



# DFEC30W SERIES

CHASSIS-MOUNT DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE  
UP TO 30 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
-------------------	----------------	-----	-----	-----	-----	---------------	--------------	-----------------------------

## 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	A	mA	%	µF
DFEC30-24S3P3W	10 ~ 40	3.3	6	52	85	19500
DFEC30-24S05W	10 ~ 40	5	6	67	85	10200
DFEC30-24S12W	10 ~ 40	12	2.5	69	85	3300
DFEC30-24S15W	10 ~ 40	15	2	75	86	1100
DFEC30-24S24W	10 ~ 40	24	1.25	39	82	500
DFEC30-24S28W	10 ~ 40	28	1	45	83	340
DFEC30-24D12W	10 ~ 40	±12	±1.25	34	82	±1000
DFEC30-24D15W	10 ~ 40	±15	±1	40	83	±680
DFEC30-48S3P3W	18 ~ 75	3.3	6	32	85	19500
DFEC30-48S05W	18 ~ 75	5	6	32	86	10200
DFEC30-48S12W	18 ~ 75	12	2.5	38	85	3300
DFEC30-48S15W	18 ~ 75	15	2	48	86	1100
DFEC30-48S24W	18 ~ 75	24	1.25	30	83	500
DFEC30-48S28W	18 ~ 75	28	1	30	84	340
DFEC30-48D12W	18 ~ 75	±12	±1.25	28	83	±1000
DFEC30-48D15W	18 ~ 75	±15	±1	28	84	±680

## PART NUMBER STRUCTURE

DFEC30 -	<b>48</b>	<b>S</b>	<b>05</b>	<b>W</b> -	<b>N</b>
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Remote Control Option
	24: 10-40 48: 18-75	S: Single	3P3: 3.3 05: 5 12: 12 15: 15 24: 24 28: 28	4:1	□: Positive logic N: Negative logic
		D: Dual	12: ±12 15: ±15		

**INPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom)	10	24	40	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		15		mAp-p
Start up voltage	24Vin(nom)			10	VDC
	48Vin(nom)			18	
Shutdown voltage	24Vin(nom)		8		VDC
	48Vin(nom)		16		
Start up time	Nominal input and Constant resistive load	Power up	100		ms
		Remote ON/OFF	20		
Input surge voltage	100ms, max.	24Vin(nom)		50	VDC
		48Vin(nom)		100	
Remote ON/OFF	Referred to -Vin pin	Positive logic	DC-DC ON	Open or 3 ~ 12VDC Short or 0 ~ 1.2VDC Short or 0 ~ 1.2VDC Open or 3 ~ 12VDC	mA
		(Standard)	DC-DC OFF		
		Negative logic	DC-DC ON		
		(Option)	DC-DC OFF		
		Input current of Ctrl pin			
Remote off input current			3	mA	

**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	-0.5		+0.5	%
Load regulation	No Load to Full Load	3.3Vout	-1.5	+1.5	%
		Others	-1.0	+1.0	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0	+5.0	%
Voltage adjustability	Single output	28Vout	-3	+17	%
		Others	-10	+10	
Ripple and noise	Measured by 20MHz bandwidth	Singl	3.3Vout, 5Vout,	50	mVp-p
			12Vout, 15Vout	75	
		24Vout, 28Vout	130		
	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	
		24Vout		30	
		28Vout		36	
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		270	300	330	kHz
Safety meets					UL60950-1 EN60950-1 IEC60950-1
Chassis material					Aluminum
Weight					170g (5.98oz)
MTBF	MIL-HDBK-217F, Full load				8.412 x 10 <sup>5</sup> hrs

## ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	-40		+65	°C
	With derating	+65		+93	
Storage temperature range		-40		+105	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

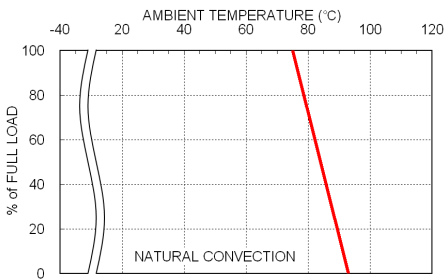
## EMC SPECIFICATIONS

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 ± 1kV	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

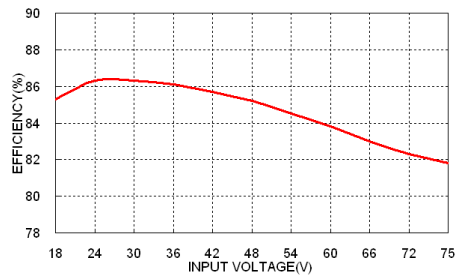
### Note:

1. Test by minimum input and constant resistive load.

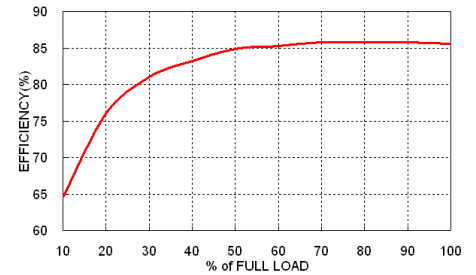
## CHARACTERISTIC CURVE



DFEC30-48S05W Derating Curve

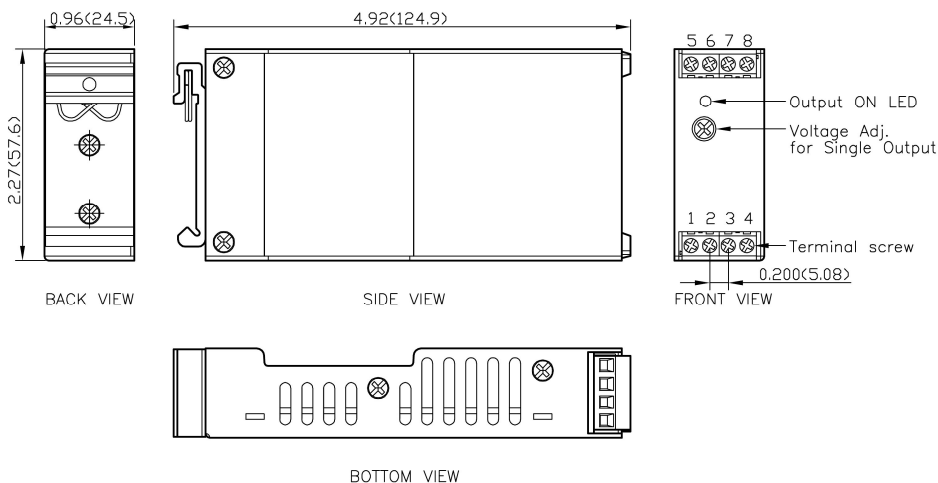


DFEC30-48S05W Efficiency vs. Input Voltage



DFEC30-48S05W 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)