

# SINGLE OUTPUT

## DFAG SERIES

### DESCRIPTION

The DFA6 Series provides quick power conversion solutions to analog and digital systems. Requires few external components. The converters provide plug-and-play versatility. The series features an input range of 3:1. The output is electrically isolated, thereby allowing the output to be configured for positive or negative output voltage. The DFA6 provides compact system power in less than 2.3 square inches (14.8 cm<sup>2</sup>).

The DFA6 Series' ultra-wide input and no load input current (7mA) makes it well suited for battery operation in commercial and industrial applications. Full overload protection is provided by pulse-by-pulse current limiting

### FEATURES

- Up to 6 Watts Output Power
- Overcurrent Protection
- Efficiency to 83%
- Low Input to Output Capacitance
- 700V Isolation, Input to Output
- Ultra-Wide Input Range (3:1)

#### Selection Chart

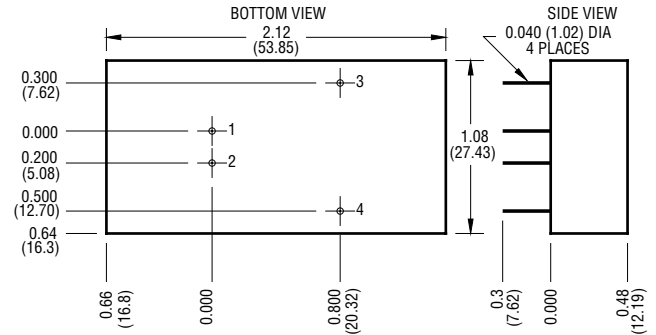
Model	Input Range VDC (4)		Output VDC	Output mA
	Min	Max		
<b>DFA6U12S5</b>	9	27	5	1000
<b>DFA6U12S12</b>	9	27	12	500
<b>DFA6U12S15</b>	9	27	15	400
<b>DFA6U48S5</b>	20	60	5	1000
<b>DFA6U48S12</b>	20	60	12	500
<b>DFA6U48S15</b>	20	60	15	400

#### General Specifications (1)

All Models			Units
<b>Isolation</b>			
Isolation Voltage Input to Output 10 $\mu$ A Leakage	MIN	700	VDC
Input to Output Capacitance	TYP	400	pF
<b>Environmental</b>			
Case Operating Range, Tc No Derating	MIN	-40	°C
	MAX	85	
Storage Range	MIN	-55	°C
	MAX	105	
Thermal Impedance (2)	TYP	20	°C/Watt
<b>General</b>			
MTBF (Calculated)	TYP	800,000	HRS
Unit Weight	TYP	1.0 / 28	oz / gm
Chassis Mounting Kits	CM2A1		

### NOTES

- (1) All parameters measured at Tc=25°C, nominal input voltage and full rated load unless otherwise noted. Refer to the DC/DC Technical Reference Section for the definition of terms, measurement circuits and other information.
- (2) The case Thermal Impedance is specified as the case temperature rise over ambient per package dissipated



Mechanical tolerances unless otherwise noted:

X.XX dimensions:  $\pm 0.040$  inches

X.XXX dimensions:  $\pm 0.010$  inches

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



## DFA6 SERIES – SINGLE SERIES

Input Parameters (1)														
Model		DFA6U12S5	DFA6U12S12	DFA6U12S15	DFA6U48S5	DFA6U48S12	DFA6U48S15	Units						
Voltage Range	MIN	9			20			VDC						
	MAX	27			60									
Reflected Ripple (2)	TYP	1.8			0.85			A <sub>PP</sub> A <sub>rms</sub>						
	TYP	0.93			0.44									
Input Current	Full Load	TYP	507	600	130	154	mA							
	No Load	TYP	6	12	5	6								
Efficiency	TYP	82	83		80	82		%						
Switching Frequency	TYP	125						kHz						
Maximum Input Overvoltage	MAX								VDC					
100ms Maximum														
12V Models												34		
48V Models				72										
Turn-on Time, 1% Output Error	TYP	6						ms						

Output Parameters (1)								
Model		DFA6U12S5	DFA6U48S5	DFA6U12S12	DFA6U48S12	DFA6U12S15	DFA6U48S15	Units
Output Voltage		5		12		15		VDC
Output Voltage Accuracy	MIN	4.95		11.90		14.90		VDC
	TYP	5.00		12.00		15.00		
	MAX	5.05		12.10		15.10		
Rated Load Range	MIN	0.0		0.0		0.0		A
	MAX	1.0		0.5		0.4		
Load Regulation 25% - 100% of Rated Load	TYP	0.1		0.2		0.2		%
	MAX	0.3		0.4		0.4		
Line Regulation Vin = Min to Max VDC	TYP	0.02		0.2		0.2		%
	MAX	0.2		0.8		0.8		
Short Term Stability (3)	TYP	< 0.05						%/24Hrs
Input Ripple Rejection (4)	TYP	> 40						dB
Noise, Peak - Peak (2)	TYP	50						mV <sub>PP</sub>
RMS Noise	TYP	8						mV <sub>rms</sub>
Temperature Coefficient	TYP	50						ppm/°C
	MAX	150						
Short Circuit Protection +OUT to -OUT		Continuous, Current Limit Protection						

