



FEATURES

- 5 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 1000mA
- STANDARD 2.00 X 1.00 X 0.40 INCH PACKAGE
- HIGH EFFICIENCY UP TO 83%
- 2:1 AND 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

OPTIONS

Negative & Positive logic Remote On/Off

APPLICATIONS

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

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 9~18VDC, 18~36VDC and 36~75VDC. FDC05-W series have 4:1 ultra wide input voltage of 9~36VDC 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	± 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%		
Short circuit protection	Continuous, automatics 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 ⁹ ohms, min.	
Isolation capacitance	300pF, max.		
Switching frequency	Standard	300kHz±10%	
	"W" series	200kHz±10%	
Safety approvals	IEC60950-1, UL60950-1, & EN60950-1		
Case material	Nickel-coated copper		
Base material	Non-conducted black plastic		
Potting material	Epoxy (UL94 V-0)		
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)	MIL-HDBK-217F	7.066 x 10 ⁶ hrs	

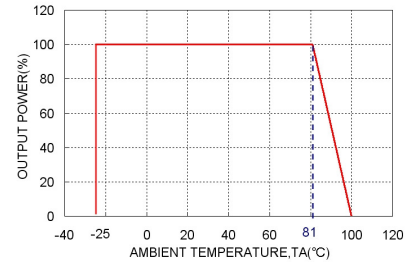
INPUT SPECIFICATIONS			
Input voltage range	FDC05	12VDC nominal input	9 ~ 18VDC
		24VDC nominal input	18 ~ 36VDC
		48VDC nominal input	36 ~ 75VDC
	FDC05-W	24VDC nominal input	9 ~ 36VDC
		48VDC nominal input	18 ~ 75VDC
Input filter	Pi type		
Input surge voltage	12VDC input	36VDC 100ms, max.	
	24VDC input	50VDC 100ms, max.	
	48VDC input	100VDC 100ms, max.	
Input reflected ripple current	20mA _{p-p}		
Start up time	Nominal input 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 input	-0.5mA ~ +1mA	
Remote off state input current	Nominal input	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 ~ +125°C		
Thermal impedance (Note 8)	Natural convection	12°C/watt	
	Natural 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 Class B	
ESD	EN61000-4-2	Air Contact	± 8kV ± 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 ⁽²⁾ Ripple & Noise	No load ⁽³⁾ Input Current	Eff ⁽⁴⁾ (%)	Capacitor Load max ⁽⁵⁾
			Min. load	Full load				
FDC05-12S33	9 ~ 18 VDC	3.3 VDC	0mA	1000mA	50mVp-p	10mA	76	3700μF
FDC05-12S05	9 ~ 18 VDC	5 VDC	0mA	1000mA	50mVp-p	10mA	79	1700μF
FDC05-12S12	9 ~ 18 VDC	12 VDC	0mA	470mA	50mVp-p	10mA	81	290μF
FDC05-12S15	9 ~ 18 VDC	15 VDC	0mA	400mA	50mVp-p	15mA	80	188μF
FDC05-12D05	9 ~ 18 VDC	± 5 VDC	0mA	± 500mA	50mVp-p	20mA	79	± 850μF
FDC05-12D12	9 ~ 18 VDC	± 12 VDC	0mA	± 230mA	50mVp-p	15mA	81	± 140μF
FDC05-12D15	9 ~ 18 VDC	± 15 VDC	0mA	± 190mA	50mVp-p	20mA	82	± 47μF
FDC05-24S33 (W)	18 ~ 36 (9 ~ 36) VDC	3.3 VDC	0mA	1000mA	50mVp-p	15(5mA)	73 (77)	3700μF
FDC05-24S05 (W)	18 ~ 36 (9 ~ 36) VDC	5 VDC	0mA	1000mA	50mVp-p	15(5mA)	78 (80)	1700μF
FDC05-24S12 (W)	18 ~ 36 (9 ~ 36) VDC	12 VDC	0mA	470mA	50mVp-p	10(5mA)	81 (82)	290μF
FDC05-24S15 (W)	18 ~ 36 (9 ~ 36) VDC	15 VDC	0mA	400mA	50mVp-p	20(5mA)	81 (81)	188μF
FDC05-24D05 (W)	18 ~ 36 (9 ~ 36) VDC	± 5 VDC	0mA	± 500mA	50mVp-p	15(5mA)	79 (80)	± 850μF
FDC05-24D12 (W)	18 ~ 36 (9 ~ 36) VDC	± 12 VDC	0mA	± 230mA	50mVp-p	20(5mA)	82 (82)	± 140μF
FDC05-24D15 (W)	18 ~ 36 (9 ~ 36) VDC	± 15 VDC	0mA	± 190mA	50mVp-p	20(10mA)	81 (83)	± 47μF
FDC05-48S33 (W)	36 ~ 75 (18 ~ 75) VDC	3.3 VDC	0mA	1000mA	50mVp-p	5(5mA)	73 (73)	3700μF
FDC05-48S05 (W)	36 ~ 75 (18 ~ 75) VDC	5 VDC	0mA	1000mA	50mVp-p	10(10mA)	76 (76)	1700μF
FDC05-48S12 (W)	36 ~ 75 (18 ~ 75) VDC	12 VDC	0mA	470mA	50mVp-p	10(10mA)	82 (82)	290μF
FDC05-48S15 (W)	36 ~ 75 (18 ~ 75) VDC	15 VDC	0mA	400mA	50mVp-p	10(10mA)	82 (81)	188μF
FDC05-48D05 (W)	36 ~ 75 (18 ~ 75) VDC	± 5 VDC	0mA	± 500mA	50mVp-p	10(5mA)	78 (78)	± 850μF
FDC05-48D12 (W)	36 ~ 75 (18 ~ 75) VDC	± 12 VDC	0mA	± 230mA	50mVp-p	10(10mA)	81 (81)	± 140μF
FDC05-48D15 (W)	36 ~ 75 (18 ~ 75) VDC	± 15 VDC	0mA	± 190mA	50mVp-p	10(10mA)	81 (81)	± 47μF

