

# Description

The DFC25 Series dc-dc converter provides three output voltages from a single 12, 24, or 48 volt nominal input for industrial and datacom equipment. Available output power ranges up to 25 watts. Excellent noise performance is attained via an aluminum case, toroidal magnetics, and double shielded transformers. Common mode and differential mode input filtering is integral to the design. Selected models provides 1544 volts isolation from input to output.

The input and output sections of the DFC25 Series are protected from overvoltage transients via internal circuitry. Same voltage single output units of the DFC25 family may be connected in parallel to achieve additional output current.

Selection Chart - Up to 25 Watts Output Power						
Model	Input Range VDC		Output VDC	Output mA MAX		
	Min	Max	Nominal			
DFC25E24T3.3/15	18	36	3.3, ±15	5000, ±800		
DFC25E24T5/12	18	36	5.0, ±12	5000, ±1000		
DFC25E24T5/15	18	36	5.0, ±15	5000, ±800		
DFC25E48T3.3/12	36	72	3.3, ±12	5000, ±1000		
DFC25E48T5/12	36	72	5.0, ±12	5000, ±1000		
DFC25E48T5/15	36	72	5.0, ±15	5000, ±800		

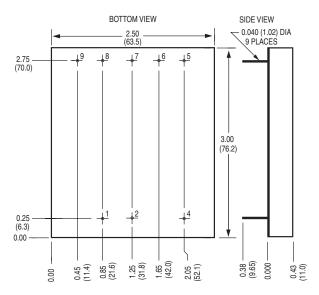
Model numbers highlighted in yellow or shaded are not recommended for new designs.

General Specifications (1)					
All Mo		Units			
Isolation (3)					
Isolation Voltage Input to Output 12V, 24V Input 48V Input 10µA Leakage	MIN MIN	700 1544	Volts		
Input to Output Capacitance	TYP	700	pF		
Remote ON/OFF					
ON Logic Level or Pin Open	MIN	2.5	Volts		
Off Logic Level or Tie to -Input	MAX	0.7	Volts		
Converter Idle Current	TYP	10	mA		
Output Trim Function					
Input Resistance	TYP	40	k		
Programming Range	MIN	±10	%		
Environmental					
Case Operating Range (2)	MIN MAX	-25 +60	°C		
Case Functional Range	MIN MAX	-40 +105	°C		
Storage Range	MIN MAX	-45 +105	°C		
Thermal Impedance	TYP	10	°C/Watt		
General					
MTBF (Calculated)	TYP	1,000,000	Hours		
Unit Weight	TYP	2.6/71	oz/gm		

## Features

- · RoHS lead solder exemption compliant
- · Up to 25 watts with triple outputs
- +3.3V or +5V main outputs
- · Remote On/Off
- · Common and differential mode input filters
- Main output trim
- Efficiencies to 81%
- Operation from -25°C up to 85°C
- 700/1544V isolation
- Two-year warranty
- UL/CSA/TÜV pending





PIN CONNECTIONS				
PIN NUMBER	PIN OUT			
1	-INPUT			
2	+INPUT			
3	N/C			
4	ON/OFF			
5	TRIM			
6	+3.3V OR +5V			
7	COMMON			
8	+12V OR +15V			
9	-12V OR -15V			

**NOTE:** All pins are 0.040" diameter brass with tin plating.

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

### NOTES

- All parameters measured at 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) Derate linearly to 0 Watts at 105 °C ambient. Operation to +70 °C ambient with externally supplied forced air cooling, 100 LFM. Consult the factory for -40 °C operation.
- (3) Case is tied to -Input, Pin 1.



