



### FEATURES

- 5 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 1000mA
- STANDARD 2.0 X 1.0 X 0.4 INCH PACKAGE
- HIGH EFFICIENCY UP TO 83%
- 2:1 AND 4:1 WIDE INPUT VOLTAGE RANGE
- SIX-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY
- CE MARK MEETS 2006/95/EC, 93/68/EEC AND 2004/108/EC
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

### APPLICATIONS

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

### OPTIONS

Negative & Positive logic Remote On/Off

### DESCRIPTION

The FDC05 and FDC05-W series offer 5 watts of output power from a 2 x 1 x 0.4 inch package without derating to 71°C ambient temperature.

FDC05 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC.  
FDC05-W series have 4:1 ultra wide input voltage of 9-36 and 18-75VDC.

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

OUTPUT SPECIFICATIONS	
Output power	5 Watts, max.
Voltage accuracy	Full load and nominal Vin ± 1%
Minimum load	0%
Line regulation	LL to HL at Full Load ± 0.2%
Load regulation	No load to Full load Single ± 0.2% 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	25% load step change Single 200µs
recovery time	FL to 1/2 FL ±1% error band Dual 200µs
Over load protection	% of FL at nominal input 170%, typ.
Short circuit protection	Continuous, automatics recovery
GENERAL SPECIFICATIONS	
Efficiency	See table
Isolation Voltage	Input to Output to Case 1600VDC, min.
Isolation resistance	10 <sup>9</sup> ohms, min.
Isolation capacitance	300pF, max.
Switching frequency	Standard 300KHz, typ. "W" series 200KHz, typ.
Approvals and standard	IEC60950-1, UL60950-1, EN60950-1
Case material	Nickel-coated copper
Base material	Non-conducted black plastic
Potting material	Epoxy (UL94-V0)
Dimensions	2.00 X 1.00 X 0.40 Inch (50.8 X 25.4 X 10.2 mm)
Weight	27g (0.95oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332 3.145 x 10 <sup>6</sup> hrs MIL-HDBK-217F 2.326 x 10 <sup>6</sup> hrs

INPUT SPECIFICATIONS			
Input voltage range	FDC05	12V nominal input	9 – 18VDC
		24V nominal input	18 – 36VDC
		48V nominal input	36 – 75VDC
	FDC05-W	24V nominal input	9 – 36VDC
		48V nominal input	18 – 75VDC
Input filter			Pi type
Input surge voltage 100ms max	12V input		36VDC
	24V input		50VDC
	48V input		100VDC
Input reflected ripple current	Nominal Vin and full load	20mA <sub>p-p</sub>	
Start up time	Nominal Vin and	Power up	450ms, max.
	Constant resistive load		
Remote ON/OFF (Option) (Note 6)			
(Positive logic)	DC-DC ON	Open or 3.5V < Vr < 12V	
	DC-DC OFF	Short or 0V < Vr < 1.2V	
(Negative logic)	DC-DC ON	Short or 0V < Vr < 1.2V	
	DC-DC OFF	Open or 3.5V < Vr < 12V	
Input current of remote control pin	Nominal Vin	-0.5mA ~ +1mA	
Remote off state input current	Nominal Vin	2.5mA	

ENVIRONMENTAL SPECIFICATIONS		
Operating ambient temperature	Standard	-25°C ~ +85°C (with derating)
	M1 (Note 7)	-40°C ~ +85°C (non-derating)
	(Reference derating curve) M2 (W series)	-40°C ~ +85°C (with derating)
Maximum case temperature	+100°C	
Storage temperature range	-55°C ~ +105°C	
Thermal impedance (Note 8)	Nature convection	12°C/watt
	Nature convection with heat-sink	10°C/watt
Thermal shock	MIL-STD-810F	
Vibration	MIL-STD-810F	
Relative humidity	5% to 95% RH	

