POWER MATE TECHNOLOGY CO.,LTD.

FDC05-SERIES

- **5 WATTS OUTPUT POWER**
- **2:1 AND 4:1 WIDE INPUT VOLTAGE RANGE**
- **INTERNATIONAL SAFETY STANDARD APPROVAL**
- **SIX-SIDED CONTINUOUS SHIELD**
- **HIGH EFFICIENCY UP TO 83%**
- **STANDARD 2" X 1" X 0.4" PACKAGE**
- **FIXED SWITCHING FREQUENCY**

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 71ºC 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. The FDC05 and FDC05-W features 1600VDC of isolation, short-circuit protection, as well as six sided shielding. The safety approve with EN60950 and UL1950. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications. According the extended operation temperature range, there are "M1" and "M2" version for special application.

UL E193009
TUV R3-50007936
CB JPTUV-003641
CE MARK

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS

Output power		5 Watts max
Voltage accuracy	Full load and nominal Vin	± 2%
Minimum load (Note 1)		10% of FL
Line regulation	LL to HL at Full Load	± 0.2%
Load regulation	10% to 100% FL Single	± 0.2%
	Dual	± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL	± 5%
Ripple and noise	20MHz bandwidth	50mVp-p
Temperature coefficient		±0.02% / ºC, max
Transient response recovery time	25% load step change FL to 1/2 FL ±1% error band	Single 200uS Dual 200uS
Over load protection	% of FL at nominal input	170% typ
Short circuit protection		Continuous, automatics recovery

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 (Note 2)		Nominal Vin and full load	20mAp-p
Start up time	Nominal Vin and constant resistor load		600mS typ
Remote ON/OFF (Note 3)			
(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
Remote off input current	Nominal Vin		2.5mA

GENERAL SPECIFICATIONS

Efficiency		See table
Isolation Voltage	Input to Output to Case	1600VDC, min
Isolation resistance		10^9 ohms, min
Isolation capacitance		300pF, max
Switching frequency	Standard	300KHz, typ
	"W" series	200KHz, typ
Approvals and standard		IEC60950, UL1950, EN60950
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 4)		3.145 x 10^6 hrs

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range (Reference derating curve)	Standard	-25ºC ~ +85ºC (with derating)
	M1 (Note 5)	-40ºC ~ +85ºC (non-derating)
	M2 (W series)	-40ºC ~ +85ºC (with derating)
Maximum case temperature		+100ºC
Storage temperature range		-55ºC ~ +105ºC
Thermal impedance (Note 6)	Nature convection	12ºC/watt
	Nature convection with heat-sink	10ºC/watt
Thermal shock		MIL-STD-810D
Vibration		10~55Hz, 2G, 30minutes along X,Y and Z
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS

Conducted emissions	EN55022	Level A
Radiated emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria2
Radiated immunity	EN61000-4-3	Perf. Criteria2
Fast transient	EN61000-4-4	Perf. Criteria2
Surge	EN61000-4-5	Perf. Criteria2
Conducted immunity	EN61000-4-6	Perf. Criteria2

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5 WATTS DC-DC CONVERTER

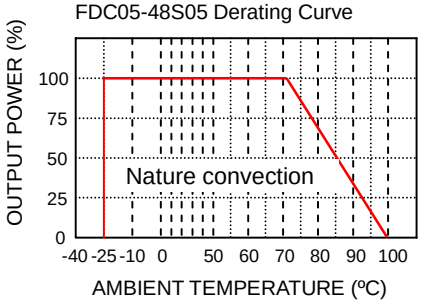
Model Number	Input Range	Output Voltage	Output Current	Input Current (7)	Eff (8) (%)	Capacitor Load max(9)
FDC05-12S33	9 – 18 VDC	3.3 VDC	1000mA	387mA	75	3700uF
FDC05-12S05	9 – 18 VDC	5 VDC	1000mA	556mA	79	1700uF
FDC05-12S12	9 – 18 VDC	12 VDC	470mA	610mA	81	290uF
FDC05-12S15	9 – 18 VDC	15 VDC	400mA	658mA	80	188uF
FDC05-12D05	9 – 18 VDC	± 5 VDC	± 500mA	595mA	74	± 850uF
FDC05-12D12	9 – 18 VDC	± 12 VDC	± 230mA	597mA	81	± 140uF
FDC05-12D15	9 – 18 VDC	± 15 VDC	± 190mA	609mA	82	± 47uF
FDC05-24S33 (W)	18 – 36 (9 – 36) VDC	3.3 VDC	1000mA	199 (196mA)	73 (74)	3700uF
FDC05-24S05 (W)	18 – 36 (9 – 36) VDC	5 VDC	1000mA	282 (274mA)	78 (80)	1700uF
FDC05-24S12 (W)	18 – 36 (9 – 36) VDC	12 VDC	470mA	305 (301mA)	81 (82)	290uF
FDC05-24S15 (W)	18 – 36 (9 – 36) VDC	15 VDC	400mA	325 (325mA)	81 (81)	188uF
FDC05-24D05 (W)	18 – 36 (9 – 36) VDC	± 5 VDC	± 500mA	289 (289mA)	76 (76)	± 850uF
FDC05-24D12 (W)	18 – 36 (9 – 36) VDC	± 12 VDC	± 230mA	295 (295mA)	82 (82)	± 140uF
FDC05-24D15 (W)	18 – 36 (9 – 36) VDC	± 15 VDC	± 190mA	308 (301mA)	81 (83)	± 47uF
FDC05-48S33 (W)	36 – 75 (18 – 75) VDC	3.3 VDC	1000mA	100 (100mA)	73 (73)	3700uF
FDC05-48S05 (W)	36 – 75 (18 – 75) VDC	5 VDC	1000mA	145 (149mA)	76 (74)	1700uF
FDC05-48S12 (W)	36 – 75 (18 – 75) VDC	12 VDC	470mA	151 (151mA)	82 (82)	290uF
FDC05-48S15 (W)	36 – 75 (18 – 75) VDC	15 VDC	400mA	160 (163mA)	82 (81)	188uF
FDC05-48D05 (W)	36 – 75 (18 – 75) VDC	± 5 VDC	± 500mA	149 (149mA)	74 (74)	± 850uF
FDC05-48D12 (W)	36 – 75 (18 – 75) VDC	± 12 VDC	± 230mA	149 (149mA)	81 (81)	± 140uF
FDC05-48D15 (W)	36 – 75 (18 – 75) VDC	± 15 VDC	± 190mA	154 (154mA)	81 (81)	± 47uF

