Series 1731

30 – 80 Watt Hybrid

For demanding Industrial and Railroad (EN50155) applications

Features

- Hermetic packaging protects against harsh environments
- Built-in EMI filter limits conducted emissions and reduces transient susceptibility
- Short circuit proof – inherent dual mode overcurrent protection
- Fixed frequency operation offers low ripple and fast load transient response
- User programmable soft start for Vout ramp
- Sync input
- Power on/off – ground INH to shut output: low quiescent current
- Precision RF feedback – no optical devices used
- Parallelable – for higher output prime or redundant power applications

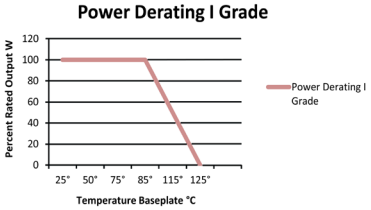
Specifications

INPUT: 110 VDC nominal
Range: 77 to 135 VDC
Operates through input transients of up to 160 V

ISOLATION:
Input to case: 100 MOhms at 500 VDC
Input to output: 100 MOhms at 500 VDC
Output to case: 10 MOhms at 100 VDC

ENVIRONMENT:
Storage temperature: -55°C to +150°C
Mechanical Shock: 50 G's, 11 mSec 1/2 sine pulse, 3X each axis
Random Vibration: 30 G's 50 – 2000Hz, 6dB/octave ramp, .6 PSD, 32g RMS overall

DERATING:
Full Power Output at T_{case} = +85°C
Linearly derates to 50% at T_{case} = +115°C



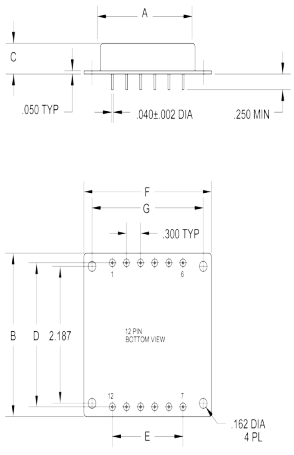
WEIGHT: 160 grams typical

SINGLE OUTPUT DEVICES		1731-S02 (30W)			1731-S02.5 (37.5W)			1731-S03.3 (50W)			1731-S05 (75W)		
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	$V_{in\,min} - V_{in\,max}$	—	—	15A	—	—	15A	—	—	15A	—	—	15A
Efficiency	P_{out} = max rated load	55%	58%	—	60%	63%	—	65%	68%	—	70%	73%	—
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

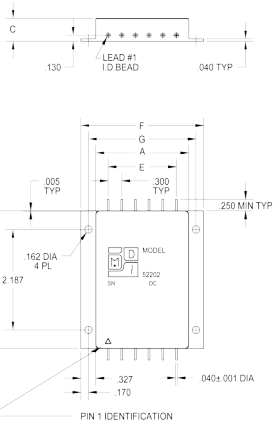
SINGLE OUTPUT DEVICES		1731-S05.2 (78W)			1731-S12 (75W)			1731-S15 (75W)			1731-S28 (70W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	—	+5.1	+5.2	+5.3	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1	+27.8	+28.0	+28.2
Output current	$V_{in\,min} - V_{in\,max}$	—	—	15A	—	—	6.25A	—	—	5A	—	—	2.5A
Efficiency	P_{out} = max rated load	70%	73%	—	78%	81%	—	78%	82%	—	77%	81%	—
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
1731		4	12	Solder Sealed PCB Mount with Flange
1731	ZF	9	12	Seam Weld PCB Chassis Mount with Flange
1731	PD	11	12	Solder Sealed Flangeless PCB Stud Mount

