



20DPEW4_1.6 series

20W - Dual/Single Output - Wide Input - Isolated & Regulated DC-DC Converter

DC-DC Converter 20 Watt

- ⊕ 20W DIP package
- ⊕ 4:1 wide input voltage range
- ⊕ High efficiency up to 91%
- ⊕ Regulated output types
- ⊕ No minimum load required
- ⊕ 3 years warranty
- ⊕ Operating temperature: -40°C up to +87°C (with derating)
- ⊕ UL94V-0 package material
- ⊕ 100% burned-in
- ⊕ Over power and short circuit protection



The 20DPEW4_1.6 series is an excellent performance and high power density design. Wide 4:1 input voltage ranges: 9V-36V and 18V-75V.

It features efficiency up to 91%, 1600VDC isolation, operating temperature of -40°C to +87°C, input under-voltage protection, output over-current, short circuit protection, which make them widely applied in medical care, industrial control, electric power, instruments and communication fields.

Common specifications

Short circuit protection:	Continuous [Hiccup Mode], Auto-Recovery		
Operating Ambient Temperature (Power Derating See Derating Graph):	<ul style="list-style-type: none"> • 20DPEW4_2405S1.6 • 20DPEW4_4805S1.6 • 20DPEW4_2412S1.6, 20DPEW4_2415S1.6 • 20DPEW4_2412D1.6, 20DPEW4_2415D1.6 • 20DPEW4_4812S1.6, 20DPEW4_4815S1.6 • 20DPEW4_4812D1.6, 20DPEW4_4815D1.6 	<ul style="list-style-type: none"> -40°C~+51.2°C -40°C~+55.9°C -40°C~+60.5°C -40°C~+69.4°C -40°C~+65°C 	
Thermal Impedance:	<ul style="list-style-type: none"> • 20LFM • 100LFM • 200LFM • 400LFM 	<ul style="list-style-type: none"> 18°C/W 14.7°C/W 11.5°C/W 8°C/W 	
Case temperature:	+105°C MAX		
Storage temperature:	-55°C ~+125°C		
Storage humidity:	5-95% RH, Non Condensing		
Thermal Shock:	MIL-STD-810F		
Shock & Vibration Test:	MIL-STD-810F		
Switching Frequency:	500kHz TYP, PWM mode		
MTBF:	445 K hours (MIL-HDBK 217F @25°C)		
Case material:	Copper		
Potting Material:	Silicone (UL94-V0)		
Cooling:	Natural Convection		
Weight:	18g TYP.		
Dimensions:	31.6 x 20.1 x 10.0mm		

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input Voltage	24V Models	9		36	VDC
	48V Models	18		75	VDC
Surge voltage (1 sec. max)	24V Models	-0.7		50	VDC
	48V Models	-0.7		100	VDC
Start-up voltage	24V Models			9	VDC
	48V Models			18	VDC
Under Voltage Shutdown	24V Models		7.5		VDC
	48V Models		16		VDC
Start-up Time (Nominal Vin)	Constant Resistive Load	Power-up	30		ms
		Remote ON/OFF	30		ms
Input under voltage protection	• 12VDC input	5.5	6.5		VDC
	• 24VDC input	12	15.5		VDC
Input filter	Internal Pi type				
Remote ON/OFF (Ctrl PIN Refer To -Vin PIN)	Positive Logic	• DC/DC ON	Open or Short	3.5VDC - 12VDC	
		• DC/DC OFF		0VDC - 1.2VDC	
Remote ON/OFF (Ctrl PIN Refer To -Vin PIN)	• Input Current Of Ctrl PIN	-0.5		-0.5	VDC
	• Remote Off Input Current		3		VDC

Output specifications

Item	Test condition	Min	Typ	Max	Units
Voltage Tolerance	100% Load	-2		+2	%
Line regulation	Vin=min to max, 100% load	-0.2		+0.2	%
Load regulation	0% Load to 100% Load	• 5V Output	-1	+1	%
		• Other Outputs	-0.5	+0.5	%
Load Cross Regulation	Asymmetrical Load	25% / 100% Load			
		• Dual Output	-0.5	+0.5	%
Ripple & Noise (BW=20MHz)	• 24Vout			150	mVp-p
		• Other Outputs			100
Transient Response Setting Time	25% Load Step Change		300	500	us
Transient response deviation	25% load step change	-5	±3	±5	%
Temperature coefficient	% of Io, Hiccup mode, Auto-recovery	-0.02		+0.02	%/°C
Output Power Protection	Input voltage range	120	150	180	%
Switching Frequency	100% Load, Nominal Input	• 5V Output		250	KHz
		• Other Output		330	KHz
Over Voltage Protection	• 5Vout			6.2	VDC
		• 12Vout		15	VDC
		• 15Vout		18	VDC
		• 24Vout		30	VDC

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 second	• Input To Output (60sec)	1600		VDC
		• Input(Output) To Case (60sec)	1000		VDC
Isolation resistance	500VDC, input to output	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/1V			2200	pF

Example:

20DPEW4_2405S1.6

20 = watt; D = DIP; PE = series; W4 = Wide input range (4:1); 24 = 9-36Vin; 05 = 5Vout; S = Single Output; 1.6 = 1600VDC isolation;

Note:

Specifications typical at TA = 25°C, nominal input voltage and rated output current unless otherwise specified.

