

FDC40-SERIES

- 40 WATTS OUTPUT POWER
- 2:1 WIDE INPUT VOLTAGE RANGE
- INTERNATIONAL SAFETY APPROVAL PENDING
- SIX-SIDED CONTINUOUS SHIELD
- HIGH EFFICIENCY UP TO 90%
- STANDARD 3" X 2.6" X 0.4" PACKAGE
- FIXED SWITCHING FREQUENCY

The FDC40 offer 40 Watts of output power from a 3 x 2.6 x 0.4 inch package. The FDC40 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC. The FDC40 features 1600VDC of isolation, short-circuit and over-voltage protection, as well as six sided shielding. Designed meets the safety of EN60950 and UL1950. 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		40 Watts max
Voltage accuracy	Full load and nominal Vin	Single & Dual ± 2%
		Triple 3.3V/5V ± 2%
		Auxiliary ± 5%
Voltage adjustability		± 10%
Minimum load (Note1)	FDC40-XXD3305 3.3Voutput	20% min
	Others	10% of full load
Line regulation	LL to HL at FL single (dual)	± 0.5% (± 1%)
	Triple 3.3V / 5V	± 2%
	Auxiliary	± 5%
Load regulation	10% to 100% FL Single	± 0.5%
	Dual	± 1%
	Triple 3.3V/5V	± 2%
	Auxiliary	± 5%
Cross regulation (Note2)	Dual	± 1%
	Triple 3.3V / 5V	± 1%
	Auxiliary	± 5%
Ripple and noise	20MHz bandwidth	1% pk-pk of Vout
Temperature coefficient		± 0.02% / °C, max
Transient response recovery time	25% load step change	500uS
Over voltage	3.3V output	3.9V
Zener diode clamp	5V output	6.2V
	12V output	15V
	15V output	18V
Short circuit protection		Hiccup, automatics recovery
INPUT SPECIFICATIONS		
Input voltage range	12V nominal input	9 – 18VDC
	24V nominal input	18 – 36VDC
	48V nominal input	36 – 75VDC
Input filter		Pi type
Input surge voltage 100mS max	12V input	36VDC
	24V input	50VDC
	48V input	100VDC
Input reflected ripple (Note3)		40mA _{p-p}
Start up time	Nominal Vin and constant resistor load	25mS typ
Remote ON/OFF (Note4)	DC-DC ON	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote off input current		30mA

GENERAL SPECIFICATIONS		
Efficiency		See table
Isolation Voltage		1600VDC
Isolation resistance		10 ⁹ ohms
Isolation capacitance		500pF
Switching frequency		185KHz
Approvals and standard		UL1950, EN60950
Case material		Nickel-coated copper
Base material		Non-conducted black FR4
Potting material		Epoxy (UL94-Vo)
Dimensions		3.00 x 2.60 x 0.40 Inches
		(70.2 x 66.0 x 10.2 mm)
Weight		125g (4.4 oz)
MTBF	MIL-HDBK-217F, TA=25°C full load	2.294 x 10 ⁵ hours
ENVIRONMENTAL SPECIFICATIONS		
Operation temperature range		-40°C to +85°C (With derating)
Maximum case temperature		+100°C
Storage temperature range		-55°C to +105°C
Thermal impedance	Nature convection	5.7°C/watt
Thermal shock		Mil-STD-810D
Vibration	10~55Hz, 2G, 3minutes period, 30minutes along X,Y and Z	
Relative humidity		5% to 95% RH
EMC CHARACTERISTICS		
Conducted emissions	EN55022	Level A
Radiated emissions	EN55022	Level A
Conducted immunity	EN61000-4-6	Perf. Criteria2
Radiated immunity	EN61000-4-3	Perf. Criteria2
Surge	EN61000-4-5	Perf. Criteria2
Fast transient	EN61000-4-4	Perf. Criteria2
ESD	EN61000-4-2	Perf. Criteria2

