

# 3.25-6.5 Watt Hybrid

## Features

- Rad Hard: TID > 25kRad(Si)
- No SEE: LET > 37MeV\*cm<sup>2</sup>/mg
- 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
- "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:** 120 VDC nominal  
Range: 86 to 158 VDC continuous

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

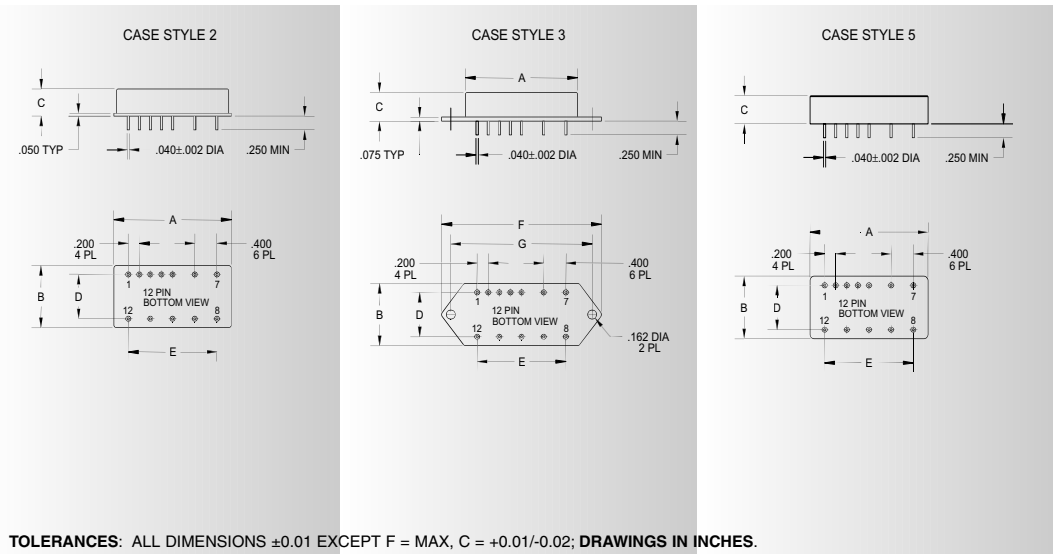
**ENVIRONMENT:**  
Storage temperature: -55°C to +150°C  
Shock: 50 G's  
Acceleration: 500 G's  
Vibration: 30 G's

Grades EU, R & S:  
Full Power Output at T<sub>case</sub> = +85°C  
Linearly derates to zero at T<sub>case</sub> = +115°C  
Grades RE & SE:  
Full Power Output at T<sub>case</sub> = +125°C  
Linearly derates to zero at T<sub>case</sub> = +135°C  
**WEIGHT:** 50 grams typical

SINGLE OUTPUT DEVICES		3070-S03.3 (6.5W)			3070-S05 (6.5W)			3070-S05.2 (6.5W)			3070-S12 (6.5W)		
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 <sub>in min</sub> — V <sub>in max</sub>	—	—	1.97A	—	—	1.3A	—	—	1.25A	—	—	541mA
Efficiency	P <sub>out</sub> = max rated load	66%	69%	—	71%	74%	—	71%	74%	—	78%	82%	—
Line regulation	P <sub>out</sub> = max rated load V <sub>in min</sub> — V <sub>in max</sub>	—	10mV	30mV	—	10mV	50mV	—	10mV	50mV	—	20mV	100mV
Load regulation	P <sub>out</sub> = 10% to F.L.	—	10mV	30mV	—	10mV	50mV	—	10mV	50mV	—	20mV	100mV
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	30	65	—	40	85	—	40	85	—	60	150

SINGLE OUTPUT DEVICES		3070-S15 (6.5W)			3070-S28 (6.5W)								
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 <sub>in min</sub> — V <sub>in max</sub>	—	—	433mA	—	—	232mA						
Efficiency	P <sub>out</sub> = max rated load	79%	83%	—	78%	82%	—						
Line regulation	P <sub>out</sub> = max rated load V <sub>in min</sub> — V <sub>in max</sub>	—	25mV	125mV	—	50mV	250mV						
Load regulation	P <sub>out</sub> = 10% to F.L.	—	25mV	125mV	—	50mV	250mV						
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	75	180	—	150	350						

Model No.	Case Style	Pin Count	Mounting
3070	2	12	Solder Sealed Flangeless PCB Mount
3070	F	12	Solder Sealed PCB Mount with Flange
3070	H	12	Seam Weld Flangeless PCB Mount
3070	HF	12	Seam Weld PCB Mount with Flange
3070	VF	12	Seam Weld Chassis Mount with Flange



## Case Dimensions

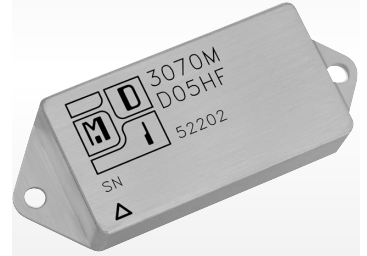
Units: inches | millimeters

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
5 H	2.130   54.102	1.120   28.448	0.495   12.573	0.800   20.320	1.600   40.640	—   —	—   —
6 HF	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
8 VF	2.160   54.864	1.510   38.354	0.495   12.573	—   —	1.600   40.640	2.890   73.406	2.550   64.770