EMC CHARACTERISTICS		
EMI	EN55022	Class A
ESD	EN61000-4-2	Air ± 8KV
		Contact ± 6KV Perf. Criteria B
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

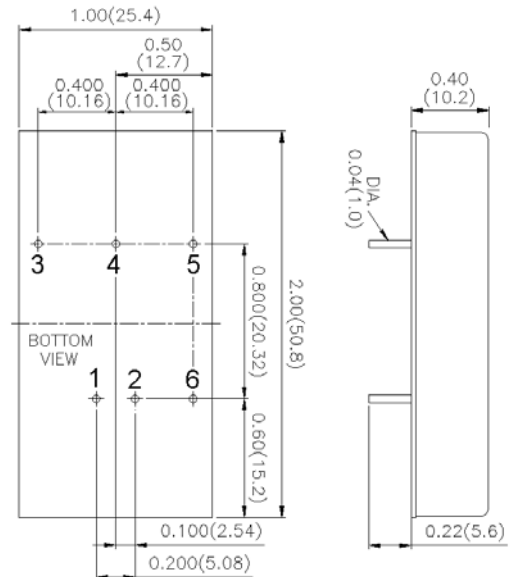
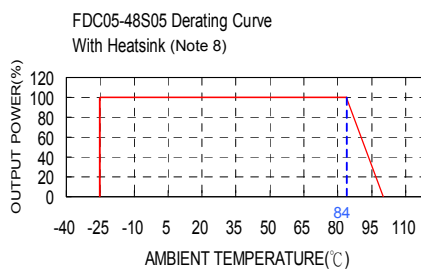
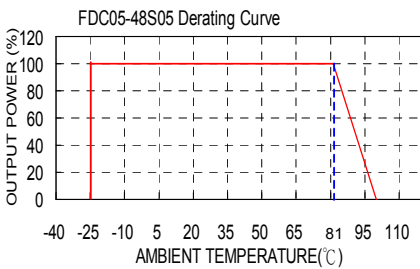




