—	50	—	—	50	—	—	50	—	—	50	—	—	50	—	—	50



Case Dimensions

Units: inches | millimeters

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

Case Style	A	B	C	D	E	F	G
4	2.040 51.816	2.610 66.294	0.495 12.573	2.300 58.420	1.500 38.100	2.710 68.834	2.360 59.944
7 LF	2.040 51.816	2.610 66.294	0.495 12.573	2.300 58.420	1.500 38.100	2.710 68.834	2.360 59.944
9 ZF	2.040 51.816	3.010 76.454	0.495 12.573	— —	1.500 38.100	2.710 68.834	2.360 59.944
11 PD	2.040 51.816	2.610 66.294	0.495 12.573	2.300 58.420	1.500 38.100	— —	— —