

# 12.5-30 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:

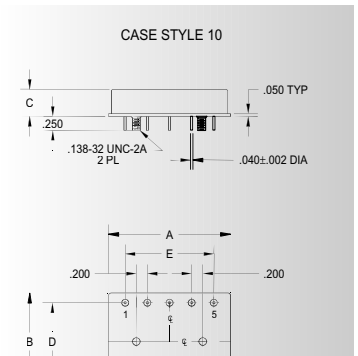
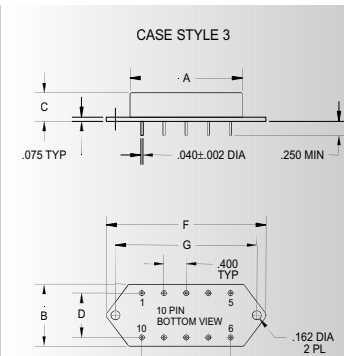
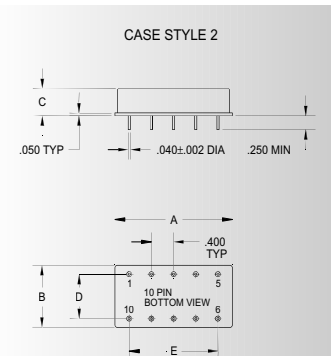
Full Power Output at  $T_{case} = +125^{\circ}C$   
 Linearly derates to zero at  $T_{case} = +135^{\circ}C$

**WEIGHT:** 65 grams typical

SINGLE OUTPUT DEVICES		3001-S02 (12W)			3001-S02.5 (15W)			3001-S03.3 (20W)			3001-S05 (30W)		
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	$V_{in\ min} - V_{in\ max}$	—	—	6.06A	—	—	6.06A	—	—	6.06A	—	—	6A
Efficiency	$P_{out} = \text{max rated load}$	57%	62%	—	62%	67%	—	67%	70%	—	72%	75%	—
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 <sub>pp</sub>	—	25	50	—	30	60	—	30	65	—	40	85

SINGLE OUTPUT DEVICES		3001-S05.2 (30W)			3001-S12 (30W)			3001-S15 (30W)			3001-S28 (30W)		
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	$V_{in\ min} - V_{in\ max}$	—	—	5.76A	—	—	2.5A	—	—	2A	—	—	1.07A
Efficiency	$P_{out} = \text{max rated load}$	72%	75%	—	79%	83%	—	80%	84%	—	79%	83%	—
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 <sub>pp</sub>	—	40	85	—	60	150	—	75	180	—	150	350

Model No.	Case Style	Pin Count	Mounting
3001	2	10	Solder Sealed Flangeless PCB Mount
3001	F	3	Solder Sealed PCB Mount with Flange
3001	PA	10	Solder Sealed Flangeless PCB Stud Mount
3001	MF	13	Seam Weld PCB Mount with Flange



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

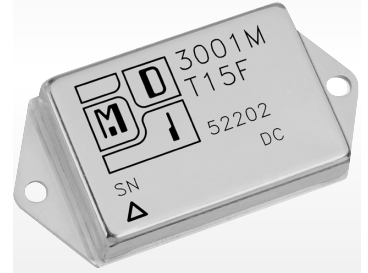
## Case Dimensions

Units: inches | millimeters

Case Style	A	B	C	D	E	F	G
2	1.950   49.530	1.350   34.290	0.495   12.573	1.000   25.400	1.600   40.640	—   —	—   —
3 F	1.950   49.530	1.350   34.290	0.495   12.573	1.000   25.400	1.600   40.640	2.710   68.834	2.360   59.944
10 PA	1.950   49.530	1.350   34.290	0.495   12.573	1.000   25.400	1.600   40.640	—   —	—   —
13 MF	1.950   49.530	1.350   34.290	0.495   12.573	1.000   25.400	1.600   40.640	2.710   68.834	2.360   59.944

# DC-DC CONVERTERS

# SERIES 3001



## 28 VDC

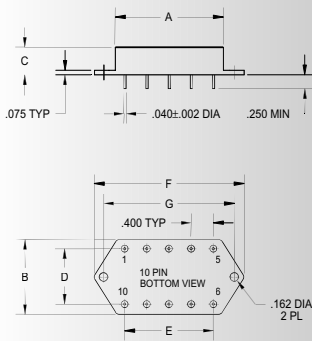
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DUAL OUTPUT DEVICES		3001-D05 (30W)			3001-D12 (30W)			3001-D15 (30W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	$+I_{out} = -I_{out}$	+4.9 -4.9	+5.0 -5.0	+5.1 -5.1	+11.9 -11.9	+12.0 -12.0	+12.1 -12.1	+14.9 -14.9	+15.0 -15.0	+15.1 -15.1
Output current*	$V_{in min} - V_{in max}$	±150mA	—	±3A	±95mA	—	±1.25A	±76mA	—	±1A
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 <sub>pp</sub>	—	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		3001-T05 (12.5W)			3001-T12 (17.5W)			3001-T15 (17.5W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	$+I_{out} = -I_{out}$	+4.9 -4.9	+5.0 -5.0	+5.1 -5.1	+11.9 -11.9	+12.0 -12.0	+12.1 -12.1	+14.9 -14.9	+15.0 -15.0	+15.1 -15.1
Output current	$V_{in min} - V_{in max}$	90mA ±40mA	—	2A ±250mA	90mA ±40mA	—	2A ±312mA	90mA ±32mA	—	2A ±250mA
Efficiency	$P_{out} = \text{max rated load}$	67%	70%	—	72%	75%	—	72%	75%	—
Line regulation	$P_{out} = \text{max rated load}$ $V_{in min} - V_{in max}$	—	10mV 25mV	50mV 50mV	—	10mV 25mV	50mV 50mV	—	10mV 25mV	50mV 50mV
Load regulation	$P_{out} = 10\%$ to F.L.	—	10mV 25mV	50mV 50mV	—	10mV 25mV	50mV 50mV	—	10mV 25mV	50mV 50mV
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	40	85	—	40	85	—	40	85

CASE STYLE 13



### 3001-SXX output <24 VDC

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

### 3001-SXX output ≥24 VDC

Pin 1	+ inhibit	Pin 7	case
Pin 2	N/C	Pin 8	inhibit not
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		

### 3001-DXX

Pin 1	+ input	Pin 7	case
Pin 2	N/C	Pin 8	inhibit not
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		

### 3001-TXX

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

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