7.5–20 Watt Hybrid

Features

- Rad Hard: TID > 25kRad(Si)
- No SEE: LET > 37MeV*cm^2/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

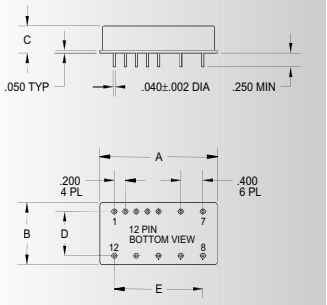
INPUT: 120 VDC nominal
Range: 86 to 158 VDC continuous
ISOLATION:
Input to case: 500 VDC
Input to output: 500 VDC
Output to case: 100 VDC
ENVIRONMENT:
Storage temperature: -55°C to +150°C
Shock: 50 G's
Acceleration: 500 G's
Vibration: 30 G's
Grades EU, L & S:
Full Power Output at T_{case} = +85°C
Linearly derates to zero at T_{case} = +115°C
Grades LE & SE:
Full Power Output at T_{case} = +125°C
Linearly derates to zero at T_{case} = +135°C
WEIGHT: 60 grams typical

SINGLE OUTPUT DEVICES		3108-S02 (8W)			3108-S02.5 (10W)			3108-S03.3 (13.2W)			3108-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} = max rated load	56%	59%	—	61%	64%	—	66%	69%	—	71%	74%	—
Line regulation	P_{out} = 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	65	—	40	85

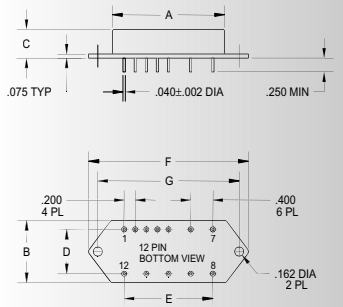
SINGLE OUTPUT DEVICES		3108-S05.2 (20W)			3108-S12 (20W)			3108-S15 (20W)			3108-S28 (20W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	—	+5.1	+5.2	+5.3	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1	+27.8	+28.0	+28.2
Output current	$V_{in\ min}$ — $V_{in\ max}$	—	—	3.85A	—	—	1.67A	—	—	1.33A	—	—	714mA
Efficiency	P_{out} = max rated load	71%	74%	—	78%	82%	—	79%	83%	—	78%	82%	—
Line regulation	P_{out} = 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
3108	2	12	Solder Sealed Flangeless PCB Mount
3108 F	3	12	Solder Sealed PCB Mount with Flange
3108 H	5	12	Seam Weld Flangeless PCB Mount
3108 HF	6	12	Seam Weld PCB Mount with Flange
3108 VF	8	12	Seam Weld Chassis Mount with Flange

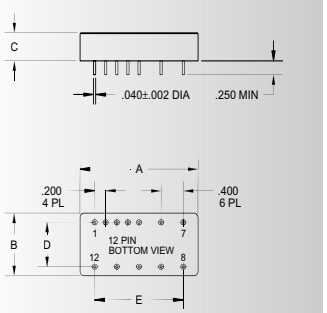
CASE STYLE 2



CASE STYLE 3



CASE STYLE 5



Case Dimensions

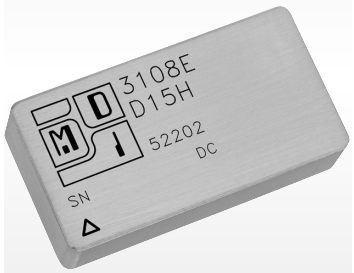
Units: inches | millimeters

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
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

9000

RAD HARD DC-DC CONVERTERS
FULL FEATURE SERIES 3108



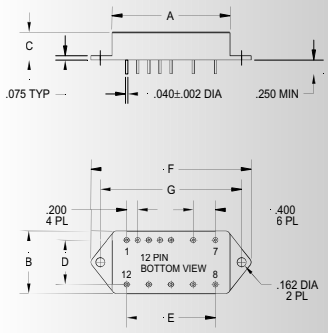
120 VDC

DUAL OUTPUT DEVICES		3108-D3.3/5 (11.6W)			3108-D05 (20W)			3108-D12 (20W)			3108-D15 (20W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	$+I_{out} = -I_{out}$	+3.2	+3.3	+3.4	+4.9	+5.0	+5.1	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1
		+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*	$V_{in\ min}$ — $V_{in\ max}$	200mA	—	2A	±150mA	—	±2A	±125mA	—	±833mA	±100mA	—	±667mA
		100mA	—	1A									
Efficiency	P_{out} = max rated load	62%	65%	—	72%	76%	—	78%	82%	—	79%	83%	—
Line regulation	P_{out} = max rated load	—	10mV	30mV	—	±10mV	±50mV	—	±20mV	±100mV	—	±25mV	±125mV
	$V_{in\ min}$ — $V_{in\ max}$	—	10mV	50mV									
Load regulation†	P_{out} = 10% to F.L.	—	10mV	30mV	—	±10mV	±50mV	—	±20mV	±100mV	—	±25mV	±125mV
		—	10mV	50mV									
Output ripple	F.L. BW 2 MHz	—	30	65	—	40	85	—	60	150	—	75	180
	mV_{pp}	—	25	50									

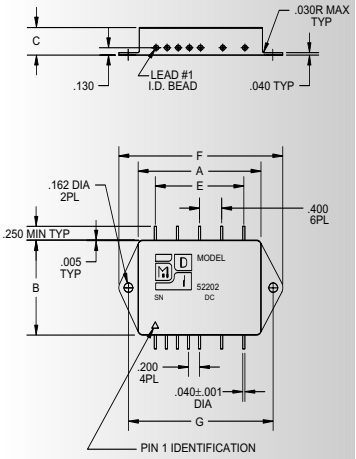
*Notes: *Up to 90% full power available from either output if rated output power is not exceeded; †balanced load conditions.*

TRIPLE OUTPUT DEVICES		3108-T3.3/5 (7.5W)			3108-T3.3/12 (10W)			3108-T3.3/15 (10W)			3108-T05 (7.5W)			3108-T12 (10W)			3108-T15 (10W)		
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	$V_{in\ min}$ — $V_{in\ max}$	150mA	—	1.5A	150mA	—	1.5A	150mA	—	1.5A	60mA	—	1A	30mA	—	1A	30mA	—	1A
		±15mA	—	±250mA	±15mA	—	±208mA	±15mA	—	±167mA	±15mA	—	±250mA	±15mA	—	±208mA	±15mA	—	±167mA
Efficiency	P_{out} = max rated load	66%	69%	—	66%	69%	—	66%	69%	—	66%	69%	—	71%	74%	—	71%	74%	—
Line regulation	P_{out} = max rated load	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV	—	10mV	50mV
	$V_{in\ min}$ — $V_{in\ max}$	—	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	—	30	65	—	30	65	—	30	65	—	40	85	—	40	85	—	40	85
	mV_{pp}	—	—	50	—	—	50	—	—	50	—	—	50	—	—	50	—	—	50

CASE STYLE 6



CASE STYLE 8



3108-SXX output <24 VDC				3108-SXX output ≥24 VDC				3108-DXX				3108-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 not	Pin 8	main output	Pin 2	inhibit not	Pin 8	N/C	Pin 2	inhibit not	Pin 8	N/C	Pin 2	inhibit not	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	N/C	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	N/C	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. **EU** grade units will be shipped if no option is specified.

EU Engineering Units

L 45 KRAD, +85°C military/aerospace
LE 45 KRAD, +125°C military/aerospace

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

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