



DFEC15W SERIES

DIN RAIL DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE
UP TO 15 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	UVP	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 VDC	Output Voltage VDC	Output Current @Full Load mA	Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load (1) µF
DFEC15-24S3P3W	9.5 ~ 36	3.3	4500	52mA	84	14700
DFEC15-24S05W	9.5 ~ 36	5	3000	67mA	85	7200
DFEC15-24S5P1W	9.5 ~ 36	5.1	3000	67mA	85	7200
DFEC15-24S12W	9.5 ~ 36	12	1250	26mA	85	1250
DFEC15-24S15W	9.5 ~ 36	15	1000	26mA	85	800
DFEC15-24D05W	9.5 ~ 36	±5	±1500	57mA	85	±3600
DFEC15-24D12W	9.5 ~ 36	±12	±625	35mA	86	±625
DFEC15-24D15W	9.5 ~ 36	±15	±500	35mA	86	±400
DFEC15-48S3P3W	18 ~ 75	3.3	4500	37mA	84	14700
DFEC15-48S05W	18 ~ 75	5	3000	38mA	86	7200
DFEC15-48S5P1W	18 ~ 75	5.1	3000	38mA	86	7200
DFEC15-48S12W	18 ~ 75	12	1250	18mA	85	1250
DFEC15-48S15W	18 ~ 75	15	1000	18mA	85	800
DFEC15-48D05W	18 ~ 75	±5	±1500	37mA	86	±3600
DFEC15-48D12W	18 ~ 75	±12	±625	20mA	86	±625
DFEC15-48D15W	18 ~ 75	±15	±500	20mA	86	±400

PART NUMBER STRUCTURE

DFEC15 -	48	S	05	W -	P
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Remote Control Option
	24: 9.5~36 48: 18~75	S: Single D: Dual	3P3: 3.3 05: 5 5P1 5.1 12: 12 15: 15 05: ±5 12: ±12 15: ±15	4:1	P: Positive logic N: Negative logic

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom)		9.5	24	36	VDC
	48Vin(nom)		18	48	75	
Input fuse (slow blow)	24Vin(nom)			6		A
	48Vin(nom)			4		
In-rush current				15		A
Input reflected ripple current	Nominal input and Full load			10		mAp-p
Start up voltage	24Vin(nom)				9.5	VDC
	48Vin(nom)				18	
Shutdown voltage	24Vin(nom)			7.5		VDC
	48Vin(nom)			15		
Start up time	Nominal input and Constant resistive load	Power up		100		ms
Input surge voltage	100ms, max.	24Vin(nom)			50	VDC
		48Vin(nom)			100	
Remote ON/OFF (Option)	Referred to -Vin pin	Positive logic	DC-DC ON	Open or 3 ~ 12VDC		mA
			DC-DC OFF	Short or 0 ~ 1.2VDC		
		Negative logic	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		mA

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy	3.3Vout		-2.0		+2.0	%
	Others		-1.2		+1.2	
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	3.3Vout	-2.0		+2.0	%
		Others	-1.5		+1.5	
Cross regulation	Asymmetrical load 25%/100% FL		-5.0		+5.0	%
Ripple and noise	Measured by 20MHz bandwidth	Single	3.3Vout, 5Vout, 5.1Vout	50		mVp-p
			12Vout, 15Vout	75		
			Dual All	75		
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, 5.1Vout		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			360	400	440	kHz
Safety meets						UL60950-1 EN60950-1 IEC60950-1
Chassis material						Aluminum
Weight					147.5g (5.19oz)	
MTBF	MIL-HDBK-217F, Full load					1.681 x 10 ⁶ hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating With derating	-40 +85		+85 +95	°C
Storage temperature range		-40		+105	°C
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

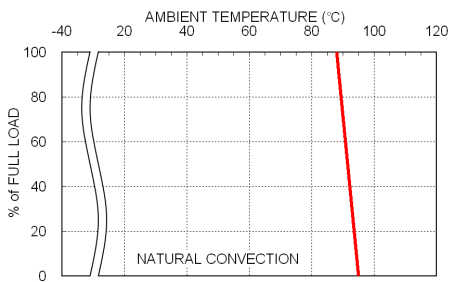
EMC SPECIFICATIONS

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

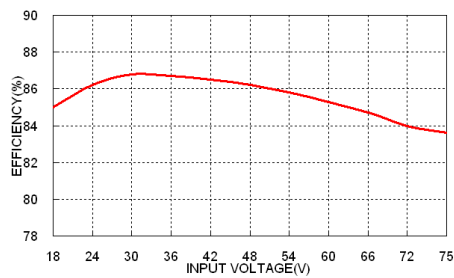
Note:

1. Test by minimum input and constant resistive load.

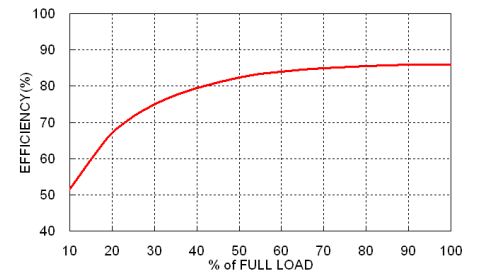
CHARACTERISTIC CURVE



DFEC15-48S05W Derating Curve

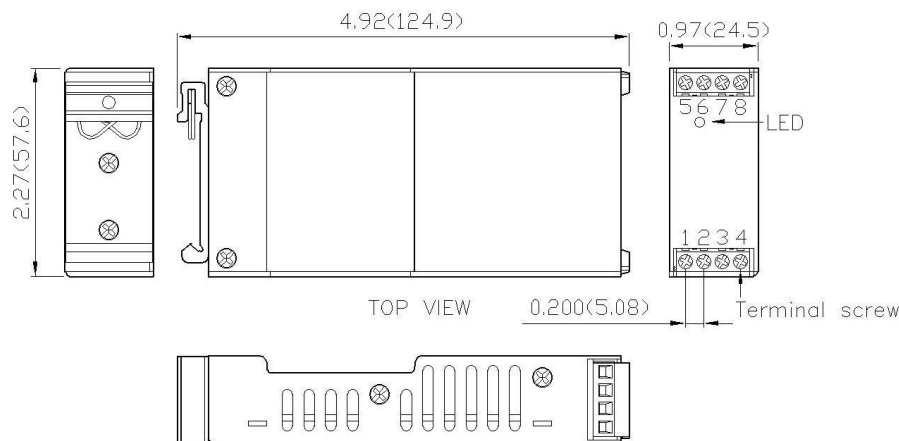


DFEC15-48S05W Efficiency vs. Input Voltage



DFEC15-48S05W Efficiency vs. Output Load

MECHANICAL DRAWING



PIN CONNECTION

PIN	SINGLE	DUAL
1	Ctrl(Optional)	Ctrl(Optional)
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)