



- 60 WATTS OUTPUT POWER
- 2:1 WIDE INPUT VOLTAGE RANGE
- DESIGN MEET SAFETY STANDARD
- SIX-SIDED CONTINUOUS SHIELD
- HIGH EFFICIENCY UP TO 90%
- 3.94 X 2.76 X 0.75 INCH PACKAGE
- FIXED SWITCHING FREQUENCY

The FDC60 series offer 60 watts of output power from a 3.94 x 2.76 x 0.75 inch package. The FDC60 series have 2:1 wide input voltage of 9~18, 18~36 and 36~75VDC. The FDC60 features 1600VDC of isolation, short-circuit and over-voltage protection, as well as six sided shielding. Designed meets the safety of IEC60950-1, EN60950-1 and UL60950-1. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS	
Output power	60 Watts, max.
Voltage accuracy	± 2%
Voltage adjustability	± 10%
Minimum load	FDC60-XXD3305 3.3VDC output 800mA, min. Others 10% of FL
Line regulation	LL to HL at Full Load ± 0.5%
Load regulation	10% to 100% FL ± 0.5%
Cross regulation (Note5)	± 5%
Ripple and noise	20MHz bandwidth (Measured with a 0.1µF/50V MLCC) See table
Temperature coefficient	±0.02% / °C, max.
Transient response recovery time	25% load step change 500µs
Over voltage protection	3.3VDC output 3.9VDC 5VDC output 6.2VDC
Zener diode clamp	12VDC output 15VDC 15VDC output 18VDC
Short circuit protection	Continuous, automatics recovery
GENERAL SPECIFICATIONS	
Efficiency	See table
Isolation voltage	1600VDC, min. 1minute
Isolation resistance	500VDC 10 ⁹ ohms, min.
Isolation capacitance	1500pF, max.
Switching frequency	200kHz, ±10%
Design meet safety standard	IEC60950-1, UL60950-1, EN60950-1
Case material	Nickel-coated copper
Base material	FR4 PCB
Potting material	Epoxy (UL94-V0)
Dimensions	3.94 X 2.76 X 0.75 Inch (100.2 X 70.1 X 19.0 mm)
Weight	280g (9.86oz)
MTBF (Note 1)	1.533 x 10 ⁶ hrs

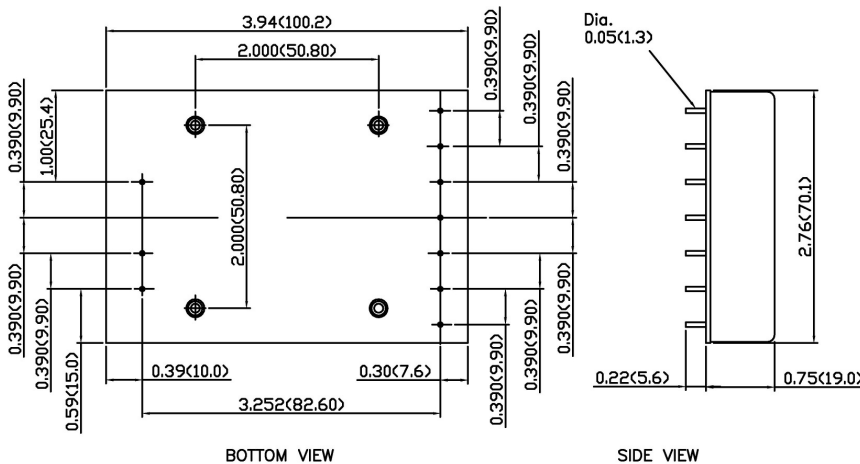
INPUT SPECIFICATIONS	
Input voltage range	12VDC nominal input 9 ~ 18VDC
	24VDC nominal input 18 ~ 36VDC
	48VDC nominal input 36 ~ 75VDC
Input filter	Pi type
Input surge voltage	12VDC input 36VDC 100ms, max.
	24VDC input 50VDC 100ms, max.
	48VDC input 100VDC 100ms, max.
Input reflected ripple current	40mA _{p-p}
Start up time	Nominal input and constant resistive load Power up 25ms
Remote ON/OFF	DC-DC ON Open or 3.5V < Vr < 12V DC-DC OFF Short or 0V < Vr < 1.2V
Remote off input current	Nominal input 30mA
ENVIRONMENTAL SPECIFICATIONS	
Operating ambient temperature	-25°C ~ +71°C (with derating)
Maximum case temperature	+95°C
Storage temperature range	-25°C ~ +100°C
Thermal impedance	5.29°C/watt
Thermal shock	MIL-STD-810F
Vibration	MIL-STD-810F
Relative humidity	5% to 95% RH
EMC CHARACTERISTICS	
Conducted emissions	EN55022 Class A
Radiated emissions	EN55022 Class A

