

## DFC6 SERIES SINGLE OUTPUT

### DESCRIPTION

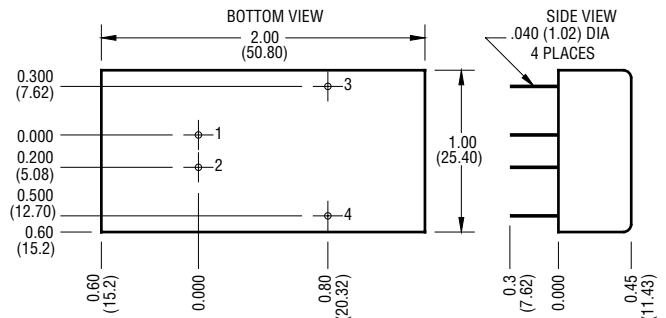
Designed for digital, ECL, and analog application, the DFC6 Series will provide up to 6 watts in an industry standard package. Ultra-wide range input voltage allows operation from battery power as well as system power. The output is electrically isolated, thereby allowing the output to be configured as a positive or negative output voltage. Fully isolated and filtered outputs permit usage in sensitive and low noise circuits. The 100KHz operating frequency of the DFC6 Series allows an increased power density while including adequate heat sinking and input/output filtering. This eliminates the need for external components in most applications.

### FEATURES

- Ultra-Wide 3.5 to 16 Volt Input Range
- Input Filtered
- 6 Watts of Output Power
- Efficiencies to 77%
- 700V Isolation
- Low Input to Output Capacitance
- Ultra-Wide Input Range (4:1)

Selection Chart				
Model	Input Range VDC (4)		Output VDC	Output mA
	Min	Max		
DFC6U5S5	3.5	16	5	1200
DFC6U5S5.2	3.5	16	5.2	1200
DFC6U5S12	3.5	16	12	500
DFC6U5S15	3.5	16	15	400

General Specifications (1)				
All Models				Units
<b>Isolation</b>				
Isolation Voltage Input to Output 10µA Leakage	MIN	700	VDC	
Input to Output Capacitance	TYP	300	pF	
<b>Environmental</b>				
Case Operating Range, Tc No Derating	MIN	-40	°C	
	MAX	85		
Case Functional Range (2)	MIN	-50	°C	
	MAX	100		
Storage Range	MIN	-55	°C	
	MAX	105		
Thermal Impedance (3)	TYP	19	°C/Watt	
<b>General</b>				
MTBF (Calculated)	TYP	800,000	HRS	
Unit Weight	TYP	0.9 / 25.6	oz / gm	
Chassis Mounting Kit	CM2B1			



Mechanical tolerances unless otherwise noted:  
X.XX dimensions: ±0.020 inches  
X.XXX dimensions: ±0.005 inches

Pin	Function
1	+INPUT
2	-INPUT
3	+OUT
4	-OUT

### NOTES

- (1) All parameters measured at Tc=25°C, nominal input voltage and full rated load unless otherwise noted. Refer to the Technical Reference Section for the definition of terms, measurement circuits and other information.
- (2) The functional temperature range is intended to give an additional data point for use in evaluating this power supply. At the low functional temperature the power supply will function with no side effects, however, sustained operation at the high functional temperature will reduce expected operational life. The data sheet specifications are not guaranteed beyond the case operating range.
- (3) The case Thermal Impedance is specified as the case temperature rise over ambient per package dissipated.
- (4) Reduced output power available with 3.5V input. Full power is available above 4.6V input. See input voltage derating curve for more information



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Input Parameters (1)						
Model		DFC6U5S5	DFC6U5S5.2	DFC6U5S12	DFC6U5S15	Units
Voltage Range (2)	MIN	3.5				VDC
	MAX	16				
Input Current	Full Load	1680	1750	1680	1670	mA
	No Load	10	10	10	20	
Switching Frequency	TYP	100				kHz
Maximum Input Overvoltage, 100ms Maximum	MAX	20				VDC
Turn-on Time, 1% Output Error	TYP	10				ms

Output Parameters (1)						
Model		DFC6U5S5	DFC6U5S5.2	DFC6U5S12	DFC6U5S15	Units
Output Voltage		5	5.2	12	15	VDC
Output Voltage Accuracy	MIN	4.95	5.15	11.900	14.900	VDC
	TYP	5.00	5.20	12.000	15.000	
	MAX	5.05	5.25	12.100	15.100	
Rated Load Range (5)	MIN	0	0	0	0	mA
	MAX	1200	1200	500	400	
Load Regulation 25% Max Load - Max Load	TYP	0.3	0.3	0.1	0.1	%
	MAX	0.7	0.7	0.5	0.5	
Line Regulation Vin = Min-Max VDC	TYP	0.1				%
	MAX	0.2				
Short Term Stability (4)	TYP	< 0.05				%/24Hrs
Long Term Stability	TYP	< 0.1				%/kHrs
Noise, Peak - Peak (3) RMS Noise	TYP	75	75	50	40	mV <sub>pp</sub>
	TYP	20	20	10	8	mV <sub>rms</sub>
Temperature Coefficient	TYP	50				ppm/°C
	MAX	150				
Short Circuit Protection to Common for all Outputs		Short Term Current Limit				

### NOTES

- (1) All parameters measured at Tc=25°C, nominal input voltage and full rated load unless otherwise noted. Refer to the Technical Reference Section for the definition of terms, measurement circuits and other information.
- (2) Reduced output power available at 3.5V input. Full output power is available above 4.6V input. See input voltage derating curve for more information.
- (3) Noise is measured per Technical Reference Section. Measurement bandwidth is 0-20 MHz for peak-peak measurements, 10 kHz to 1 MHz for RMS measurements. Output noise is measured with a 1µF/35V Tantalum capacitor located 1" away from the converter to simulate PCB standard decoupling.
- (4) Short term stability is specified after a 30 minute warmup at full load, constant line and recording the drift over a 24 hour period.
- (5) No minimum load required for operation. Dynamic regulation may degrade when run with less than 5% load.

