



### APPLICATIONS

Wireless Network  
Telecom/Datacom  
Industry Control System  
Measurement Equipment  
Semiconductor Equipment

### FEATURES

- 15 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 3A
- STANDARD 2.00 X 1.60 X 0.40 INCH PACKAGE
- HIGH EFFICIENCY UP TO 82%
- 4:1 WIDE INPUT VOLTAGE RANGE
- SIX-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY
- UL60950-1, EN60950-1, & IEC60950-1 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

### DESCRIPTION

The FDC15 series offer 15 watts of output power from a 2.00 x 1.60 x 0.40 inch package. The FDC15 series have 4:1 wide input voltage of 9~36VDC and 18~75VDC. The FDC15 features 1600VDC of isolation, short-circuit and over-voltage protection.

## TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS			
Output power	15 Watts, max.		
Voltage accuracy	± 1%		
Minimum load (Note 6)	See Table		
Voltage adjustability	± 10%		
Line regulation	LL to HL at Full Load	± 0.2%	
Load regulation	Min. load to Full load	Single	± 0.5%
		Dual	± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth	See table	
Temperature coefficient	±0.02% / °C, max.		
Transient response recovery time	25% load step change	250µs	
Over voltage protection	5VDC output	6.2VDC	
	Zener diode clamp	12VDC output	
		15VDC output	
Over load protection	% of FL at nominal input	150%, max.	
Short circuit protection	Continuous, automatic recovery		
GENERAL SPECIFICATIONS			
Efficiency	See table		
Isolation voltage	Input to Output	1600VDC, min. 1minute	
	Input(Output) to Case	1600VDC, min. 1minute	
Isolation resistance	500VDC	10 <sup>9</sup> ohms, min.	
Isolation capacitance	300pF, max.		
Switching frequency	270kHz±10%		
Safety approvals	IEC60950-1, UL60950-1, & EN60950-1		
Case material	Nickel-coated copper		
Base material	Non-conductive black plastic		
Potting material	Epoxy (UL94 V-0)		
Dimensions	2.00 X 1.60 X 0.40 Inch (50.8 X 40.6 X 10.2 mm)		
Weight	48g (1.69oz)		
MTBF (Note 1)	MIL-HDBK-217F	2.250 x 10 <sup>6</sup> hrs	

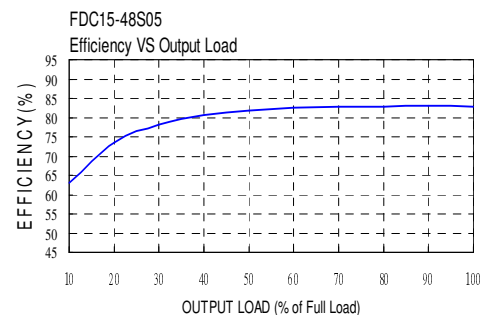
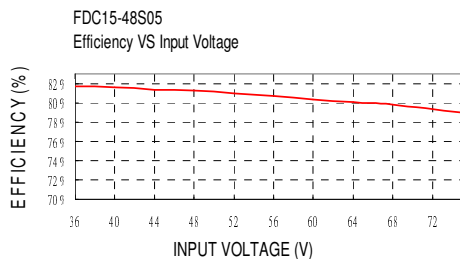
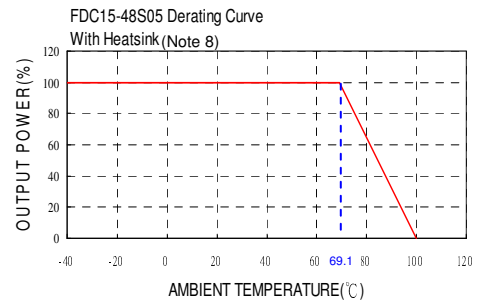
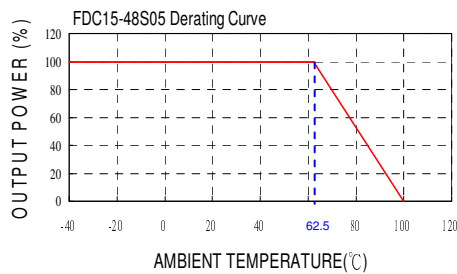
INPUT SPECIFICATIONS			
Input voltage range	24VDC nominal input	9 ~ 36VDC	
	48VDC nominal input	18 ~ 75VDC	
Input filter	Pi type		
Input surge voltage	24VDC input	50VDC 100ms, max.	
	48VDC input	100VDC 100ms, max.	
Input reflected ripple current	20mA <sub>p-p</sub>		
Start up time	Nominal input and constant resistive load	Power up	20ms
Remote ON/OFF (Note 7) (Positive logic)	DC-DC ON	Open or 3.5V < Vr < 12V	
	DC-DC OFF	Short or 0V < Vr < 1.2V	
Input current of remote control pin	Nominal input	-0.5mA~+0.5mA	
Remote off state input current	Nominal input	20mA	
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature	-40°C ~ +85°C (with derating)		
Maximum case temperature	100°C		
Storage temperature range	-55°C ~ +125°C		
Thermal impedance (Note 8)	Natural convection	10°C/Watt	
	Natural convection with heat-sink	8.24°C/Watt	
Thermal shock	MIL-STD-810F		
Vibration	MIL-STD-810F		
Relative humidity	5% to 95% RH		
EMC CHARACTERISTICS			
EMI	EN55022	Class A, Class B	
ESD	EN61000-4-2	Air	± 8kV
		Contact	± 6kV
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 9)	EN61000-4-4	± 2kV	Perf. Criteria B
Surge (Note 9)	EN61000-4-5	± 1kV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