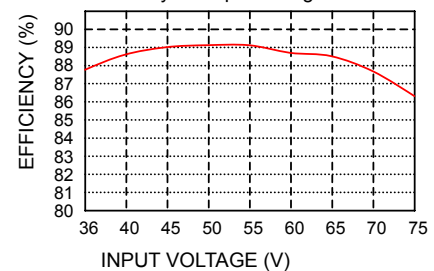
40 WATTS DC-DC CONVERTER

Model Number	Input Range	Output Voltage	Output Current	Input Current ⁽⁵⁾	Eff ⁽⁶⁾ (%)	Capacitor Load max.
FDC40-12S33	9 – 18 VDC	3.3VDC	10A	3.53A	83	25800uF
FDC40-12S05	9 – 18 VDC	5VDC	8A	4.17A	84	13600uF
FDC40-12S12	9 – 18 VDC	12VDC	3.4A	4.10A	87	2400uF
FDC40-12S15	9 – 18 VDC	15VDC	2.7A	4.10A	87	1550uF
FDC40-12D05	9 – 18 VDC	±5VDC	+7A / -1A	4.33A	81	12000 / 1700uF
FDC40-12D12	9 – 18 VDC	±12VDC	±1.8A	4.55A	83	±1200uF
FDC40-12D15	9 – 18 VDC	±15VDC	±1.4A	4.43A	83	±750uF
FDC40-12D3305	9 – 18 VDC	3.3 / 5VDC	4A / 4A	3.73A	78	10300 / 6800uF
FDC40-12T0512	9 – 18 VDC	5 / ±12VDC	4A / ±850mA	4.49A	79	6800/±590uF
FDC40-12T0515	9 – 18 VDC	5 / ±15VDC	4A / ±680mA	4.43A	80	6800/±380uF
FDC40-24S33	18 – 36 VDC	3.3VDC	10A	1.72A	84	25800uF
FDC40-24S05	18 – 36 VDC	5VDC	8A	2.01A	87	13600uF
FDC40-24S12	18 – 36 VDC	12VDC	3.4A	1.98A	90	2400uF
FDC40-24S15	18 – 36 VDC	15VDC	2.7A	2.00A	88	1550uF
FDC40-24D05	18 – 36 VDC	±5VDC	+7A / -1A	2.13A	82	12000 / 1700uF
FDC40-24D12	18 – 36 VDC	±12VDC	±1.8A	2.17A	87	±1200uF
FDC40-24D15	18 – 36 VDC	±15VDC	±1.4A	2.14A	86	±750uF
FDC40-24D3305	18 – 36 VDC	3.3 / 5VDC	4A / 4A	1.84A	79	10300 / 6800uF
FDC40-24T0512	18 – 36 VDC	5 / ±12VDC	4A / ±850mA	2.18A	81	6800/±590uF
FDC40-24T0515	18 – 36 VDC	5 / ±15VDC	4A / ±680mA	2.16A	82	6800/±380uF
FDC40-48S33	36 – 75 VDC	3.3VDC	10A	0.85A	85	25800uF
FDC40-48S05	36 – 75 VDC	5VDC	8A	0.98A	89	13600uF
FDC40-48S12	36 – 75 VDC	12VDC	3.4A	1.00A	89	2400uF
FDC40-48S15	36 – 75 VDC	15VDC	2.7A	1.00A	88	1550uF
FDC40-48D05	36 – 75 VDC	±5VDC	+7A / -1A	1.06A	84	12000 / 1700uF
FDC40-48D12	36 – 75 VDC	±12VDC	±1.8A	1.10A	86	±1200uF
FDC40-48D15	36 – 75 VDC	±15VDC	±1.4A	1.10A	86	±750uF
FDC40-48D3305	36 – 75 VDC	3.3 / 5VDC	4A / 4A	0.91A	80	10300 / 6800uF
FDC40-48T0512	36 – 75 VDC	5 / ±12VDC	4A / ±850mA	1.06A	83	6800/±590uF
FDC40-48T0515	36 – 75 VDC	5 / ±15VDC	4A / ±680mA	1.06A	83	6800/±380uF

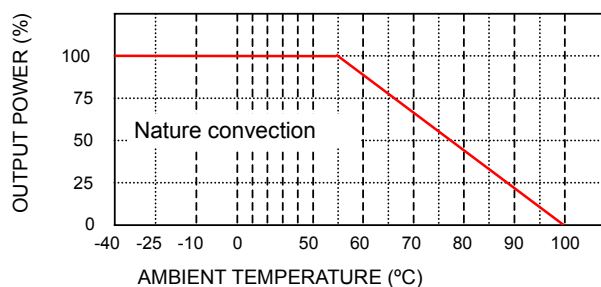
Note

- The FDC40 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.
- Cross regulation:
Dual output—Asymmetrical load 25% to 100% full load
Triple output – 3.3V / 5V 100% load and one of auxiliary 100% load, other auxiliary load change from 25% to 100% load
- Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
- The ON-OFF control pin voltage is reference to negative input.
- Maximum value at nominal input voltage and full load
- Typical value at nominal input voltage and full load

