

Series 3650

8 - 20 Watt Low Input Voltage Converters

5 VOLTS DC INPUT

Features

- Specifically designed for military or aerospace applications, with hermetic package
- Completely self contained DC-DC converter, needs no external components
- Fully isolated input - output
- "Inhibit-not" function
- Power on soft start
- 300 kHz operation for low ripple and fast response time
- Built-in common mode and differential mode EMI filter
- Short circuit protection
- Capability of external sync for switching frequencies
- Built-in test pin

Specifications

INPUT: 5 VDC nominal
 Range: 4.6 to 5.6 VDC continuous
 4.75 to 5.6 VDC full power
 Survives 10 V transients

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 M:
 Full Output Power at
 Tcase = +85°C
 Linearly derates to zero at
 Tcase = +115°C
 Grades E:
 Full Power Output at
 Tcase = +125°C
 Linearly derates to zero at
 Tcase = +135°C

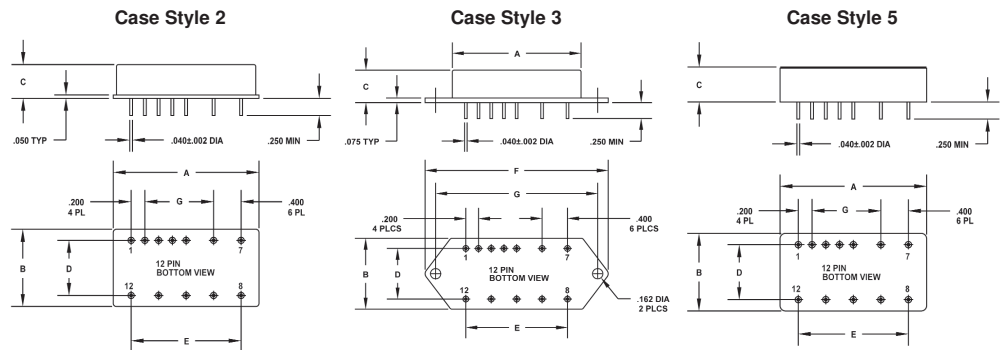
WEIGHT: 75 grams typical

PACKAGE and DIMENSIONS: Many case styles are available.

SINGLE OUTPUT CONVERTERS		3650-S02 (8W)			3650-S02.5 (10W)			3650-S03.3 (13W)			3650-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	+3.04	+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%	70%	—	73%	77%	—
Line regulation	V _{in} min — V _{in} max P _{out} = max rated load	—	10mV	30mV	—	10mV	30mV	—	10mV	30mV	—	10mV	50mV
Load regulation	V _{in} min — V _{in} max 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 CONVERTERS		3650-S05.2 (20W)			3650-S12 (20W)			3650-S15 (20W)			3650-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	—	—	0.72A
Efficiency	P _{out} = max rated load	73%	77%	—	78%	82%	—	79%	83%	—	78%	82%	—
Line regulation	V _{in} min — V _{in} max P _{out} = max rated load	—	10mV	50mV	—	20mV	100mV	—	25mV	125mV	—	50mV	250mV
Load regulation	V _{in} min — V _{in} max 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
3650	—	2	Solder Sealed Flangeless PCB Mount
3650	F	3	Solder Sealed PCB Mount with Flange
3650	I	5	Seam Weld Flangeless PCB Mount
3650	IF	6	Seam Weld PCB Mount with Flange
3650	WF	8	Seam Weld Chassis Mount with Flange
3650	PB	10	Solder Sealed Flangeless PCB Stud Mount
3650	PE	12	Seam Weld PCB Stud Mount



Case Dimensions

Units: inches | millimeters

TOLERANCES: Drawings in Inches All dimensions ±0.01 except F = max, C = +0.01/-0.020 For Custom Packages, Contact Factory

Case Style	A	B	C	D	E	F	G
2	2.200 55.880	1.350 34.290	0.495 12.573	1.000 25.400	1.600 40.640	— —	— —
3 F	2.200 55.880	1.350 34.290	0.495 12.573	1.000 25.400	1.600 40.640	2.960 75.184	2.610 66.294
5 I	2.225 56.515	1.350 34.290	0.495 12.573	1.000 25.400	1.600 40.640	— —	— —
6 IF	2.225 56.515	1.350 34.290	0.495 12.573	1.000 25.400	1.600 40.640	2.960 75.184	2.610 66.294
8 WF	2.225 56.515	1.710 43.434	0.495 12.573	— —	1.600 40.640	2.960 75.184	2.610 66.294
10 PB	2.225 56.515	1.350 34.290	0.495 12.573	1.000 25.400	1.600 40.640	— —	— —
12 PE	2.225 56.515	1.350 34.290	0.495 12.573	1.000 25.400	1.600 40.640	— —	— —



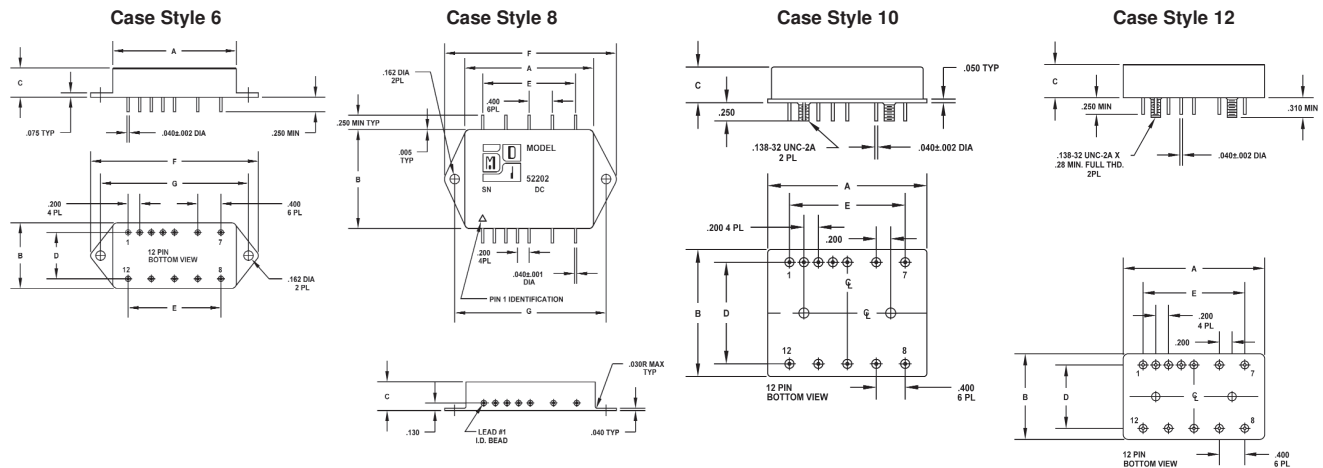
Series 3650

FULL FEATURE DC-DC CONVERTERS

DUAL OUTPUT DEVICES		3650-D05 (20W)			3650-D12 (20W)			3650-D15 (20W)		
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
Output current*	V _{in min} - V _{in max}	±150mA	—	±2A	±95mA	—	±0.84A	±76mA	—	±0.67A
Efficiency	P _{out} = max rated load	72%	76%	—	78%	82%	—	79%	83%	—
Line regulation	P _{out} = 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

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

5 VOLTS DC INPUT



3650-SXX output <24 VDC			3650-SXX output = 24 VDC			3650-DXX		
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 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 4	sync	Pin 10 + remote sense	Pin 4	sync	Pin 10 main 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 rtn
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

GRADE LEVELS:

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

- I -40°C to +85°C industrial
- M -55°C to +85°C military
- E -55°C to +125°C military