Model Number	Input Range	Output Voltage	Output Current		Output (2) Ripple & Noise	No load(3) Input Current	Eff (4) (%)	Capacitor Load max(5)
			Min. load	Full load				
FDC15-24S05	9 ~ 36 VDC	5 VDC	210mA	3000mA	75mVp-p	20mA	80	6800μF
FDC15-24S12	9 ~ 36 VDC	12 VDC	100mA	1250mA	75mVp-p	10mA	82	890μF
FDC15-24S15	9 ~ 36 VDC	15 VDC	80mA	1000mA	75mVp-p	20mA	82	570μF
FDC15-24D05	9 ~ 36 VDC	± 5 VDC	± 105mA	± 1500mA	75mVp-p	20mA	80	± 1700μF
FDC15-24D12	9 ~ 36 VDC	± 12 VDC	± 50mA	± 625mA	75mVp-p	20mA	82	± 300μF
FDC15-24D15	9 ~ 36 VDC	± 15 VDC	± 40mA	± 500mA	75mVp-p	20mA	82	± 200μF
FDC15-48S05	18 ~ 75 VDC	5 VDC	210mA	3000mA	75mVp-p	15mA	80	6800μF
FDC15-48S12	18 ~ 75 VDC	12 VDC	100mA	1250mA	75mVp-p	15mA	82	890μF
FDC15-48S15	18 ~ 75 VDC	15 VDC	80mA	1000mA	75mVp-p	10mA	82	570μF
FDC15-48D05	18 ~ 75 VDC	± 5 VDC	± 105mA	± 1500mA	75mVp-p	10mA	80	± 1700μF
FDC15-48D12	18 ~ 75 VDC	± 12 VDC	± 50mA	± 625mA	75mVp-p	20mA	82	± 300μF
FDC15-48D15	18 ~ 75 VDC	± 15 VDC	± 40mA	± 500mA	75mVp-p	15mA	82	± 200μF

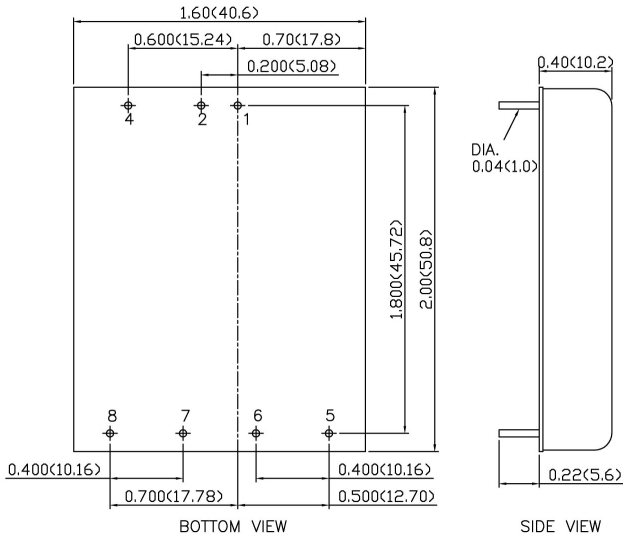
**Note**

1. MIL-HDBK-217F @Ta=25 °C, Full load.
2. Typical value at nominal input and full load. (20MHZ BW.)
3. Typical value at nominal input and no load.
4. Typical value at nominal input and full load.
5. Test by minimum input and constant resistive load.
6. The output requires a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
7. The CTRL pin voltage is reference to -INPUT.
8. Heat-sink is optional and P/N: 7G-0011C-F.
9. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220μF /100V.

**CAUTION:** This power module is not internally fused. An input line fuse must always be used.



## MECHANICAL DRAWING



1. All dimensions in Inch (mm)  
Tolerance: X.XX±0.02 (X.X±0.5)  
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

PIN CONNECTION		
PIN	SINGLE	DUAL
1	+INPUT	+INPUT
2	-INPUT	-INPUT
4	CTRL	CTRL
5	NO PIN	+OUTPUT
6	+OUTPUT	COMMON
7	-OUTPUT	-OUTPUT
8	TRIM	TRIM

