POWER MATE TECHNOLOGY CO.,LTD.

FDC10-SERIES

- **10 WATTS OUTPUT POWER**
- **2:1 AND 4:1 WIDE INPUT VOLTAGE RANGE**
- **INTERNATIONAL SAFETY STANDARD APPROVAL**
- **SIX-SIDED CONTINUOUS SHIELD**
- **HIGH EFFICIENCY UP TO 86%**
- **STANDARD 2" X 1" X 0.4" PACKAGE**
- **FIXED SWITCHING FREQUENCY**

UL E193009
TUV
CB
CE MARK

The FDC10 and FDC10-W series offer 10 watts of output power from a 2 x 1 x 0.4 inch package. FDC10 series have 2：1 wide input voltage of 9-18, 18-36 and 36-75VDC. FDC10-W series have 4:1 ultra wide input voltage of 9-36 and 18-75VDC. The FDC10 and FDC10-W features 1600VDC of isolation, short-circuit and over-voltage protection, as well as six sided shielding. The safety approval of 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.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS

Output power			10 Watts max
Voltage accuracy	Full load and nominal Vin		± 1%
Minimum load (Note 1)			10% of FL
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	10% to 100% FL	Single Dual	± 0.5% ± 1%
Cross regulation(Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth	Single Dual	50mVp-p 75mVp-p
Temperature coefficient			±0.02% / ºC, max
Transient response recovery time	25% load step change		250uS
Over voltage protection Zener diode clamp	3.3V output 5V output 12V output 15V output		3.9V 6.2V 15V 18V
Over load protection	% of FL at nominal input		150% max
Short circuit protection			Hiccup, automatics recovery

INPUT SPECIFICATIONS

Input voltage range	FDC10	12V nominal input	9 – 18VDC
		24V nominal input	18 – 36VDC
		48V nominal input	36 – 75VDC
	FDC10-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		30mAp-p
Start up time	Nominal Vin and constant resistive load	Power up	20mS 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		20mA

GENERAL SPECIFICATIONS

Efficiency	See table
Isolation voltage	1600VDC, min
Isolation resistance	10^9 ohms, min
Isolation capacitance	300pF, max
Switching frequency	300KHz, typ
Approvals and standard	IEC60950-1, UL60950-1, EN60950-1
Case material	Nickel-coated copper
Base material	Non-conductive 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)	1.976 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, 10G, 30minutes along X,Y and Z
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS

Conducted emissions	EN55022	Class A
Radiated emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. CriteriaB
Radiated immunity	EN61000-4-3	Perf. CriteriaA
Fast transient	EN61000-4-4	Perf. CriteriaB
Surge	EN61000-4-5	Perf. CriteriaB
Conducted immunity	EN61000-4-6	Perf. CriteriaA

10 WATTS DC-DC CONVERTER

Model Number	Input Range	Output Voltage	Output Current	Input Current (7)	Eff (8) (%)	Capacitor(9) Load max
FDC10-12S33	9 – 18 VDC	3.3 VDC	2000mA	724mA	80	6800uF
FDC10-12S05	9 – 18 VDC	5 VDC	2000mA	1082mA	81	4700uF
FDC10-12S12	9 – 18 VDC	12 VDC	830mA	1037mA	84	690uF
FDC10-12S15	9 – 18 VDC	15 VDC	670mA	1046mA	84	470uF
FDC10-12D05	9 – 18 VDC	± 5 VDC	± 1000mA	1042mA	84	± 680uF
FDC10-12D12	9 – 18 VDC	± 12 VDC	± 416mA	1053mA	83	± 330uF
FDC10-12D15	9 – 18 VDC	± 15 VDC	± 333mA	1041mA	84	± 110uF
FDC10-24S33 (W)	18 – 36 (9 – 36) VDC	3.3 VDC	2000(2500mA)	362(465mA)	80(78)	6800uF
FDC10-24S05 (W)	18 – 36 (9 – 36) VDC	5 VDC	2000mA	534 (548mA)	82 (80)	4700uF
FDC10-24S12 (W)	18 – 36 (9 – 36) VDC	12 VDC	830mA	519 (519mA)	84 (84)	690uF
FDC10-24S15 (W)	18 – 36 (9 – 36) VDC	15 VDC	670mA	523 (544mA)	84 (81)	470uF
FDC10-24D05 (W)	18 – 36 (9 – 36) VDC	± 5 VDC	± 1000mA	527 (534mA)	83 (82)	± 680uF
FDC10-24D12 (W)	18 – 36 (9 – 36) VDC	± 12 VDC	± 416mA	513 (547mA)	85 (80)	± 330uF
FDC10-24D15 (W)	18 – 36 (9 – 36) VDC	± 15 VDC	± 333mA	520 (548mA)	84 (80)	± 110uF
FDC10-48S33 (W)	36 – 75 (18 – 75) VDC	3.3 VDC	2000(2500mA)	181(239mA)	80(76)	6800uF
FDC10-48S05 (W)	36 – 75 (18 – 75) VDC	5 VDC	2000mA	260 (270mA)	84 (81)	4700uF
FDC10-48S12 (W)	36 – 75 (18 – 75) VDC	12 VDC	830mA	253 (259mA)	86 (84)	690uF
FDC10-48S15 (W)	36 – 75 (18 – 75) VDC	15 VDC	670mA	252 (262mA)	87 (84)	470uF
FDC10-48D05 (W)	36 – 75 (18 – 75) VDC	± 5 VDC	± 1000mA	260 (267mA)	84 (82)	± 680uF
FDC10-48D12 (W)	36 – 75 (18 – 75) VDC	± 12 VDC	± 416mA	254 (281mA)	86 (78)	± 330uF
FDC10-48D15 (W)	36 – 75 (18 – 75) VDC	± 15 VDC	± 333mA	256 (270mA)	85 (81)	± 110uF

