P-DUKE

DFEC60 Series

Din Rail DC-DC Converter
Up to 60 Watts

3 YEARS WARRANTY

RoHS COMPLIANT

REACH COMPLIANT

Automation | Datacom | IPC

Industry | Measurement | Telecom

Automobile | Boat | Charger

Medical | PV | Railway

CE

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 Option
	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℃ unless otherwise noted

Model Number	Input Range VDC	Output Voltage VDC	Output Current @Full Load A	Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load 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 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 (Standard) DC-DC ON DC-DC OFF Negative logic (Option) DC-DC ON DC-DC OFF Input current of Ctrl pin Remote off input current		Open or 3 ~ 12VDC Short or 0 ~ 1.2VDC Short or 0 ~ 1.2VDC Open or 3 ~ 12VDC -0.5 4	1.0	 mA mA

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy		3.3Vout Others	-1.5 -1.0		+1.5 +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 Others	-2.5 -1.5		+2.5 +1.5	%
Voltage adjustability		24Vout Others	-10 -10		+20 +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	%/℃
Transient response recovery time	25% load step change			250		μs
Over voltage protection		3.3Vout 5Vout 12Vout 15Vout 24Vout	3.7 5.6 13.8 16.8 30.0		5.4 7.0 17.5 20.5 33.0	VDC
Output indicator			Green LED			
Over load protection	% of Iout rated				150	%
Short circuit protection			Continuous, automatics recovery			

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output Input (Output) to Chassis	1600 1600			VDC
Isolation resistance	500VDC		1			GΩ
Isolation capacitance					4000	pF
Switching frequency			270	300	330	kHz
Safety meets					IEC/ UL/ EN60950-1	
Chassis material					Aluminum	
Weight					182g (6.40oz)	
MTBF	MIL-HDBK-217F, Full load				5.296 x 10^5 hrs	

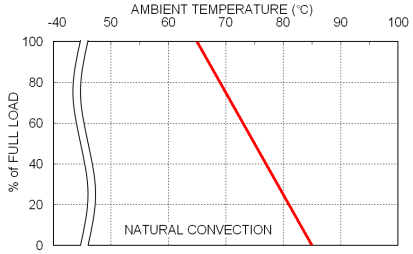
ENVIRONMENTAL SPECIFICATIONS

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

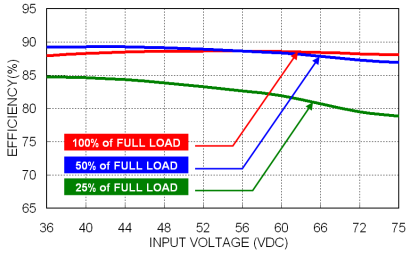
EMC SPECIFICATIONS

Parameter	Conditions		Level
EMI	EN55032		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

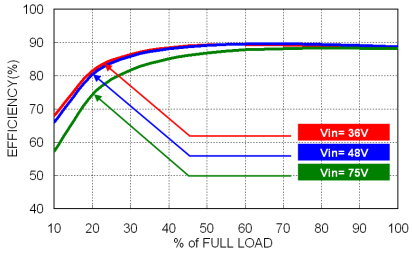
CHARACTERISTIC CURVE



DFEC60-48S05 Derating Curve

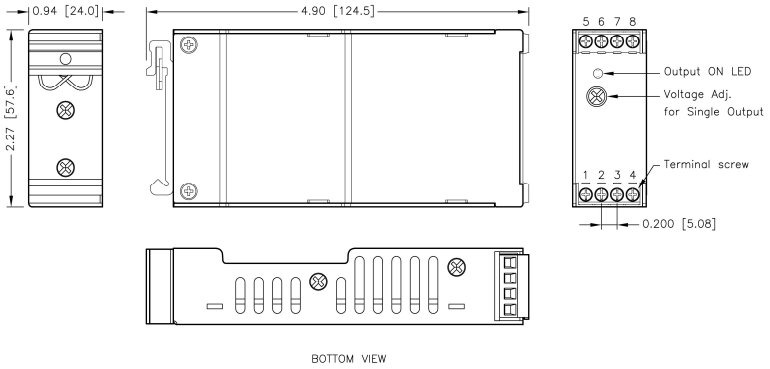


DFEC60-48S05 Efficiency vs. Input Voltage



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

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. Clamp screw locked torque:
   MAX 5.0kgf-cm/0.49N-m
4. Terminal screw locked torque:
   MAX 2.5kgf-cm/0.25N-m

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