20DPEW4_1.6 series

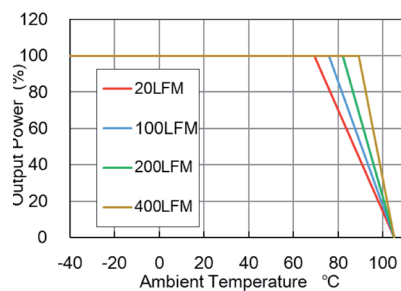
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DC-DC Converter

Product Selection Guide

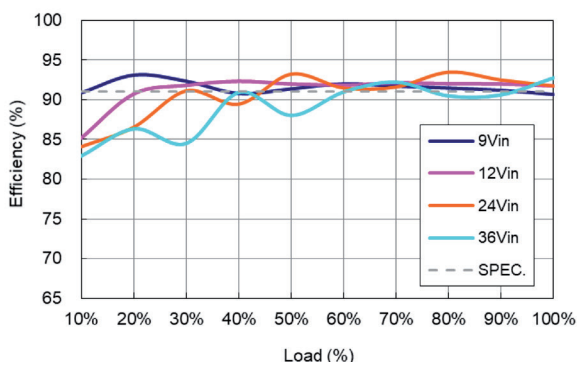
Part Number	Input Voltage [VDC, Range]	Input Current [No-Load]	Input Current [Full-Load]	Output Voltage [VDC]	Output Current [mA, max.]	Efficiency [%, typ.]	Capacitive Load [max.]
20DPEW4_2405S1.6	9-36	7	958	5	4000	87	6800
20DPEW4_2412S1.6	9-36	7	938	12	1670	89	1200
20DPEW4_2415S1.6	9-36	7	934	15	1330	89	750
20DPEW4_2424S1.6	9-36	7	915	24	833	91	300
20DPEW4_4805S1.6	18-75	4	474	5	4000	88	6800
20DPEW4_4812S1.6	18-75	4	469	12	1670	89	1200
20DPEW4_4815S1.6	18-75	4	467	15	1330	89	750
20DPEW4_4824S1.6	18-75	4	463	24	833	90	300
20DPEW4_2412D1.6	9-36	7	936	±12	±833	89	±820
20DPEW4_2415D1.6	9-36	7	934	±15	±665	89	±560
20DPEW4_4812D1.6	18-75	7	468	±12	±833	89	±820
20DPEW4_4815D1.6	18-75	7	467	±15	±665	89	±560

Typical characteristics

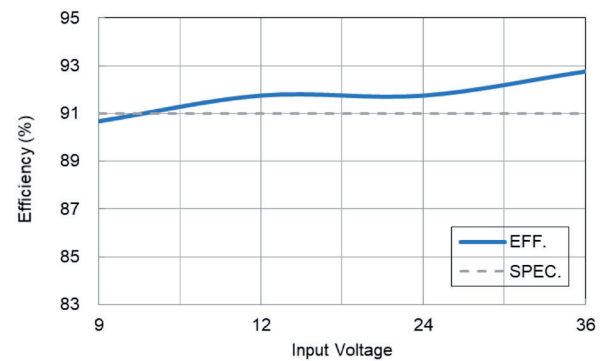
Temperature Derating Graph



Efficiency



20DPEW4_2424S1.6

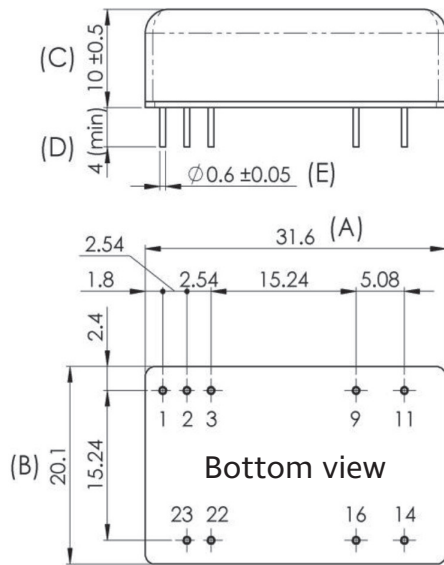


20DPEW4_2424S1.6

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Mechanical dimensions



Unit : mm
Tolerance : XX.X ± 0.5 , XX.XX ± 0.25

Pin	Single	Dual	Diameter
1	Ctrl	Ctrl	0.6mm [0.024"]
2	-Vin	-Vin	0.6mm [0.024"]
3	-Vin	-Vin	0.6mm [0.024"]
9	NC	Com	0.6mm [0.024"]
11	NC	-Vout	0.6mm [0.024"]
14	+Vout	+Vout	0.6mm [0.024"]
16	-Vout	Com	0.6mm [0.024"]
22	+Vin	+Vin	0.6mm [0.024"]
23	+Vin	+Vin	0.6mm [0.024"]