Input Parameters (1)									
Model		DFC25E24T3.3/15	DFC25E24T5/12	DFC25E24T5/15	DFC25E48T3.3/12	DFC25E48T5/12	DFC25E48T5/15	Units	
Reflected Ripple (2)	TYP	230	230	230	150	150	150	mАрр	
Input Current Full Load No Load	TYP TYP	1780 10	1563 10	1563 10	890 10	781 10	781 10	mA	
Inrush Current (5)	MAX	50	50	50	50	50	50	Арк	
Efficiency	TYP	78	80	80	78	80	80	%	
Switching Frequency	TYP	150	150	150	150	150	150	kHz	
Maximum Input Overvoltage, 100ms Maximum	MAX	45	45	45	85	85	85	VDC	
Turn-on Time, 1% Output Error	TYP	10	10	10	10	10	10	mS	

Output Parameters (1)								
Model		DFC25EXXT3.3/XX	DFC25EXXT5/XX	DFC25EXXTX/12	DFC25EXXTX/15	Units		
Output (8)		V1	V1	V2,V3	V2,V3			
Output Voltage		3.3	5	12	15	VDC		
Output Voltage Accuracy	MIN TYP MAX	3.27 3.30 3.33	5.05 5.10 5.15	11.88 12.00 12.12	14.85 15.00 15.15	VDC		
Rated Load Range	MIN MAX	0.5 5.0	0.5 5.0	0.0 1.0	0.0 0.8	A		
Load Regulation 25% Load - Max Load	TYP	1.0	1.0	8.0	8.0	%		
Line Regulation Vin = Min-Max VDC	TYP	0.2	0.2	3.0	3.0	%		
Cross Regulation 25% Load - Max Load (6)	TYP	3.0	3.0	8.0	8.0	%		
Transient Response 25% Load Step (7)	TYP	2	2	2	2	%		
Short Term Stability (3)	TYP	<0.05	<0.05	<0.05	<0.05	%/24Hrs		
Long Term Stability	TYP	<0.1	<0.1	<0.1	<0.1	%/kHrs		
Input Ripple Rejection (4)	TYP	>40	>40	>40	>40	dB		
Noise, Peak - Peak (2)	TYP	75	75	120	150	тVрр		
Temperature Coefficient	TYP	100	100	300	300	ppm/°C		
Short Circuit Protection from +OUT to -OUT	Continuous, Current Limit Protection							

#### NOTES

 All All parameters measured at Tc=25°C, nominal input voltage and full rated load unless otherwise noted. Refer to the Reference Section for the definition of terms, measurement circuits and other information.

(2) Noise is measured per the 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 0.01µF/100V ceramic capacitor in parallel with a 1µF/35V Tantalum capacitor, 1 inch from the output pins to simulate standard PCB decoupling capacitance.

(3) Short term stability is specified after a 30 minute warm-up at full load, constant line and recording the drift over a 24 hour period.

(4) The transient response is specified as the time required to settle from a 50 to 75% step load change (rise time of step = 2μSec) to a 1% error band.

- (5) Per ETSI-300-132
- (6) Change to main channel output for a 25% to 100% change on dual outputs or change on dual channel outputs due to a 25% to 100% change on the main channel output.

(7) Recovery to within 1% in less than 1 millisecond after transient has been applied.

(8) V3 is defined as the minus, or negative output. Values in the chart are shown as positive for V2, and can be assumed negative for V3.

### DFC25 SERIES APPLICATION NOTES:

External Capacitance Requirements

A low ESR external capacitance is required for operation of the DFC25 Series. For maximum performance, it is recommended that the DFC25 Series use a capacitor of sufficient ripple current capacity connected across the input pins, especially if a capacitive input source is farther than 1" from the converter. To meet the reflected ripple requirements of the converter, an input impedance of less than 0.09 Ohms at 200 kHz is required. 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 each output to reduce system noise. Additional output capacitance may be added for increased filtering, but should not exceed 400µF.

#### Remote ON/OFF Operation

The remote ON/OFF pin may be left floating if this function is not used. It is recommended to drive this pin with TTL compatible circuitry. When the ON/OFF pin is pulled low with respect to the -INPUT, the converter is placed in a low power drain state. The input capacitors are kept fully charged in the OFF mode. For proper operation, this input may be driven from a logic gate directly. The ON/OFF pin should never be pulled more than 0.3 volts below -INPUT or have a voltage greater than +6 volts applied.



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