POWER MATE TECHNOLOGY CO.,LTD.

P-DUKE

FDC15-SERIES

- **15 WATTS OUTPUT POWER**
- **4:1 WIDE INPUT VOLTAGE RANGE**
- **INTERNATIONAL SAFETY STANDARD APPROVAL**
- **SIX-SIDED CONTINUOUS SHIELD**
- **HIGH EFFICIENCY UP TO 82%**
- **STANDARD 2" X 1.6" X 0.4" PACKAGE**
- **FIXED SWITCHING FREQUENCY**

The FDC15 series offer 15 watts of output power from a 2 x 1.6 x 0.4 inch package. The FDC15 series have 4:1 wide input voltage of 9-36 and 18-75VDC. The FDC15 features 1600VDC of isolation, short-circuit and over-voltage protection, as well as six sided shielding. A safety approval to EN60950-1 and UL60950-1. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

UL E193009
TUV
CB
CE MARK

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS			
Output power			15 Watts max
Voltage accuracy	Full load and nominal Vin		± 1%
Voltage adjustability			± 10%
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		75mVp-p
Temperature coefficient			±0.02% / ºC, max
Transient response recovery time	25% load step change		250uS
Over voltage protection Zener diode clamp	5V output 12V output 15V output		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	24V nominal input 48V nominal input		9 – 36VDC 18 – 75VDC
Input filter			Pi type
Input surge voltage 100mS max	24V input 48V input		50VDC 100VDC
Input reflected ripple (Note 2)	Nominal Vin and full load		20mAp-p
Start up time	Nominal Vin and constant resistive load	Power up	20mS typ
Remote ON/OFF (Note 3) (Positive logic)	DC-DC ON DC-DC OFF	Open or 3.5V < Vr < 12V Short or 0V < Vr < 1.2V	
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		270KHz, 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 1.60 X 0.40 Inch (50.8 X 40.6 X 10.2 mm)
Weight		48g (1.69oz)
MTBF (Note 4)		2.041 x 10^6 hrs

ENVIRONMENTAL SPECIFICATIONS		
Operating temperature		-40ºC ~ +85ºC (with derating)
Maximum case temperature		100ºC
Storage temperature range		-55ºC ~ +105ºC
Thermal impedance (Note 5)	Nature convection Nature convection with heat-sink	10ºC/Watt 8.24ºC/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 EN55022(Note 6)	Class A Class B
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

Model Number	Input Range	Output Voltage	Output Current	Input Current (7)	Eff (8) (%)	Capacitor Load max(9)
FDC15-24S05	9 – 36 VDC	5 VDC	3000mA	822mA	80	6800uF
FDC15-24S12	9 – 36 VDC	12 VDC	1250mA	801mA	82	890uF
FDC15-24S15	9 – 36 VDC	15 VDC	1000mA	801mA	82	570uF
FDC15-24D05	9 – 36 VDC	± 5 VDC	± 1500mA	822mA	80	± 1700uF
FDC15-24D12	9 – 36 VDC	± 12 VDC	± 625mA	801mA	82	± 300uF
FDC15-24D15	9 – 36 VDC	± 15 VDC	± 500mA	801mA	82	± 200uF
FDC15-48S05	18 – 75 VDC	5 VDC	3000mA	411mA	80	6800uF
FDC15-48S12	18 – 75 VDC	12 VDC	1250mA	401mA	82	890uF
FDC15-48S15	18 – 75 VDC	15 VDC	1000mA	401mA	82	570uF
FDC15-48D05	18 – 75 VDC	± 5 VDC	± 1500mA	411mA	80	± 1700uF
FDC15-48D12	18 – 75 VDC	± 12 VDC	± 625mA	401mA	82	± 300uF
FDC15-48D15	18 – 75 VDC	± 15 VDC	± 500mA	401mA	82	± 200uF

