



APPLICATIONS

Communication System
Industry Control System
Factory Automatic Equipment
Semiconductor Equipment

FEATURES

- DIN RAIL DC/DC CONVERTERS
- 30 WATTS MAXIMUM OUTPUT POWER
- OFFER SINGLE AND DUAL OUTPUT
- OVERLOAD AND SHORT CIRCUIT PROTECTION
- OVER VOLTAGE PROTECTION
- RELIABLE SNAP-ON FOR DIN RAIL TS-35/7.5 OR TS-35/15
- I/O-ISOLATION 1600 VDC
- CASE PROTECTION MEET IP20(IEC60529)
- INTERNAL INPUT FUSE PROTECTION
- INTERNAL INPUT REVERSAL POLARITY PROTECTION
- INTERNAL INPUT IN-RUSH CURRENT LIMIT CIRCUIT
- INTERNAL OUTPUT DC-OK INDICATOR
- MEET EN55022 CLASS B
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

DESCRIPTION

The DFEC30 series was designed to easy application of din rail DC-DC converters. Easy installation is provided with snap-on mounting on the DIN-rail. Internal protection circuits such as input reversal and in-rush current limit protection, as well as output short-circuit and over-voltage protection. A green LED at the front displays the status of the output(s).

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

TECHNICAL SPECIFICATION

OUTPUT SPECIFICATIONS			
Output power		30 Watts, max.	
Voltage accuracy	3.3Vout	± 1.5%	
	Others	± 1%	
Minimum load		0%	
Voltage adjustability (Note 6)	Single 28Vout	-3% ~ +17%	
	Single Others	± 10%	
Line regulation	LL to HL at Full load		± 0.5%
Load regulation	No load to Full load	3.3Vout	± 1.5%
		Others	± 1%
Load cross regulation (Note 7)	Dual		± 5%
Ripple and noise	20MHz bandwidth		See table
Temperature coefficient		±0.02% / °C, max.	
Transient response recovery time	25% load step change		300µs
Over voltage protection	3.3VDC output		3.9VDC
	5VDC output		6.2VDC
	12VDC output		15VDC
	15VDC output		18VDC
	24VDC output		30VDC
Zener diode clamp	28VDC output		36VDC
Output indicator			Green LED
Over load protection	% of FL at nominal input		150%, max.
Short circuit protection	Continuous, automatics recovery		
GENERAL SPECIFICATIONS			
Efficiency	See table		
Isolation voltage	Input to Output	1600VDC, min. 1minute	
	Input(Output) to Chassis	1600VDC, min. 1minute	
Isolation resistance	500VDC	10 ⁹ ohms, min.	
Isolation capacitance	4000pF, max.		
Switching frequency	300kHz±10%		
Design meets safety standard	IEC60950-1, UL60950-1, EN60950-1		
Chassis material	Aluminum		
Dimensions	4.92 X 2.27 X 0.97 Inch (125.0 X 57.6 X 24.5 mm)		
Weight	170g (5.98oz)		
MTBF (Note 1)	MIL-HDBK-217F	9.229 x 10 ⁵ hrs	

INPUT SPECIFICATIONS			
Input voltage range	12VDC nominal input	9.5 ~ 18VDC	
	24VDC nominal input	18 ~ 36VDC	
	48VDC nominal input	36 ~ 75VDC	
Input surge voltage 100mS max	12VDC input	36VDC 100ms, max.	
	24VDC input	50VDC 100ms, max.	
	48VDC input	100VDC 100ms, max.	
Input fuse (slow blow)	12VDC input	6A	
	24VDC input	6A	
	48VDC input	4A	
In-rush current		15A	
Input reflected ripple current		15mA p-p	
Start up time	Nominal input and constant resistive load	Power up	100ms
		Remote ON/OFF	25ms
Start-up voltage	12VDC input	9.5VDC	
	24VDC input	18VDC	
	48VDC input	36VDC	
Shutdown voltage	12VDC input	8VDC	
	24VDC input	16VDC	
	48VDC input	33VDC	
Remote ON/OFF (Note 8)			
(Positive logic)		DC-DC ON	Open or 3 V < Vr < 12V
		DC-DC OFF	Short or 0V < Vr < 1.2V
Input current of Remote control pin		Nominal input	-0.5mA ~ + 0.5mA
Remote off state input current		Nominal input	2.5mA
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature		-40°C ~ +68°C (without derating) +68°C ~ +90°C (with derating)	
Storage temperature range		-40°C ~ +105°C	
Thermal shock		MIL-STD-810F	
Vibration		MIL-STD-810F	
Relative humidity		5% to 95% RH	
EMC CHARACTERISTICS			
EMI	EN55022		Class B
ESD	EN61000-4-2	Air Contact	± 8kV ± 6kV Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/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	10 Vr.m.s	Perf. Criteria A