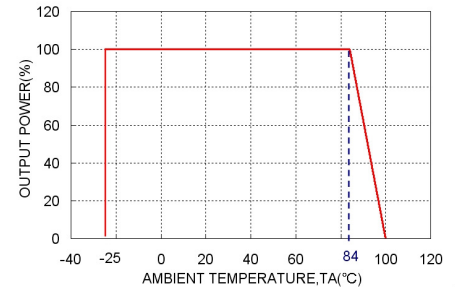
Note

- MIL-HDBK-217F @Ta=25 °C, Full load.
- Typical value at nominal input and full load. (20MHz BW.)
- Typical value at nominal input and no load.
- Typical value at nominal input and full load.
- Test by minimum input and constant resistive load.
- The CTRL pin voltage is referenced to -INPUT
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, 220μF/100V.

FDC05-48S05 Derating Curve

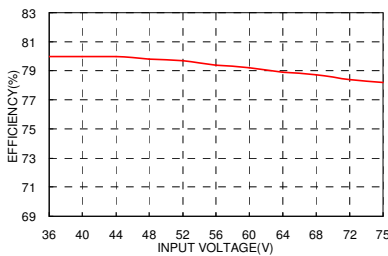


FDC05-48S05 Derating Curve With Heat-sink (Note 8)

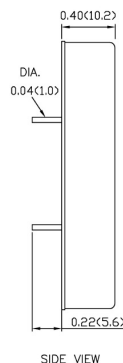
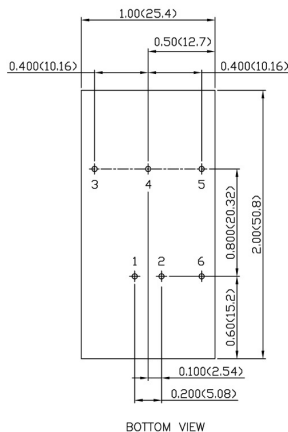
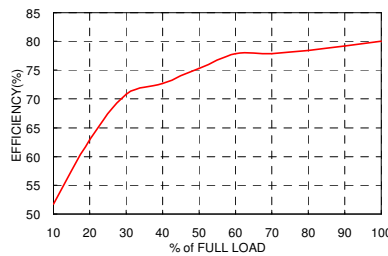


CAUTION: This power module is not internally fused. An input line fuse must always be used.

FDC05-48S05 Efficiency VS Input Voltage



FDC05-48S05 Efficiency VS Output Load



- All dimensions in Inch (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
1	+INPUT	+INPUT
2	-INPUT	-INPUT
3	+OUTPUT	+OUTPUT
4	NO PIN	COMMON
5	-OUTPUT	-OUTPUT
6	CTRL (Option)	CTRL (Option)