



**APPLICATIONS**

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

**FEATURES**

- 5 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 1000mA
- STANDARD 2" X 1" X 0.4" 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 89/336 EEC
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

**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.

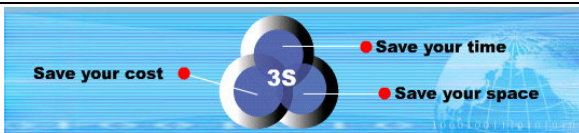
**TECHNICAL SPECIFICATION** All specifications are typical at nominal input, full load and 25°C otherwise noted

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 200uS
recovery time	FL to 1/2 FL ±1% error band	Dual 200uS
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 "W" series	300KHz, typ 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)		3.145 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-p-p
Start up time	Nominal Vin and Constant resistive load	Power up	450mS max
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 temperature range	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		10~55Hz, 10G, 30minutes along X,Y and Z	
Relative humidity		5% to 95% RH	

EMC CHARACTERISTICS			
EMI	EN55022		Class A
ESD	EN61000-4-2	Air	± 8KV
		Contact	± 6KV
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient	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

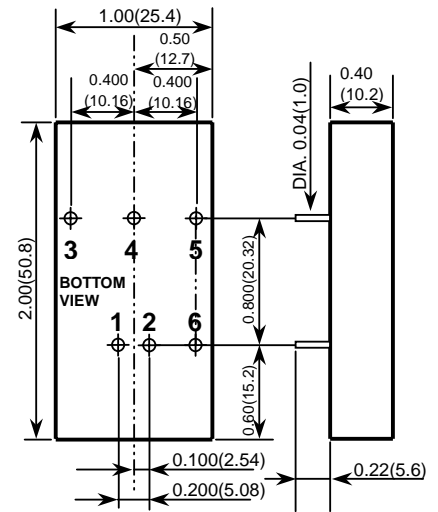
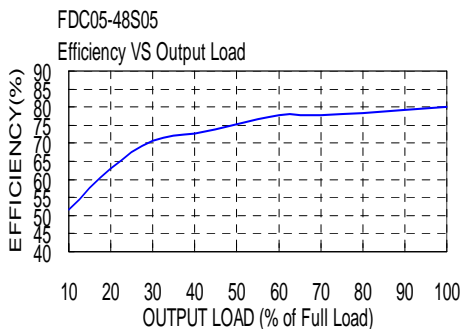
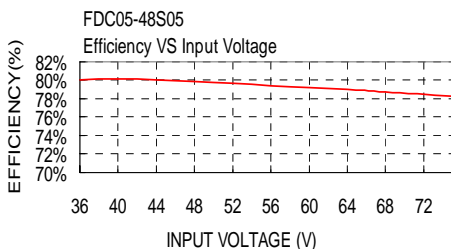
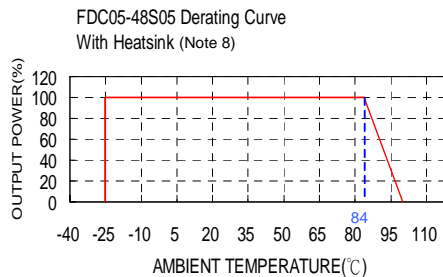
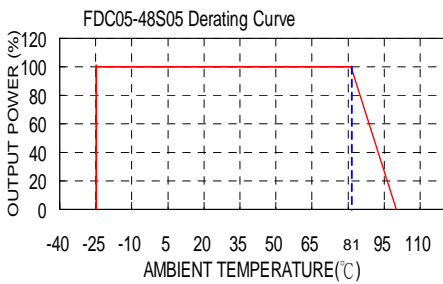




Model Number	Input Range	Output Voltage	Output Current		Output (4) Ripple & Noise	Input Current		Eff (4) (%)	Capacitor Load max(5)
			Min. load	Full load		No load (3)	Full load (2)		
FDC05-12S33	9 – 18 VDC	3.3 VDC	0mA	1000mA	50mVp-p	10mA	382mA	76	3700uF
FDC05-12S05	9 – 18 VDC	5 VDC	0mA	1000mA	50mVp-p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

**Note**

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. (Ground fixed and 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-0020A.
- An external filter capacitor is required if the module has to meet 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)