



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

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

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 (Standard)	DC-DC ON	Open or 3 ~ 12VDC		mA
			DC-DC OFF	Short or 0 ~ 1.2VDC		
		Negative logic (Option)	DC-DC ON	Short or 0 ~ 1.2VDC		
			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 Iout 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

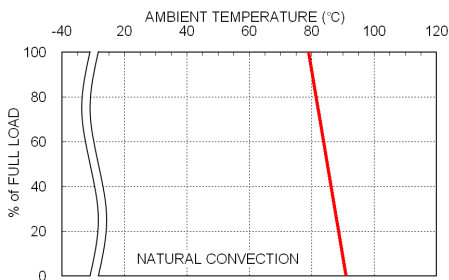
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	-40		+73	°C
	With derating	+73		+90	
Storage temperature range		-40		+105	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

EMC SPECIFICATIONS

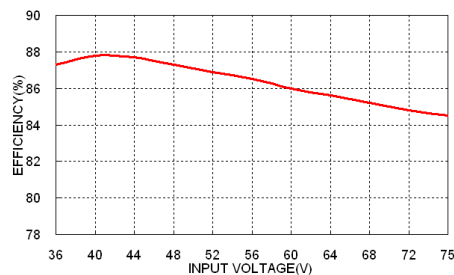
Parameter	Conditions	Level
EMI	EN55022	Class B
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ± 2kV	Perf. Criteria A
Surge	EN61000-4-5 ± 0.5kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 10Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 100A/m continuous; 1000A/m 1 second	Perf. Criteria A

Note:

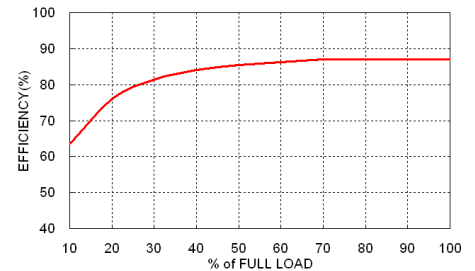
1. Test by minimum input and constant resistive load.

CHARACTERISTIC CURVE


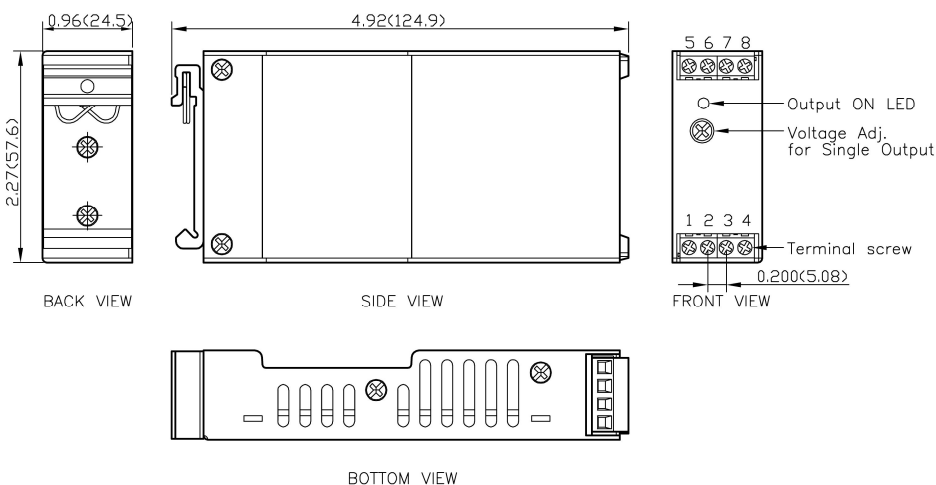
DFED20-48S05 Derating Curve



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)