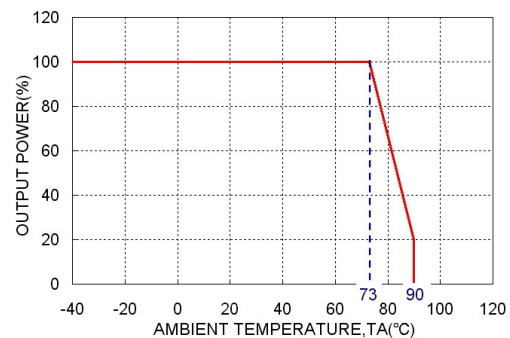


Model Number	Input Range	Output Voltage	Output Current		Output ⁽²⁾ Ripple & Noise	No load ⁽³⁾ Input Current	Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. load	Full load				
DFEC30-12S3P3	9.5 ~ 18 VDC	3.3 VDC	0mA	6000mA	50mVp-p	119mA	83	19500μF
DFEC30-12S05	9.5 ~ 18 VDC	5 VDC	0mA	6000mA	50mVp-p	100mA	85	10200μF
DFEC30-12S12	9.5 ~ 18 VDC	12 VDC	0mA	2500mA	75mVp-p	178mA	86	3240μF
DFEC30-12S15	9.5 ~ 18 VDC	15 VDC	0mA	2000mA	75mVp-p	220mA	86	1100μF
DFEC30-12S24	9.5 ~ 18 VDC	24 VDC	0mA	1250mA	100mVp-p	74mA	85	510μF
DFEC30-12S28	9.5 ~ 18 VDC	28 VDC	0mA	1000mA	100mVp-p	56mA	85	340μF
DFEC30-12D12	9.5 ~ 18 VDC	±12 VDC	0mA	±1250mA	100mVp-p	68mA	85	±1020μF
DFEC30-12D15	9.5 ~ 18 VDC	±15 VDC	0mA	±1000mA	100mVp-p	50mA	85	±675μF
DFEC30-24S3P3	18 ~ 36 VDC	3.3 VDC	0mA	6000mA	50mVp-p	52mA	84	19500μF
DFEC30-24S05	18 ~ 36 VDC	5 VDC	0mA	6000mA	50mVp-p	52mA	86	10200μF
DFEC30-24S12	18 ~ 36 VDC	12 VDC	0mA	2500mA	75mVp-p	84mA	87	3300μF
DFEC30-24S15	18 ~ 36 VDC	15 VDC	0mA	2000mA	75mVp-p	95mA	87	1100μF
DFEC30-24S24	18 ~ 36 VDC	24 VDC	0mA	1250mA	75mVp-p	38mA	86	510μF
DFEC30-24S28	18 ~ 36 VDC	28 VDC	0mA	1000mA	75mVp-p	39mA	86	340μF
DFEC30-24D12	18 ~ 36 VDC	±12 VDC	0mA	±1250mA	100mVp-p	34mA	86	±1020μF
DFEC30-24D15	18 ~ 36 VDC	±15 VDC	0mA	±1000mA	100mVp-p	35mA	86	±675μF
DFEC30-48S3P3	36 ~ 75 VDC	3.3 VDC	0mA	6000mA	50mVp-p	32mA	85	19500μF
DFEC30-48S05	36 ~ 75 VDC	5 VDC	0mA	6000mA	50mVp-p	37mA	87	10200μF
DFEC30-48S12	36 ~ 75 VDC	12 VDC	0mA	2500mA	75mVp-p	38mA	88	3300μF
DFEC30-48S15	36 ~ 75 VDC	15 VDC	0mA	2000mA	75mVp-p	58mA	88	1100μF
DFEC30-48S24	36 ~ 75 VDC	24 VDC	0mA	1250mA	75mVp-p	29mA	86	510μF
DFEC30-48S28	36 ~ 75 VDC	28 VDC	0mA	1000mA	75mVp-p	29mA	86	340μF
DFEC30-48D12	36 ~ 75 VDC	±12 VDC	0mA	±1250mA	100mVp-p	23mA	86	±1020μF
DFEC30-48D15	36 ~ 75 VDC	±15 VDC	0mA	±1000mA	100mVp-p	23mA	86	±675μF

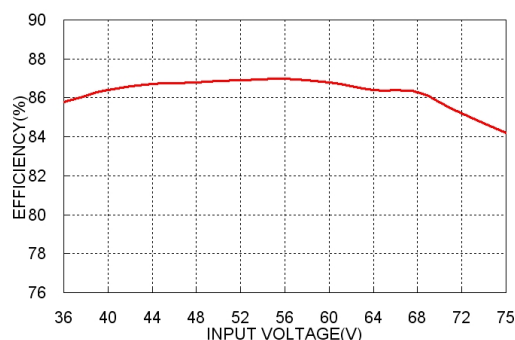
Note

1. MIL-HD MIL-HDBK-217F @Ta=25 °C, Full load.
2. Typical value at nominal input and full load. (20MHz BW.)
3. Typical value at nominal input and no load.
4. Typical value at nominal input and full load.
5. Test by minimum input and constant resistive load.
6. Single output installs a potentiometer to adjust the output voltage.
7. Cross regulation for dual output : asymmetrical load 25% / 100% FL
8. The ON/OFF control pin voltage is referenced to -INPUT

