

# **DSP1D Series**Dual Output DC-DC Converters

The DSP1D Series is specifically designed to convert a nominal 5 volt input into two isolated output voltages.

The dual semi-regulated output voltages were designed to allow analog circuits and three-terminal regulators to operate within their most efficient input voltage range.

This series achieves high power densities through the use of 350 kHz fixed-frequency switching converters.



# **Key Features & Benefits**

- RoHS lead solder exemption compliant
- Up to 1 Watt unregulated output power
- Single-In-Line package
- Four-terminal operation
- Efficiencies to 70%
- Output Voltages: 5V, 7V, 12V, 14V, 15V, 17V
- 700 V isolation
- -40 °C to +85 °C operation





# 1. MODEL SELECTION

MODEL	INPUT RANGE [VDC]		ОИТРИТ		
MODEL	MIN	MAX	[VDC]	[mA]	POWER [W]
DSP1N5D5	4.5	5.5	±5	±75	0.75
DSP1N5D7	4.5	5.5	±7	±70	1
DSP1N5D12	4.5	5.5	±12	±40	1
DSP1N5D14	4.5	5.5	±14	±35	1
DSP1N5D15	4.5	5.5	±15	±33	1
DSP1N5D17	4.5	5.5	±17	±30	1

Model numbers highlighted in yellow are not recommended for new designs.

# 2. GENERAL SPECIFICATIONS 1

PARAMETER	CONDITIONS / DESCRIPTION	MIN	TYP	MAX	UNITS
Isolation					
Isolation Voltage		500			VDC
Capacitance	Input to Output		10		pF
Output Trim Function					
Input Resistance			40		kΩ
Programming Range		+5, -34			%
Environmental					
Case Operating Range (T <sub>C</sub> ) <sup>2</sup>		-40		85	°C
Storage Range		-55		105	°C
Line Regulation			1		%
Load Regulation	20% to 100% Load		5		%
General					
MTBF	Calculated		700,000		hrs
Weight			0.1/28		oz/g
Case Material		Non C	onductive F	Plastic	

### **NOTES**

- All parameters measured at Tc = 25 °C, nominal input voltage and full rated load unless otherwise noted. Derate output power linearly to 0.6 watts from 70 °C to 85 °C.



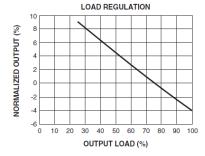
#### 3. DSP1 SERIES APPLICATION NOTES

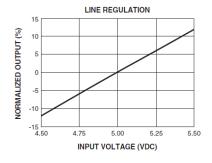
### **EXTERNAL CAPACITANCE REQUIREMENTS**

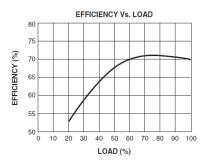
Output filtering is required for operation. A minimum of 10 F is specified for optimal performance. Output capacitance may be increased for additional filtering, and should not exceed 400  $\mu$ F. To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 Ohms from DC to 350 kHz is required. If a capacitive input source is farther than 2" from the converter, it is recommended to use a 10  $\mu$ F, 25 V solid tantalum capacitor.

#### REGULATION

This converter uses a semi-regulated design. The output will vary as the load is changed, with output decreasing with increasing load. Additionally, output voltage will change in proportion to a change in input voltage. The typical output voltage will change 1% for each 1% change in input voltage.







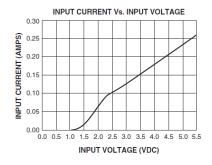
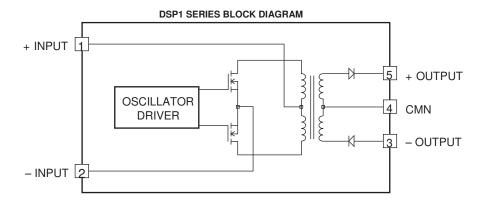


Figure 1. Typical Performance (Tc = 25°C)



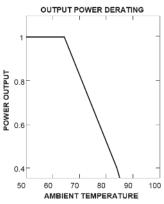


Figure 2. Block Diagram



**Asia-Pacific** +86 755 298 85888 Europe, Middle East +353 61 225 977 North America +1 408 785 5200

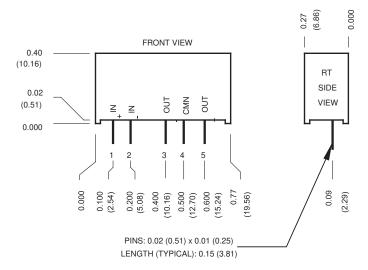


Figure 3. Mechanical Dimensions

PIN	FUNCTION	
1	+INPUT	
2	-INPUT	
3	- OUT	
4	4 COMMON	
5	+OUT	

Mechanical tolerances unless otherwise noted:

X.XX dimensions: ±0.020 inches X.XXX dimensions: ±0.010 inches

# For more information on these products consult: tech.support@psbel.com

**NUCLEAR AND MEDICAL APPLICATIONS** - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

**TECHNICAL REVISIONS** - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

