



DFED20 SERIES

DIN RAIL DC-DC CONVERTER

2:1 WIDE INPUT RANGE
UP TO 20 Watts



FEATURES

- NO MINIMUM LOAD REQUIRED
- 1600VDC INPUT TO OUTPUT ISOLATION
- SCREW TERMINALS FOR INPUT AND OUTPUT CONNECTIONS
- RELIABLE SNAP-ON FOR DIN RAIL TS-35/7.5 OR TS-35/15
- CASE PROTECTION MEET IP20(IEC60529)
- INTERNAL OUTPUT DC-OK INDICATOR
- MEET EN55022 CLASS B
- SAFETY MEETS UL60950-1, EN60950-1, & IEC60950-1
- CE MARKED
- COMPLIANT TO RoHS II & REACH

APPLICATIONS

- COMMUNICATION SYSTEM
- INDUSTRY CONTROL SYSTEM
- FACTORY AUTOMATIC EQUIPMENT
- SEMICONDUCTOR EQUIPMENT

1600VDC ISOLATION	REMOTE CONTROL	OCP	SCP	OVP	FUSE INCLUDED	INRUSH LIMIT	REVERSE POLARITY PROTECTION
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TECHNICAL SPECIFICATION

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

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load (1)
	VDC	VDC	mA	mA	%	μF
DFED20-12S3P3	9.5 ~ 18	3.3	5000	118	83	13000
DFED20-12S05	9.5 ~ 18	5	4000	79	85	6800
DFED20-12S12	9.5 ~ 18	12	1670	97	84	2200
DFED20-12S15	9.5 ~ 18	15	1330	44	84	755
DFED20-12D12	9.5 ~ 18	±12	±833	52	84	±680
DFED20-12D15	9.5 ~ 18	±15	±667	59	84	±450
DFED20-24S3P3	18 ~ 36	3.3	5000	32	84	13000
DFED20-24S05	18 ~ 36	5	4000	37	87	6800
DFED20-24S12	18 ~ 36	12	1670	59	85	2200
DFED20-24S15	18 ~ 36	15	1330	45	85	755
DFED20-24D12	18 ~ 36	±12	±833	34	85	±680
DFED20-24D15	18 ~ 36	±15	±667	35	86	±450
DFED20-48S3P3	36 ~ 75	3.3	5000	17	85	13000
DFED20-48S05	36 ~ 75	5	4000	22	87	6800
DFED20-48S12	36 ~ 75	12	1670	38	86	2200
DFED20-48S15	36 ~ 75	15	1330	53	85	755
DFED20-48D12	36 ~ 75	±12	±833	23	86	±680
DFED20-48D15	36 ~ 75	±15	±667	23	86	±450

PART NUMBER STRUCTURE

DFED20	-	48	S	05	-	N
Series Name		Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)		Remote Control Option
		12: 9.5~18 24: 18~36 48: 36~75	S: Single D: Dual	3P3: 3.3 05: 5 12: 12 15: 15 12: ±12 15: ±15		□: Positive logic N: Negative logic

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	12Vin(nom)		9.5	12	18	VDC
	24Vin(nom)		18	24	36	
	48Vin(nom)		36	48	75	
Input fuse (slow blow)	12Vin(nom)			6		A
	24Vin(nom)			6		
	48Vin(nom)			4		
In-rush current				15		A
Input reflected ripple current	Nominal input and Full load			10		mAp-p
Start up time	Nominal input and Constant resistive load	Power up		100		ms
		Remote ON/OFF		10		
Input surge voltage	100ms, max.	12Vin(nom)			36	VDC
		24Vin(nom)			50	
		48Vin(nom)			100	
Remote ON/OFF	Referred to -Vin pin	Positive logic	DC-DC ON	Open or 3 ~ 12VDC		mA
		(Standard)	DC-DC OFF	Short or 0 ~ 1.2VDC		
		Negative logic	DC-DC ON	Short or 0 ~ 1.2VDC		
		(Option)	DC-DC OFF	Open or 3 ~ 12VDC		
		Input current of Ctrl pin		-0.5	0.5	
Remote off input current			2.5			

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy	3.3Vout		-1.5		+1.5	%
	Others		-1.0		+1.0	
Line regulation	Low Line to High Line at Full Load	Single	-0.2		+0.2	%
		Dual	-0.5		+0.5	
Load regulation	No Load to Full Load		-1.5		+1.5	%
Cross regulation	Asymmetrical load 25%/100% FL		-5.0		+5.0	%
Voltage adjustability	Single output		-10		+10	%
Ripple and noise	Measured by 20MHz bandwidth	Single	3.3Vout,	60		mVp-p
			5Vout, 12Vout, 15Vout	75		
		Dual	All	100		
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change			250		µs
Over voltage protection	Zener diode clamp	3.3Vout		3.9		VDC
		5Vout		6.2		
		12Vout		15		
		15Vout		18		
Output indicator			Green LED			
Over load protection	% of lout rated; Hiccup mode			150		%
Short circuit protection			Continuous, automatic recovery			