### NOTES

- (1) All parameters measured at Tc=25°C, nominal input voltage and full rated load unless otherwise noted. Refer to the DC/DC Technical Reference Section for the definition of terms, measurement circuits and other information.
- (2) Noise is measured per DC/DC 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, 1 inch from the output pins to simulate standard PCB decoupling capacitance. Reflected Ripple is measured with the appropriate input capacitor, and into a 10µH source impedance. See application notes for input capacitor requirements.
- (3) Short term stability is specified after a 30 minute warmup at full load, constant line and recording the drift over a 24 hour period.
- (4) The input ripple rejection is specified for DC to 120 Hz ripple with a modulation amplitude of 1% of Vin.

### DFA6 SERIES APPLICATION NOTES:

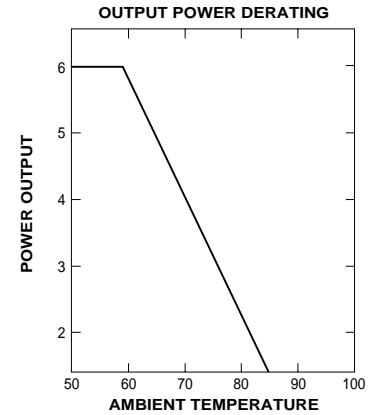
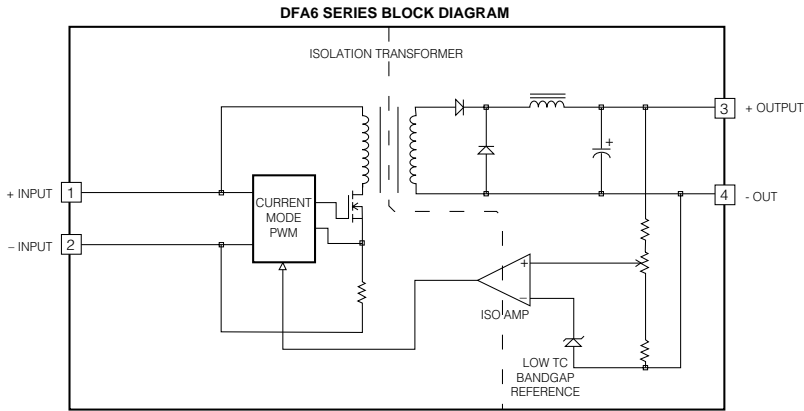
#### External Capacitance Requirements

No external capacitance is required for operation of the DFA6 Series. To meet the reflected ripple requirements of the converter, an input impedance of less than 0.35 Ohms from DC to 250KHz 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.

#### Negative Outputs

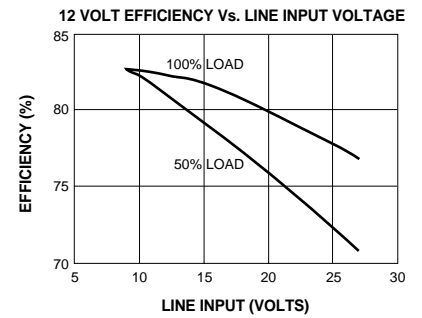
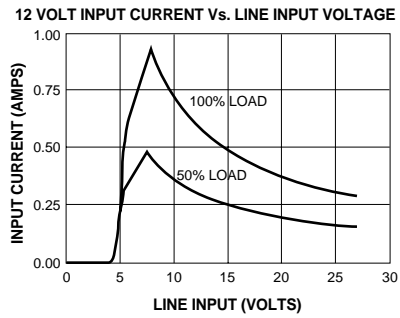
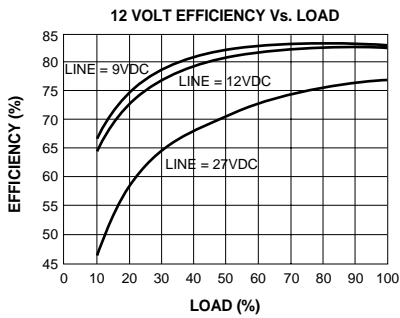
A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

## DFAG SERIES – SINGLE SERIES



Typical Performance: ( $T_c=25^\circ\text{C}$ ,  $V_{in}=\text{Nom VDC}$ , Rated Load)

### Data for 12 Volt Input Models



### Data for 48 Volt Input Models