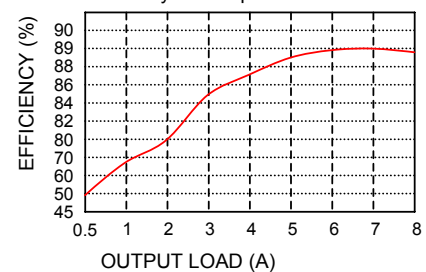
FDC40-48S05
Efficiency VS Input Voltage



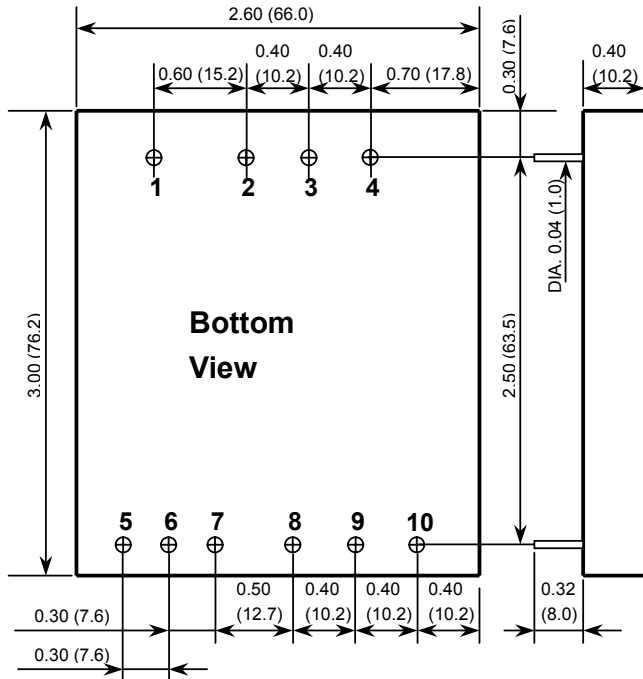
FDC40-48S05 Derating Curve



FDC40-48S05
Efficiency VS Output load



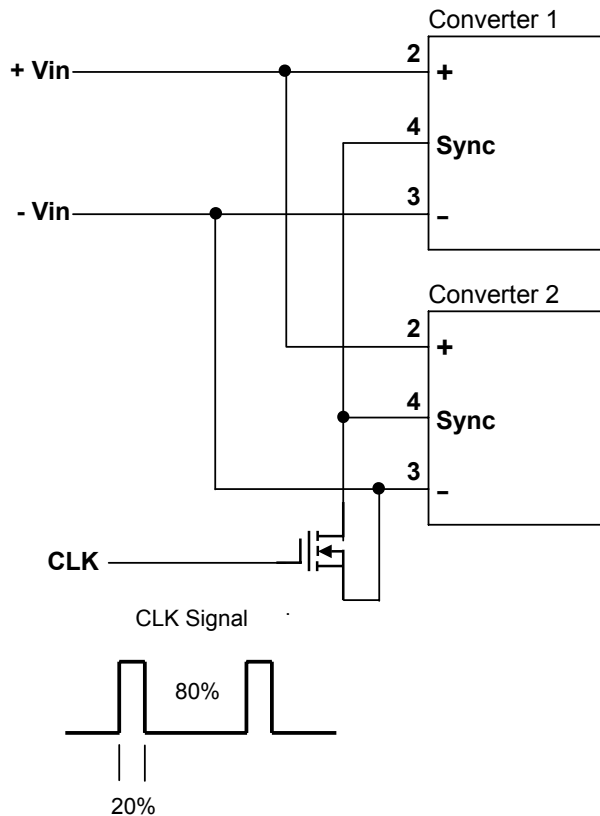
40 WATTS DC-DC CONVERTER



- All dimensions in Inches (mm)
- Pin pitch tolerance $\pm 0.014(0.35)$

EXTERNAL OUTPUT TRIMMING			
Single	Dual	Triple	3.3V/5V
7	7	9	6
6	8	10	8
5	5	8	5

PIN CONNECTION				
PIN	SINGLE	DUAL	TRIPLE	3.3V / 5V
1	CTRL	CTRL	CTRL	CTRL
2	+ INPUT	+ INPUT	+ INPUT	+ INPUT
3	- INPUT	- INPUT	- INPUT	- INPUT
4	SYNC	SYNC	SYNC	SYNC
5	TRIM DOWN	+ OUTPUT	+ AUX	+3.3V
6	TRIM	COMMON	COMMON (AUX)	COMMON
7	TRIM UP	- OUTPUT	- AUX	+ 5V
8	+ OUTPUT	TRIM	+ OUTPUT	TRIM
9	- OUTPUT	NC	- OUTPUT	NC
10	NO PIN	NC	TRIM	NC



Application of synchronization

- The unit is capable of external synchronization from an independent time base with a switching rate between 200kHz and 215kHz
- The amplitude of the synchronizing pulse train is TTL compatible
- The duty cycle of the CLK should be 20% high and 80% low
- Synchronization is referenced to negative input (-Vin)

ON/OFF Control application