### DFC6 SERIES APPLICATION NOTES:

#### External Capacitance Requirements

No external capacitance is required for operation of the DFC6 Series. To meet the reflected ripple requirements of the converter, an input impedance of less than 0.15 Ohms from DC to 200KHz is required. If a capacitive input source is farther than 1" from the converter, an additional capacitor may be required at the input pins for proper operation. External output capacitance is not

required for operation, however it is recommended that 1µF to 10µF of tantalum and 0.001 to 0.1µF ceramic capacitance be selected for reduced system noise. Additional output capacitance may be added for increased filtering, but should not exceed 400µF.

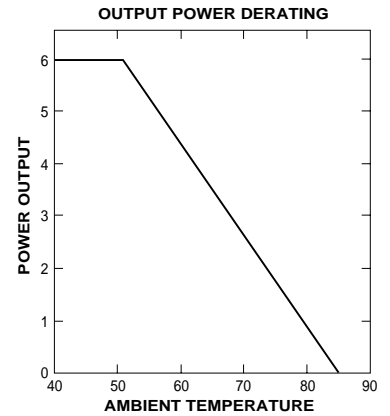
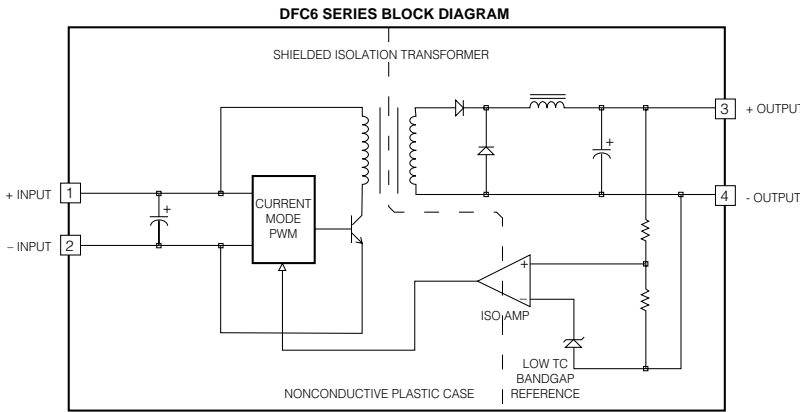
#### Output Power

The available output power of the DFC6 Series is reduced when operating below 4.6 volts. See Input Voltage Derating curve. Below 4.6 volts the output power is linearly derated from 100% at 4.6 volts to 50% at 3.5 volts.

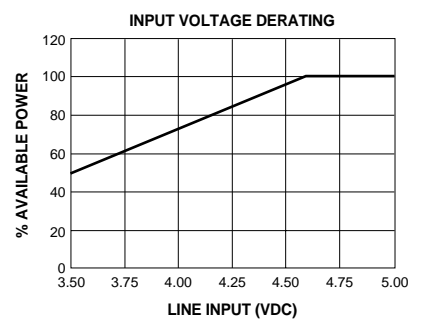
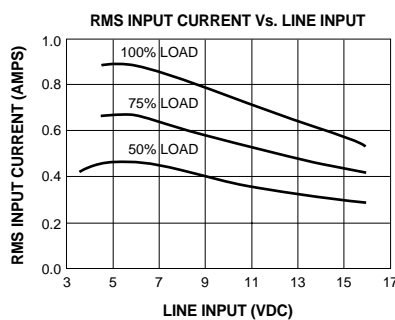
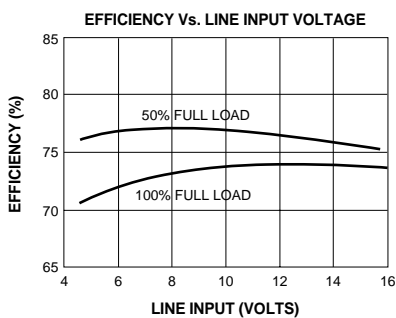
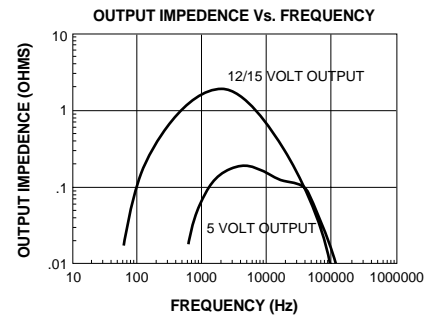
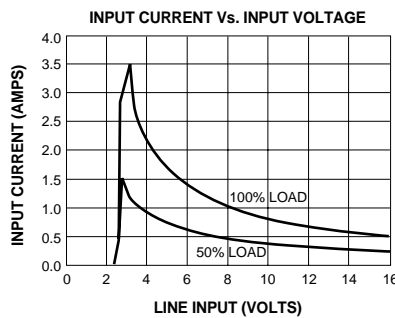
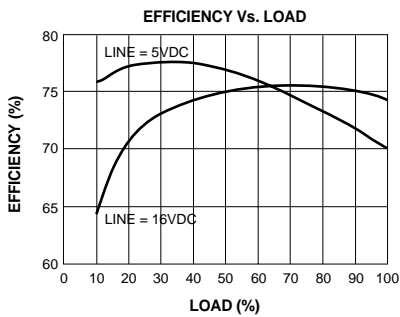
#### Negative Outputs

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

**DFC6 SERIES – SINGLE OUTPUT**



Typical Performance: (Tc=25°C, Vin=Nom VDC, Rated Load)



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