Note

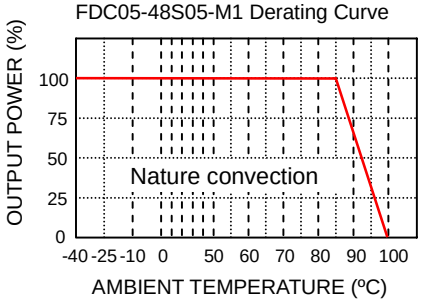
1. The FDC05 (W) series required a minimum 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification
2. Simulated source impedance of 12uH. 12uH inductor on series with + Vin.
3. The ON/OFF control is option function. There are positive logic and negative logic. The pin voltage is referenced to negative input
   To order positive logic ON-OFF control add the suffix-P (Ex: FDC05-24S05-P)
   To order negative logic ON-OFF control add the suffix-N (Ex: FDC05-24S05-N)
4. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40ºC.
   (Ground fixed and controlled environment)
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. Maximum value at nominal input voltage and full load of standard type.
8. Typical value at nominal input voltage and full load.
9. Test by minimum Vin and constant resistor load.

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)

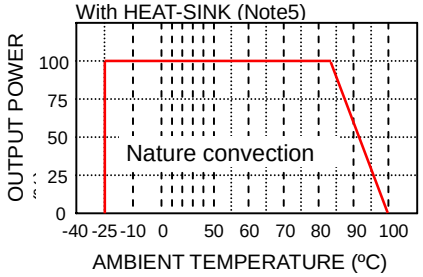
FDC05-48S05 Derating Curve



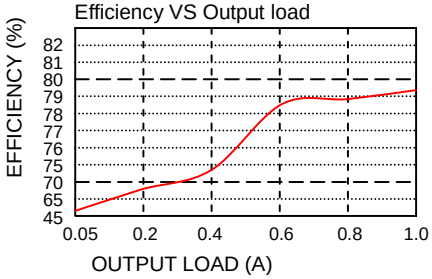
FDC05-48S05-M1 Derating Curve

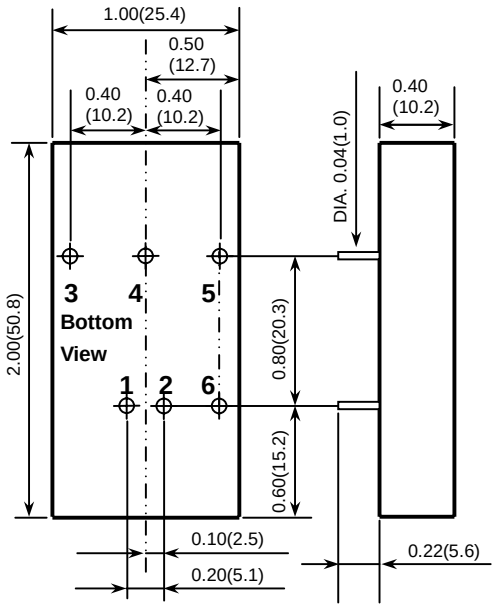


FDC05-48S05 Derating Curve
With HEAT-SINK (Note5)



FDC05-48S05
Efficiency VS Output load





1. All dimensions in Inches (mm)
2. Pin Pitch tolerance ±0.014(0.35)