Note

1. The FDC15 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, as figure 1.
   L: Simulated source impedance of 12uH C: Nippon chemi-con KMF series 47uF/100V
3. The ON/OFF control pin voltage is reference to -Vin.
4. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40ºC. (Ground fixed and controlled environment).
5. Heat-sink option, Thermal impedance is 8.24ºC/Watt for natural convection and the P/N is 7G-0011A.
6. The FDC15 meets EN55022 class B only with external components connected before the input pin to converter.
7. Maximum value at nominal input voltage and full load.
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
4	CTRL	CTRL
5	NO PIN	+ OUTPUT
6	+ OUTPUT	COMMON
7	- OUTPUT	- OUTPUT
8	TRIM	TRIM

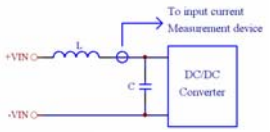
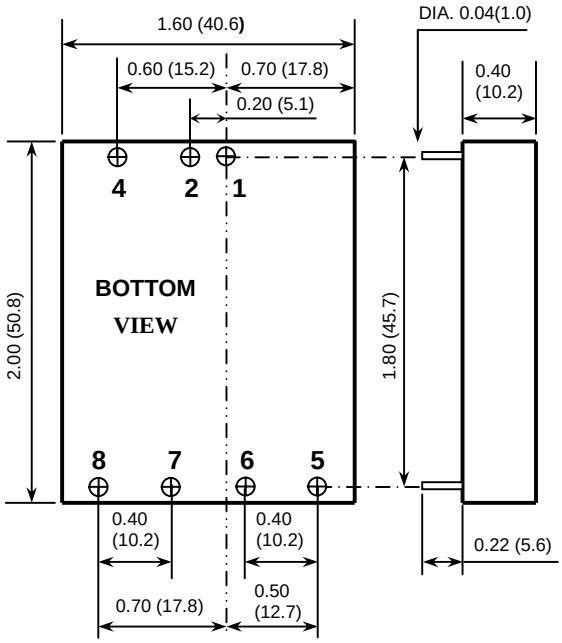
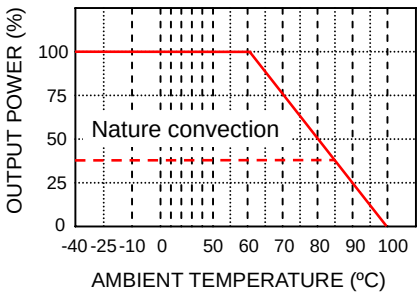


Figure 1

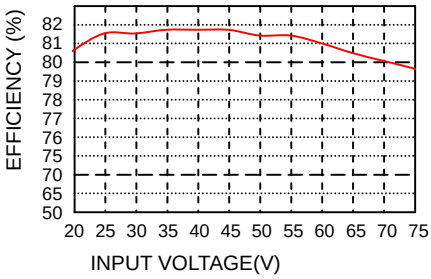


1. All dimensions in Inches (mm)
   Tolerance: X.XX±0.02 (X.X±0.5)
2. Pin pitch tolerance ±0.014(0.35)

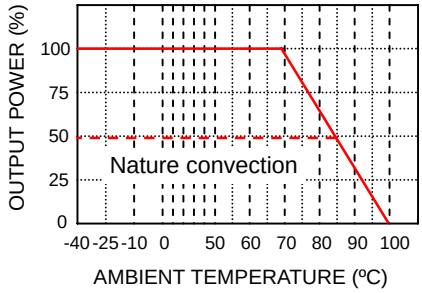
FDC15-48S05 Derating Curve



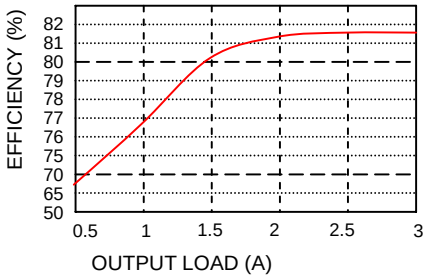
FDC15-48S05
Efficiency VS Input Voltage



FDC15-48S05 Derating Curve
With HEAT-SINK (Note5)



FDC15-48S05
Efficiency VS Output load



EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.
( ) for dual output trim