

# FDC05(W) SERIES

DC / DC Single & Dual Output: 5 Watts



## Features

- 2:1 standard input range
- 4:1 wide Input range option 9~36V & 18~75V
- Single & Dual outputs
- Industry Standard 2 x 1in package
- High efficiency up to 83%
- Regulated output & Short circuit protection
- 1600V isolation
- Five sided continuous copper shield
- Remote ON / OFF ( Negative or Positive option )
- High operating temperature +85°C
- Zero load operation
- M1 option: -40°C to +85°C ( non-derating )
- M2 option: W series: -40°C to +85° with derating

## Specifications:

<b>Input Voltage</b>	12VDC ( 9 ~ 18 ) 24VDC ( 18 ~ 36 ) 48VDC ( 36 ~ 75 )
Option ( W ) models	24VDC ( 9 ~ 36 ) 48VDC ( 18 ~ 75 )
<b>Input Filter</b>	Pi type
<b>Input Surge Voltage.</b> ( 100mS )	12V: 36VDC 24V: 50VDC. 48V: 100VDC
<b>Input Reflected Ripple Current</b>	20mA pk-pk ( @ nominal input & 100% load
<b>Start Up time</b>	450mS constant resistive load
<b>Remote ON/OFF</b> ( Positive logic ) ( Negative logic ) ( Option )	DC-DC ON Open or $3.0V < V_r < 12V$ DC-DC OFF Short or $0V < V_r < 1.2V$ DC-DC ON Short or $0V < V_r < 1.2V$ DC-DC OFF Open or $3.0V < V_r < 12V$ Input current of remote control pin: 0.5mA Remote off state input current: 2.5mA
<b>Output power</b>	5 watts
<b>Voltage Accuracy</b>	±1.0%
<b>Minim Load</b>	Zero
<b>Line Regulation</b>	Single ±0.2% Dual ±0.5%
<b>Load Regulation</b>	Single ±0.2% , Dual ±1% ( 0% -100% load )
<b>Cross Regulation</b>	±5% Asymmetrical load: 25-100% load )
<b>Ripple &amp; noise</b>	See table. 20MHZ bandwidth
<b>Temp. Coefficient</b>	±0.02% / °C
<b>Transient Response</b>	200uS ( 25% load step change )
<b>Overload Protection</b>	Typically 150% of load
<b>Short Circuit protection</b>	Continuous hiccup mode

<b>Efficiency</b>	Model dependant 76 ~ 83%
<b>Isolation</b>	1600VDC
<b>Isolation Cap.</b>	300pF
<b>Switching Freq.</b>	Standard 300KHz W series 400KHz
<b>Safety</b>	EN60950-1, UL60950-1
<b>Case Material</b>	Nickel-coated copper
<b>Base Material</b>	Non-conductive black plastic
<b>Potting</b>	Epoxy UL94-V0
<b>Dimensions</b>	50.8 x 25.4 x 10.2mm
<b>Weight</b>	27g
<b>MTBF</b>	3.145 x 10 <sup>6</sup> Hrs
<b>Operating Temp</b>	Standard: -25°C to +85°C ( with derating ) M1 option: -40°C to +85°C ( non-derating ) M2 option: W series: -40°C to +85° with derating
<b>Case Temp</b>	+100°C maximum case temperature
<b>Thermal Impedance</b>	12°C / watt Standard convection 10°C / watt with optional heatsink
<b>Thermal shock</b>	MIL-STD-810F
<b>Vibration</b>	10-55Hz, 10G, 30min along X, Y,Z
<b>Humidity</b>	5-95% RH
<b>EMC</b>	EN55022 Class A Consult office for Class B design
<b>ESD</b>	EN61000-4-2
<b>Radiated Immunity</b>	EN61000-4-3
<b>Fast Transients</b>	EN61000-4-4
<b>Surge</b>	EN61000-4-5
<b>Conducted Immunity</b>	EN61000-4-6

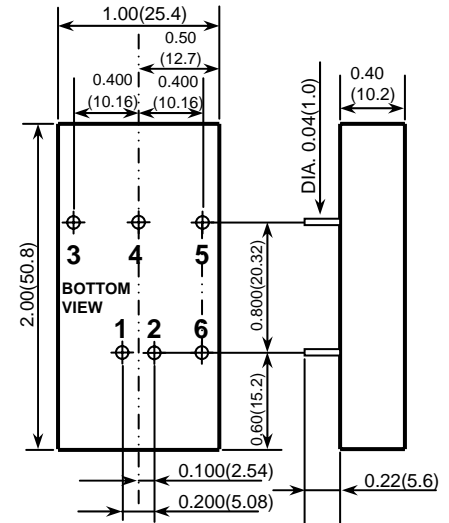
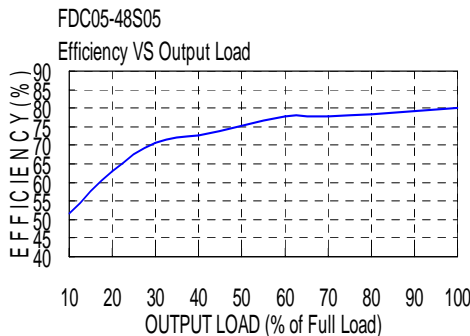
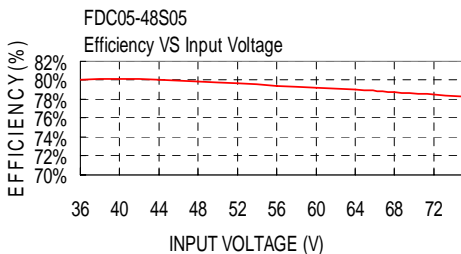
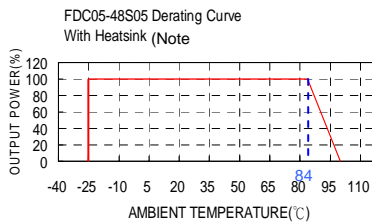
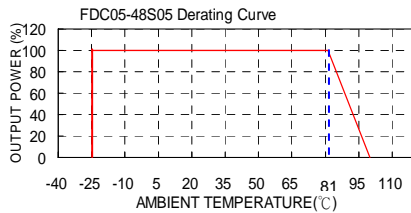
# FDC05(W) SERIES

DC / DC Single & Dual Output: 5 Watts

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

**Notes:**

1. MTBF Calculation per BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
2. Typical values at nominal input voltage and full load
3. Ripple & Noise test by minimum Vin and constant resistive load.
4. The ON/OFF control pin voltage is referenced to -Vin
- To order positive logic ON/OFF control add the suffix-P eg: FDC05-48S05-P. To order negative logic ON/OFF control add the suffix -N (eg: FDC05-48S05-N)
5. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard and M2 version.
6. Heat sink is optional and P/N: 7G-0020A.
7. An external filter capacitor is required if the module has to meet EN61000-4-5.
8. The filter capacitor suggest: Nippon chemi-con KY series, 220µF/100V, ESR 48mΩ.



1. All dimensions in Inches (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 Assignment		
PIN	Single Output	Dual Output
1	+ Input	+ Input
2	- Input	- Input
3	+ Output	+ Output
4	NO PIN	COMMON
5	- Output	- Output
6	CTRL (Option)	CTRL (Option)