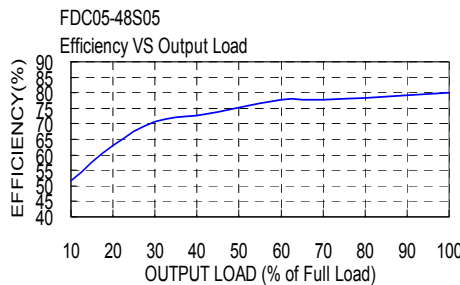
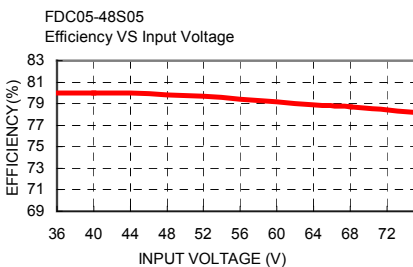
Model Number	Input Range	Output Voltage	Output Current		Output <sup>(4)</sup> Ripple & Noise	Input Current		Eff <sup>(4)</sup> (%)	Capacitor Load max <sup>(5)</sup>
			Min. load	Full load		No load <sup>(3)</sup>	Full load <sup>(2)</sup>		
FDC05-12S33	9 – 18 VDC	3.3 VDC	0mA	1000mA	50mVp-p	10mA	382mA	76	3700µF
FDC05-12S05	9 – 18 VDC	5 VDC	0mA	1000mA	50mVp-p	10mA	556mA	79	1700µF
FDC05-12S12	9 – 18 VDC	12 VDC	0mA	470mA	50mVp-p	10mA	610mA	81	290µF
FDC05-12S15	9 – 18 VDC	15 VDC	0mA	400mA	50mVp-p	15mA	658mA	80	188µF
FDC05-12D05	9 – 18 VDC	± 5 VDC	0mA	± 500mA	50mVp-p	20mA	556mA	79	± 850µF
FDC05-12D12	9 – 18 VDC	± 12 VDC	0mA	± 230mA	50mVp-p	15mA	597mA	81	± 140µF
FDC05-12D15	9 – 18 VDC	± 15 VDC	0mA	± 190mA	50mVp-p	20mA	609mA	82	± 47µF
FDC05-24S33 (W)	18 – 36 (9 – 36) VDC	3.3 VDC	0mA	1000mA	50mVp-p	15(5mA)	199 (188mA)	73 (77)	3700µF
FDC05-24S05 (W)	18 – 36 (9 – 36) VDC	5 VDC	0mA	1000mA	50mVp-p	15(5mA)	282 (274mA)	78 (80)	1700µF
FDC05-24S12 (W)	18 – 36 (9 – 36) VDC	12 VDC	0mA	470mA	50mVp-p	10(5mA)	305 (301mA)	81 (82)	290µF
FDC05-24S15 (W)	18 – 36 (9 – 36) VDC	15 VDC	0mA	400mA	50mVp-p	20(5mA)	325 (325mA)	81 (81)	188µF
FDC05-24D05 (W)	18 – 36 (9 – 36) VDC	± 5 VDC	0mA	± 500mA	50mVp-p	15(5mA)	278 (274mA)	79 (80)	± 850µF
FDC05-24D12 (W)	18 – 36 (9 – 36) VDC	± 12 VDC	0mA	± 230mA	50mVp-p	20(5mA)	295 (295mA)	82 (82)	± 140µF
FDC05-24D15 (W)	18 – 36 (9 – 36) VDC	± 15 VDC	0mA	± 190mA	50mVp-p	20(10mA)	308 (301mA)	81 (83)	± 47µF
FDC05-48S33 (W)	36 – 75 (18 – 75) VDC	3.3 VDC	0mA	1000mA	50mVp-p	5(5mA)	100 (100mA)	73 (73)	3700µF
FDC05-48S05 (W)	36 – 75 (18 – 75) VDC	5 VDC	0mA	1000mA	50mVp-p	10(10mA)	145 (145mA)	76 (76)	1700µF
FDC05-48S12 (W)	36 – 75 (18 – 75) VDC	12 VDC	0mA	470mA	50mVp-p	10(10mA)	151 (151mA)	82 (82)	290µF
FDC05-48S15 (W)	36 – 75 (18 – 75) VDC	15 VDC	0mA	400mA	50mVp-p	10(10mA)	160 (163mA)	82 (81)	188µF
FDC05-48D05 (W)	36 – 75 (18 – 75) VDC	± 5 VDC	0mA	± 500mA	50mVp-p	10(5mA)	141 (141mA)	78 (78)	± 850µF
FDC05-48D12 (W)	36 – 75 (18 – 75) VDC	± 12 VDC	0mA	± 230mA	50mVp-p	10(10mA)	149 (149mA)	81 (81)	± 140µF
FDC05-48D15 (W)	36 – 75 (18 – 75) VDC	± 15 VDC	0mA	± 190mA	50mVp-p	10(10mA)	154 (154mA)	81 (81)	± 47µF

**Note**

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- Maximum value at nominal input voltage and full load of standard type.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- The ON/OFF control pin voltage is referenced to -Vin  
To order positive logic ON/OFF control add the suffix-P (Ex: FDC05-48S05-P)  
To order negative logic ON/OFF control add the suffix-N (Ex: FDC05-48S05-N)
- M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard and M2 version.
- Heat sink is optional and P/N: 7G-0020C-F.
- 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, 220 µF/100V, ESR 48mΩ.



- All dimensions in Inches (mm)  
Tolerance: X.XX±0.02 (X.X±0.5)  
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.01(0.25)
- Pin dimension tolerance ±0.004 (0.1)



PIN CONNECTION		
PIN	SINGLE	DUAL OUTPUT
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
3	+ OUTPUT	+ OUTPUT
4	NO PIN	COMMON
5	- OUTPUT	- OUTPUT
6	CTRL (Option)	CTRL (Option)