Note

1. The FDC10 (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. Please add an external filter at converter input terminals when measuring input reflected ripple, figure 1.
   L : Simulated source impedance of 12 uH C : Nippon chemi-con KMF series 47uF/100V
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: FDC10-24S05-P)
   To order negative logic ON-OFF control add the suffix-N (Ex: FDC10-24S05-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 resistive load.

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)

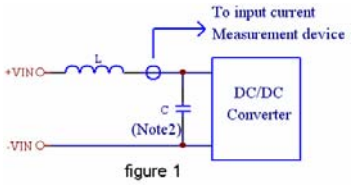
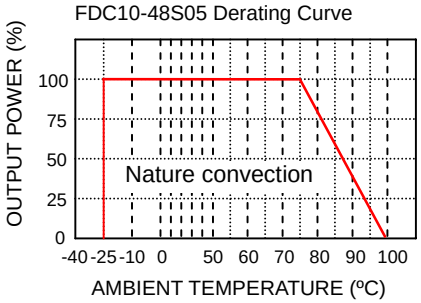
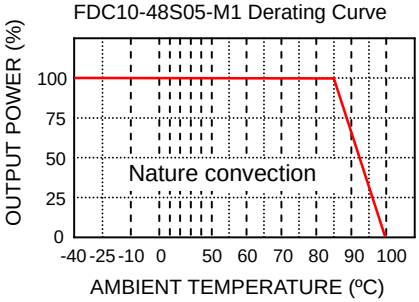
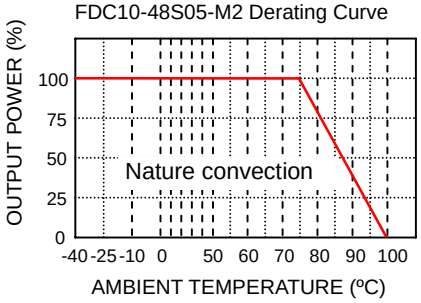
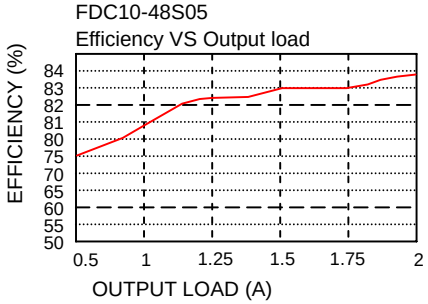


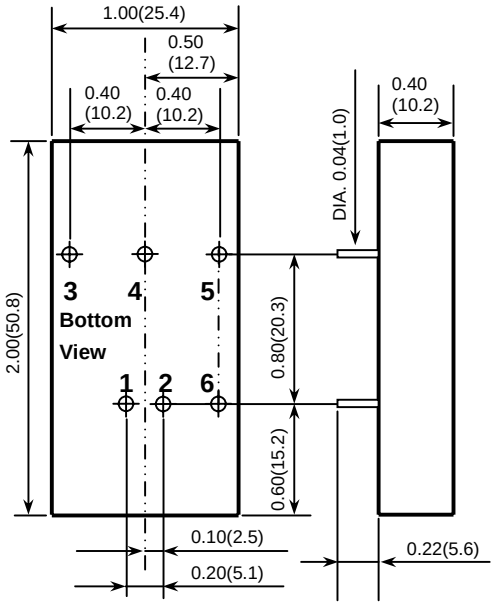
figure 1











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 ±0.014(0.35)