



3
YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway

CE UK
CA

1600
VDC
Isolation
Voltage

2 : 1
Input
Range

FUSE
Installed

INRUSH
CURRENT
LIMIT

Internal
EN55032
Class **B**
Filter

NO
Min. Load
Required

REMOTE
ON
OFF

REVERSE
POLARITY
PROTECTION

OCP

OVP

SCP

UVP

PART NUMBER STRUCTURE

DFEC60 -	48	S	05	-	N
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)		Remote Control Options
	24:18~36 48:36~75	S:Single	3P3:3.3 05:5 12:12 15:15 24:24		□:Positive logic N:Negative logic

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

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	A	mA	%	μF
DFEC60-24S3P3	18 ~ 36	3.3	14	104	87	36000
DFEC60-24S05	18 ~ 36	5	12	134	88	20400
DFEC60-24S12	18 ~ 36	12	5	59	88	3550
DFEC60-24S15	18 ~ 36	15	4	74	88	2300
DFEC60-24S24	18 ~ 36	24	2.5	76	87	855
DFEC60-48S3P3	36 ~ 75	3.3	14	102	87	36000
DFEC60-48S05	36 ~ 75	5	12	94	89	20400
DFEC60-48S12	36 ~ 75	12	5	37	88	3550
DFEC60-48S15	36 ~ 75	15	4	42	88	2300
DFEC60-48S24	36 ~ 75	24	2.5	45	88	855

INPUT SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom) 48Vin(nom)		18 36	24 48	36 75	VDC
Input fuse	slow blow	24Vin(nom) 48Vin(nom)		8 4		A
In-rush current				15		A
Start up voltage		24Vin(nom) 48Vin(nom)			18 36	VDC
Shutdown voltage		24Vin(nom) 48Vin(nom)	14.5 31	15.5 32	17.5 35.5	VDC
Start up time	Constant resistive load	Power up Remote ON/OFF		100 20		ms
Input surge voltage	100ms, max.	24Vin(nom) 48Vin(nom)			50 100	VDC
Remote ON/OFF	Referred to –Vin pin	Positive logic DC-DC ON (Standard) DC-DC OFF Negative logic DC-DC ON (Option) DC-DC OFF Input current of Ctrl pin Remote off input current	-0.5	Open or 3 ~ 12VDC Short or 0 ~ 1.2VDC Short or 0 ~ 1.2VDC Open or 3 ~ 12VDC 4	1.0	mA 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		-2.5		+2.5 %
	Others		-1.5		+1.5 %
Voltage adjustability	24Vout		-10		+20 %
	Others		-10		+10 %
Ripple and noise	Measured by 20MHz bandwidth	3.3Vout, 5Vout 12Vout, 15Vout 24Vout		75 100 130	mVp-p
Temperature coefficient			-0.02		+0.02 %/°C
Transient response recovery time	25% load step change			250	µs
Over voltage protection	3.3Vout		3.7		5.4 VDC
	5Vout		5.6		7.0 VDC
	12Vout		13.8		17.5 VDC
	15Vout		16.8		20.5 VDC
	24Vout		30.0		33.0 VDC
Output indicator			Green LED		
Over load protection	% of Iout rated			150	%
Short circuit protection			Continuous, automatic recovery		

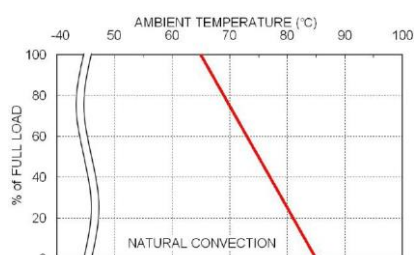
GENERAL SPECIFICATIONS					
Parameter	Conditions		Min.	Typ.	Max. Unit
Isolation voltage	1 minute	Input to Output	1600		
		Input (Output) to Chassis	1600		VDC
Isolation resistance	500VDC		1		GΩ
Isolation capacitance					4000 pF
Switching frequency			270	300	330 kHz
Safety meets			IEC/ EN/ UL62368-1		
Chassis material			Aluminum		
Weight			182g (6.40oz)		
MTBF	MIL-HDBK-217F, Full load		5.296 x 10 ⁵ hrs		

ENVIRONMENTAL SPECIFICATIONS					
Parameter	Conditions		Min.	Typ.	Max. Unit
Operating ambient temperature	Without derating		-40		+55 °C
	With derating		+55		+99 °C
Storage temperature range			-40		+105 °C
Thermal shock			MIL-STD-810F		
Vibration			IEC60068-2-6		
Relative humidity			5% to 95% RH		

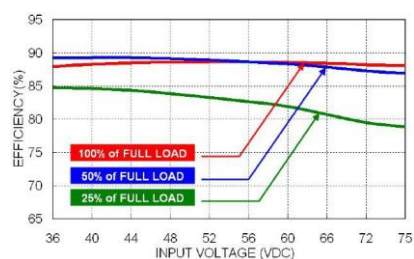
EMC SPECIFICATIONS

Parameter	Conditions		Level
EMI	EN55032		Class B
EMS	EN55024		
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

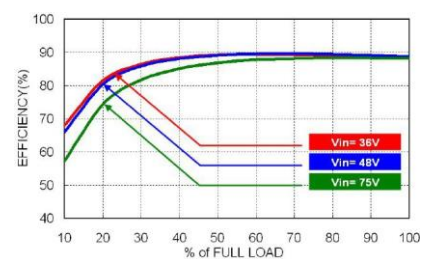
CHARACTERISTIC CURVE



DFEC60-48S05 Derating Curve

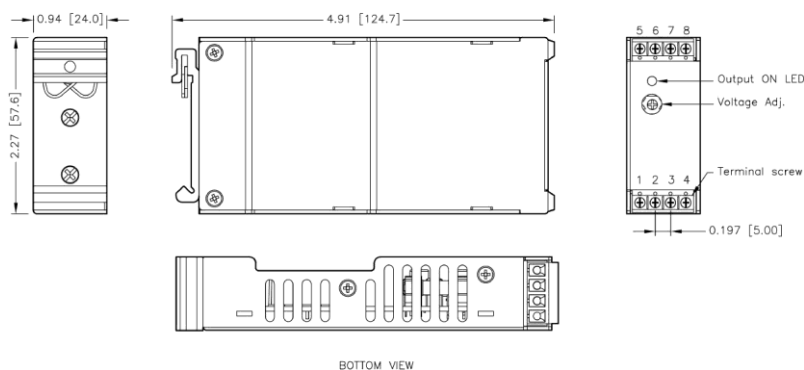


DFEC60-48S05 Efficiency vs. Input Voltage



DFEC60-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING



TERMINAL CONNECTION

NO.	SINGLE
1	Ctrl
2	-Vin
3	-Vin
4	+Vin
5	NC
6	-Vout
7	+Vout
8	NC

※ NC : No Connection

※ Screw terminals – wire range from 14 to 18 AWG

- All dimensions in Inch [mm]
- Tolerance : X.XX $\pm$ 0.02 [X.X $\pm$ 0.5]
X.XXX $\pm$ 0.01 [X.XX $\pm$ 0.25]
- Clamp screw locked torque:
MAX 5.0kgf-cm/0.49N-m
- Terminal screw locked torque:
MAX 2.5kgf-cm/0.25N-m