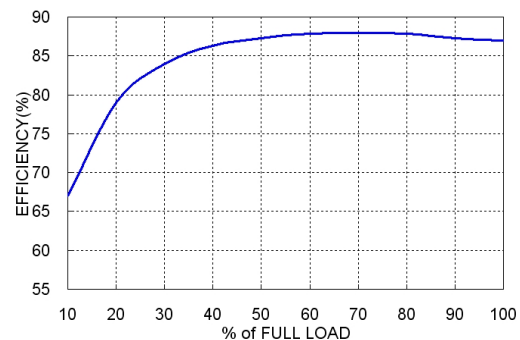
DFEC30-48S05 Derating Curve



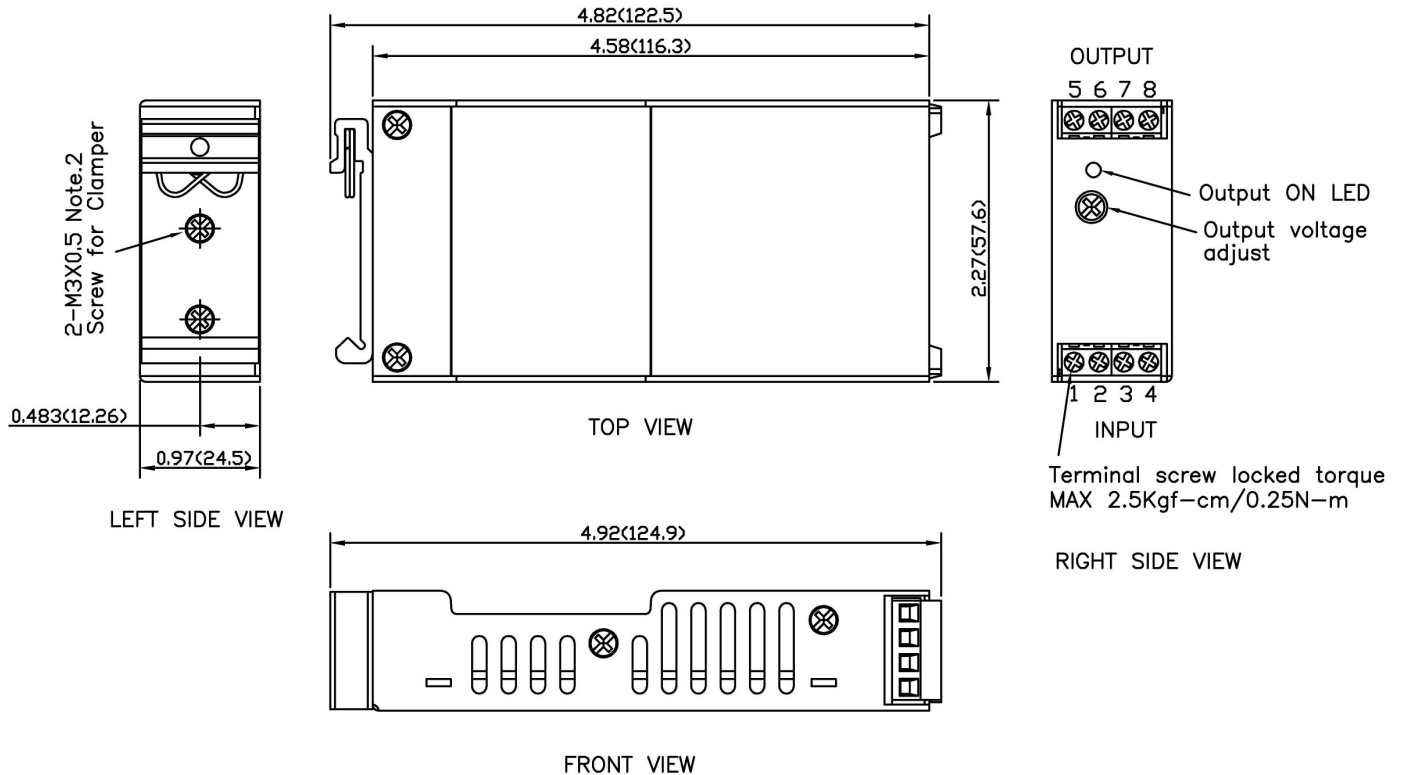
DFEC30-48S05 Efficiency VS Input Voltage



DFEC30-48S05 Efficiency VS Output Current



MECHANICAL DRAWING :



Note: 1.All dimensions in inch(mm)
Tolerance : x.xx±0.02(x.x±0.5)
x.xxx±0.01(x.xx±0.25)
2.The screw locked torque: MAX 5.0kgf-cm/0.49N-m

PIN CONNECTION		
PIN	SINGLE	DUAL
1	CTRL	CTRL
2	-INPUT	-INPUT
3	-INPUT	-INPUT
4	+INPUT	+INPUT
5	NC	NC
6	-OUTPUT	-OUTPUT
7	+OUTPUT	COMMON
8	NC	+OUTPUT

※ NC : No Connection

※ Screw terminals – wire range from 14 to 18 AWG