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output	1600			VDC
		Input (Output) to Chassis	1600			
Isolation resistance	500VDC		1			GΩ
Isolation capacitance					4000	pF
Switching frequency			450	500	550	kHz
Safety meets			UL60950-1 EN60950-1 IEC60950-1			
Chassis material			Aluminum			
Weight			147.5g (5.19oz)			
MTBF	MIL-HDBK-217F, Full load		1.682 x 10 ⁶ hrs			

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating With derating	-40 +73		+73 +90	°C
Storage temperature range		-40		+105	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

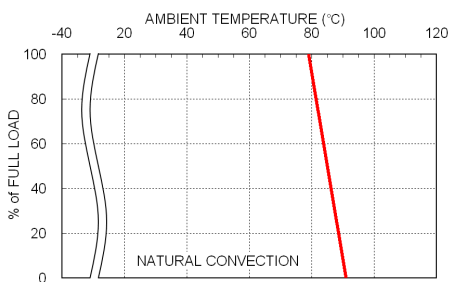
EMC SPECIFICATIONS

Parameter	Conditions	Level
EMI	EN55022	Class B
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ± 2kV	Perf. Criteria A
Surge	EN61000-4-5 ± 0.5kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 10Vr.m.s	Perf. Criteria A

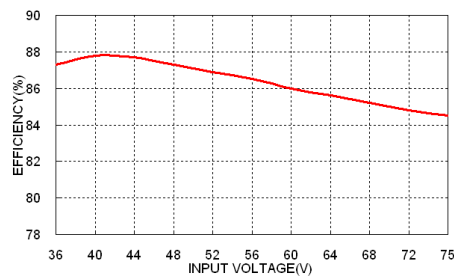
Note:

1. Test by minimum input and constant resistive load.

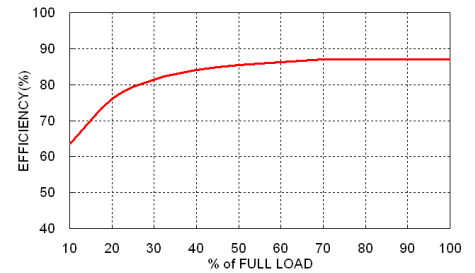
CHARACTERISTIC CURVE



DFED20-48S05 Derating Curve

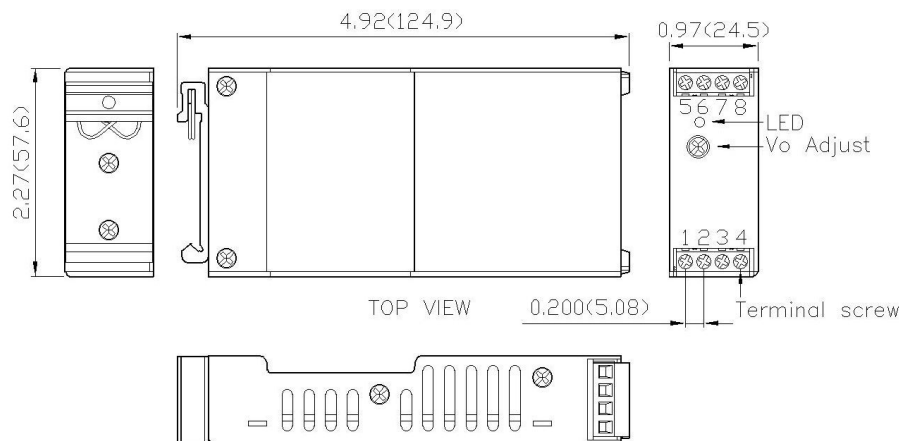


DFED20-48S05 Efficiency vs. Input Voltage



DFED20-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING



PIN CONNECTION

PIN	SINGLE	DUAL
1	Ctrl	Ctrl
2	-Vin	-Vin
3	-Vin	-Vin
4	+Vin	+Vin
5	NC	NC
6	-Vout	-Vout
7	+Vout	Common
8	NC	+Vout

* NC : No Connection

* Screw terminals – wire range from 14 to 18 AWG

1. All dimensions in Inch (mm)
2. Tolerance : X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
3. Terminal screw locked torque :
MAX 2.5kgf-cm (0.25N-m)