



DFEC40W SERIES

CHASSIS-MOUNT DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE
UP TO 40 Watts



FEATURES

- 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	Output Voltage	Output Current @ Full Load		Input Current @ No Load	Efficiency	Maximum Capacitor Load (1)
	VDC	VDC	Min. Load mA	Full Load A	mA	%	µF
DFEC40-24S3P3W	9.5 ~ 36	3.3	0	10	83	85	25750
DFEC40-24S05W	9.5 ~ 36	5	0	8	103	86	13600
DFEC40-24S12W	9.5 ~ 36	12	0	3.33	56	85	2360
DFEC40-24S15W	9.5 ~ 36	15	0	2.67	56	85	1510
DFEC40-24S24W	9.5 ~ 36	24	0	1.67	76	84	600
DFEC40-24S28W	9.5 ~ 36	28	0	1.33	82	84	375
DFEC40-24D12W	9.5 ~ 36	±12	±65	±1.67	65	84	±1200
DFEC40-24D15W	9.5 ~ 36	±15	±50	±1.33	76	84	±750
DFEC40-48S3P3W	18 ~ 75	3.3	0	10	63	85	25750
DFEC40-48S05W	18 ~ 75	5	0	8	68	87	13600
DFEC40-48S12W	18 ~ 75	12	0	3.33	34	85	2360
DFEC40-48S15W	18 ~ 75	15	0	2.67	34	86	1510
DFEC40-48S24W	18 ~ 75	24	5	1.67	41	85	600
DFEC40-48S28W	18 ~ 75	28	0	1.33	41	84	375
DFEC40-48D12W	18 ~ 75	±12	±65	±1.67	34	85	±1200
DFEC40-48D15W	18 ~ 75	±15	±60	±1.33	34	84	±750

PART NUMBER STRUCTURE

DFEC40 -	48	S	05	W -	N
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Remote Control Option
	24: 9.5~36 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)		9.5	24	36	VDC
	48Vin(nom)		18	48	75	
Input fuse (slow blow)	24Vin(nom)			8		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)				9.5	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 (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		24Vin(nom)		10		mA
		48Vin(nom)		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		-0.5		+0.5	%
Load regulation	Min. Load to Full Load	3.3Vout	-2.0		+2.0	%
		Others	-1.0		+1.0	
Cross regulation	Asymmetrical load 25%/100% FL		-5.0		+5.0	%
Voltage adjustability	Single output	28Vout	-3		+17	%
		Others	-10		+10	
Ripple and noise	Measured by 20MHz bandwidth	Single	3.3Vout, 5Vout, 12Vout, 15Vout, 24Vout, 28Vout			mVp-p
		Dual	All		50, 75, 100, 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					4500	pF
Switching frequency			270	300	330	kHz
Safety meets						UL60950-1 EN60950-1 IEC60950-1
Chassis material						Aluminum
Weight						182g (6.40oz)
MTBF	MIL-HDBK-217F, Full load					7.632 x 10 ⁵ hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	-40		+63	°C
	With derating	+63		+87	
Storage temperature range		-40		+105	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

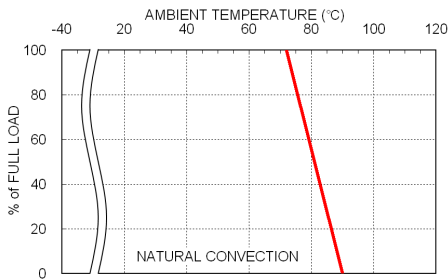
EMC SPECIFICATIONS

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

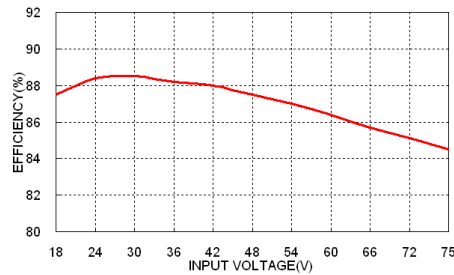
Note:

1. Test by minimum input and constant resistive load.

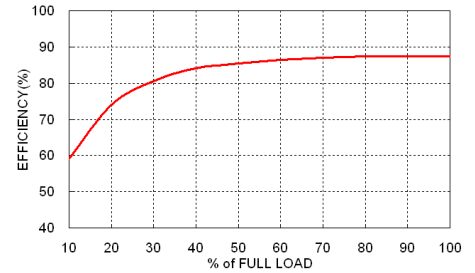
CHARACTERISTIC CURVE



DFEC40-48S05W Derating Curve

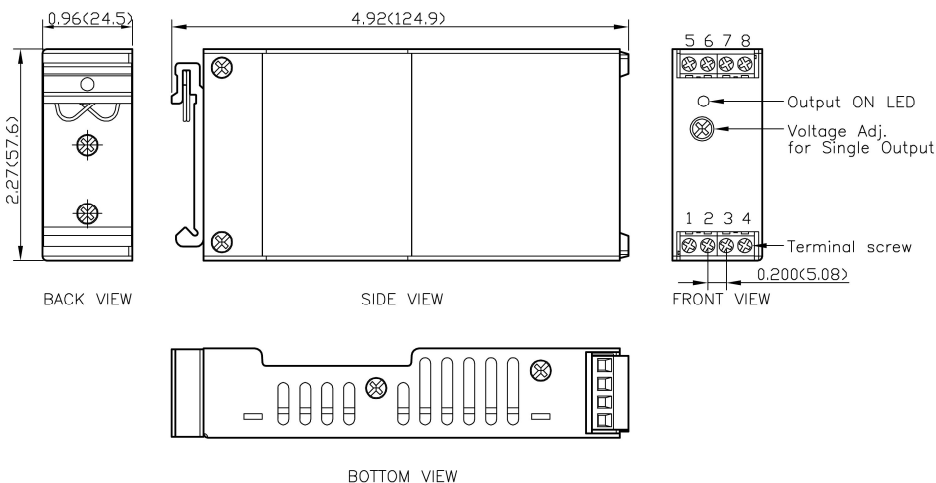


DFEC40-48S05W Efficiency vs. Input Voltage



DFEC40-48S05W 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)