# RAD HARD DC-DC CONVERTERS

## FULL FEATURE SERIES

# 3070



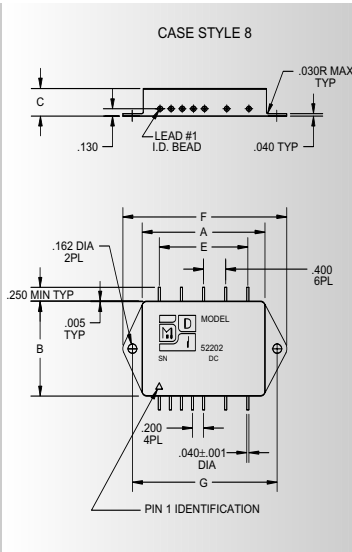
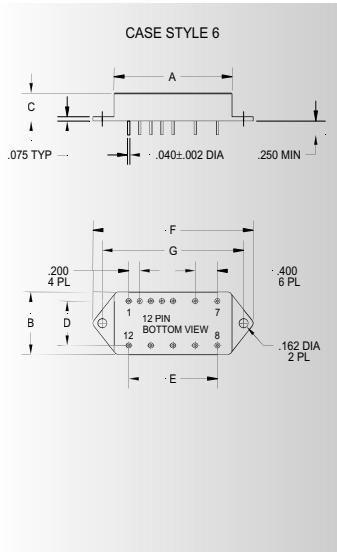
### 120 VDC

DUAL OUTPUT DEVICES		3070-D05 (6.5W)			3070-D12 (6.5W)			3070-D15 (6.5W)		
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*	$V_{in\ min} - V_{in\ max}$	±35mA	—	±625mA	±35mA	—	±270mA	±32mA	—	±217mA
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 <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		3070-T3.3/5 (3.75W)			3070-T3.3/12 (5W)			3070-T3.3/15 (5W)			3070-T05 (3.75W)			3070-T12 (5W)			3070-T15 (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 +4.9 -4.9	+3.3 +5.0 -5.0	+3.4 +5.1 -5.1	+3.2 +11.9 -11.9	+3.3 +12.0 -12.0	+3.4 +12.1 -12.1	+3.2 +14.9 -14.9	+3.3 +15.0 -15.0	+3.4 +15.1 -15.1	+4.9 +4.9 -4.9	+5.0 +5.0 -5.0	+5.1 +5.1 -5.1	+11.9 +11.9 -11.9	+12.0 +12.0 -12.0	+12.1 +12.1 -12.1	+14.9 +14.9 -14.9	+15.0 +15.0 -15.0	+15.1 +15.1 -15.1
Output current	$V_{in\ min} - V_{in\ max}$	75mA ±20mA	—	750mA ±150mA	75mA ±20mA	—	750mA ±105mA	75mA ±20mA	—	750mA ±83mA	50mA ±20mA	—	500mA ±150mA	50mA ±20mA	—	500mA ±105mA	50mA ±20mA	—	500mA ±83mA
Efficiency	$P_{out} = \text{max rated load}$	66%	69%	—	66%	69%	—	66%	69%	—	66%	69%	—	71%	74%	—	71%	74%	—
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	—	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	—	10mV 25mV	50mV 50mV	—	10mV 25mV	50mV 50mV	—	10mV 25mV	50mV 50mV
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	30	65	—	30	65	—	30	65	—	40	85	—	40	85	—	40	85

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#### 3070-SXX output <24 VDC

Pin 1	bit	Pin 7	+ input
Pin 2	inhibit not	Pin 8	main output
Pin 3	soft start	Pin 9	main output ret
Pin 4	sync	Pin 10	N/C
Pin 5	N/C	Pin 11	adjust
Pin 6	input ret	Pin 12	N/C

#### 3070-SXX output ≥24 VDC

Pin 1	bit	Pin 7	+ input
Pin 2	inhibit not	Pin 8	N/C
Pin 3	soft start	Pin 9	N/C
Pin 4	sync	Pin 10	main output
Pin 5	N/C	Pin 11	N/C
Pin 6	input ret	Pin 12	main output ret

#### 3070-DXX

Pin 1	bit	Pin 7	+ input
Pin 2	inhibit not	Pin 8	N/C
Pin 3	soft start	Pin 9	N/C
Pin 4	sync	Pin 10	+ dual output
Pin 5	N/C	Pin 11	dual output ret
Pin 6	input ret	Pin 12	- dual output

#### 3070-TXX

Pin 1	bit	Pin 7	+ input
Pin 2	inhibit not	Pin 8	main output
Pin 3	soft start	Pin 9	main output ret
Pin 4	sync	Pin 10	+ dual output
Pin 5	N/C	Pin 11	dual output ret
Pin 6	input ret	Pin 12	- dual output

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

**EU** Engineering Units

**R** 25 KRAD, +85°C military/aerospace  
**RE** 25 KRAD, +125°C military/aerospace

**S** 25 KRAD, +85°C space  
**SE** 25 KRAD, +125°C space

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