Model Number	Input Range	Output Voltage	Output Current	Output Ripple & Noise	Eff (%)	Capacitor Load max
FDC60-12S33	9 ~ 18 VDC	3.3 VDC	15A	50mVp-p	80	38700μF
FDC60-12S05	9 ~ 18 VDC	5 VDC	12A	75mVp-p	83	20400μF
FDC60-12S12	9 ~ 18 VDC	12 VDC	5A	120mVp-p	84	3550μF
FDC60-12S15	9 ~ 18 VDC	15 VDC	4A	150mVp-p	84	2300μF
FDC60-12D05	9 ~ 18 VDC	± 5 VDC	+10 / -2A	75mVp-p	81	17000 / 3400μF
FDC60-12D12	9 ~ 18 VDC	± 12 VDC	± 2.5A	120mVp-p	84	± 900μF
FDC60-12D15	9 ~ 18 VDC	± 15 VDC	± 2A	150mVp-p	84	± 600μF
FDC60-12D3305	9 ~ 18 VDC	3.3 / 5VDC	6 / 6A	50mVp-p / 75mVp-p	76	16000 / 10200μF
FDC60-24S33	18 ~ 36 VDC	3.3 VDC	15A	50mVp-p	79	38700μF
FDC60-24S05	18 ~ 36 VDC	5 VDC	12A	75mVp-p	85	20400μF
FDC60-24S12	18 ~ 36 VDC	12 VDC	5A	120mVp-p	88	3550μF
FDC60-24S15	18 ~ 36 VDC	15 VDC	4A	150mVp-p	89	2300μF
FDC60-24D05	18 ~ 36 VDC	± 5 VDC	+10 / -2A	75mVp-p	84	17000 / 3400μF
FDC60-24D12	18 ~ 36 VDC	± 12 VDC	± 2.5A	120mVp-p	86	± 900μF
FDC60-24D15	18 ~ 36 VDC	± 15 VDC	± 2A	150mVp-p	87	± 600μF
FDC60-24D3305	18 ~ 36 VDC	3.3 / 5VDC	6 / 6A	50mVp-p / 75mVp-p	81	16000 / 10200μF
FDC60-48S33	36 ~ 75 VDC	3.3 VDC	15A	50mVp-p	83	38700μF
FDC60-48S05	36 ~ 75 VDC	5 VDC	12A	75mVp-p	86	20400μF
FDC60-48S12	36 ~ 75 VDC	12 VDC	5A	120mVp-p	89	3550μF
FDC60-48S15	36 ~ 75 VDC	15 VDC	4A	150mVp-p	90	2300μF
FDC60-48D05	36 ~ 75 VDC	± 5 VDC	+10 / -2A	75mVp-p	85	17000 / 3400μF
FDC60-48D12	36 ~ 75 VDC	± 12 VDC	± 2.5A	120mVp-p	90	± 900μF
FDC60-48D15	36 ~ 75 VDC	± 15 VDC	± 2A	150mVp-p	90	± 600μF
FDC60-48D3305	36 ~ 75 VDC	3.3 / 5VDC	6 / 6A	50mVp-p / 75mVp-p	83	16000 / 10200μF

- Note
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
 - Typical value at nominal input and full load. (20MHz BW.)
 - Typical value at nominal input and full load.
 - Test by minimum input and constant resistive load.
 - Cross regulation:
Dual output—Asymmetrical load 25% to 100% full load

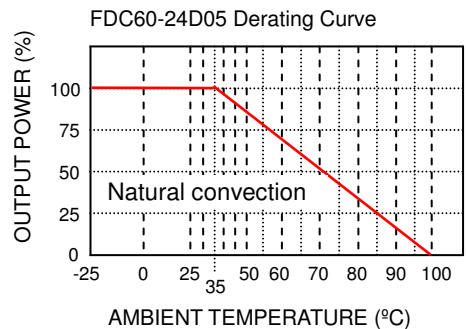
CAUTION: This power module is not internally fused. An input line fuse must always be used.

MECHANICAL DRAWING :



Mounting inserts screw type : No.4-40UNC X 0.24(6.0)deep

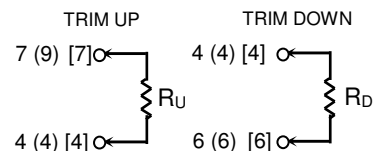
- All dimensions in Inch (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.01 (0.25)
- Pin dimension tolerance ±0.004 (0.1)



EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.

- () for dual output trim
- [] XXD3305 only trim 3.3V



PIN CONNECTION

PIN	SINGLE	DUAL	D3305	PIN	SINGLE	DUAL	D3305
1	+INPUT	+INPUT	+INPUT	6	+OUTPUT	+OUTPUT	+3.3V
2	-INPUT	-INPUT	-INPUT	7	-OUTPUT	COMMON	COMMON
3	CTRL	CTRL	CTRL	8	-OUTPUT	COMMON	COMMON
4	TRIM	TRIM	TRIM	9	NO PIN	-OUTPUT	+5V
5	+OUTPUT	+OUTPUT	+ 3.3V	10	NO PIN	-OUTPUT	+5V