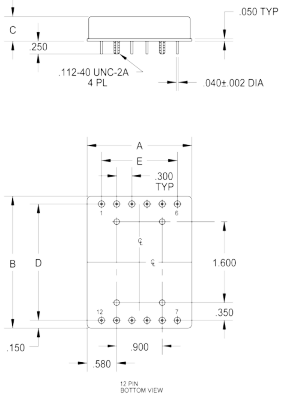
CASE STYLE 4
Solder Sealed



CASE STYLE 9
Seam Welded



CASE STYLE 11
Solder Sealed



Case Dimensions

Units: inches | millimeters

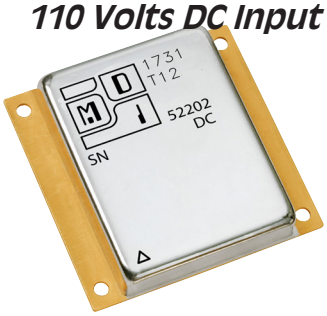
TOLERANCES: ALL DIMENSIONS ±0.01 EXCEPT F= MAX. C = +0.01/-0.02; **DRAWINGS IN INCHES.**

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
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	— | —	— | —

Series 1731

DC – DC Converters INDUSTRIAL/RAILROAD GRADE

110 Volts DC Input



DUAL OUTPUT DEVICES		1731-D3.3/5 (37.78W)			1731-D05 (75W)			1731-D12 (74.4W)			1731-D15 (75W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	—	+3.2 +4.9	+3.3 +5.0	+3.4 +5.1	+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*	$V_{in\,min} - V_{in\,max}$	600mA 200mA	— —	6.6A 2A	±266mA	—	±7.5A	±158mA	—	±3.1A	±127mA	—	±2.5A
Efficiency	P_{out} = max rated load	64%	67%	—	72%	75%	—	77%	81%	—	78%	82%	—
Line regulation	P_{out} = max rated load $V_{in\,min} - V_{in\,max}$	— —	10mV 10mV	30mV 50mV	—	±10mV	±50mV	—	±20mV	±100mV	—	±25mV	±125mV
Load regulation†	P_{out} = 10% to F.L.	— —	10mV 10mV	30mV 50mV	—	±10mV	±50mV	—	±20mV	±100mV	—	±25mV	±125mV
Output ripple	F.L. BW 2 MHz mV_{pp}	— —	30 25	65 50	—	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		1731-T3.3/5 (32.25W)			1731-T3.3/12 (42.75W)			1731-T3.3/15 (47.25W)			1731-T05 (32.5W)			1731-T12 (43W)			1731-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 +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	+4.9 +11.9 -11.9	+5.0 +12.0 -12.0	+5.1 +12.1 -12.1	+4.9 +14.9 -14.9	+5.0 +15.0 -15.0	+5.1 +15.1 -15.1
Output current	$V_{in\,min} - V_{in\,max}$	750mA ±40mA	— —	7.5A ±750mA	750mA ±40mA	— —	7.5A ±750mA	750mA ±32mA	— —	7.5A ±750mA	90mA ±40mA	— —	5A ±750mA	90mA ±40mA	— —	5A ±750mA	90mA ±32mA	— —	5A ±750mA
Efficiency	P_{out} = max rated load	65%	68%	—	65%	68%	—	65%	68%	—	65%	68%	—	70%	73%	—	71%	74%	—
Line regulation	P_{out} = max rated load $V_{in\,min} - V_{in\,max}$	— —	10mV 25mV	50mV 50mV	— —	10mV 25mV	50mV 50mV	— —	10mV 25mV	125mV 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_{pp}	— —	30 —	65 50	— —	30 —	65 50	— —	40 —	85 50	— —	40 —	85 50	— —	40 —	85 50	— —	40 —	85 50

1731-SXX output < 24 VDC				1731-SXX output ≥ 24 VDC				1731-DXX				1731-TXX			
Pin 1	N/C	Pin 7	N/C	Pin 1	N/C	Pin 7	N/C	Pin 1	N/C	Pin 7	N/C	Pin 1	N/C	Pin 7	N/C
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	N/C
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	N/C
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