

- Operating temperature: -40 to +85°C
- Wide voltage input: 4:1
- Package size: 1 "x 1"
- High efficiency: 88%
- Isolation voltage: 1500VDC
- Input under-voltage protection, output over-current and short-circuit protection (self-recovery)



Selection Table

Product Model	Input Voltage (VDC)		Output		Full Load efficiency (%) Min./Typ.	Maximum Capacitive Load (µF)
	Nominal value Range	Crest value	Output Voltage (VDC)	Output (mA) Max./Min.		
LRD10-24S03	24 (9-36)	40	3.3	2400/0	76/78	2000
LRD10-24S05			5	2000/0	81/83	2000
LRD10-24S09			9	1111/0	83/85	680
LRD10-24S12			12	833/0	84/86	470
LRD10-24S15			15	667/0	84/86	330
LRD10-24S24			24	416/0	86/88	100
LRD10-24D05			±5	±1000/0	81/83	1000
LRD10-24D09			±9	±555/0	83/84	680
LRD10-24D12			±12	±416/0	85/86	470
LRD10-24D15			±15	±333/0	85/86	330
LRD10-24D24			±24	±208/0	85/86	100
LRD10-48S03			48 (18-75)	80	3.3	2400/0
LRD10-48S05	5	2000/0			81/83	2000
LRD10-48S09	9	1111/0			83/85	680
LRD10-48S12	12	833/0			85/87	470
LRD10-48S15	15	667/0			86/88	330
LRD10-48S24	24	416/0			86/88	100
LRD10-48D05	±5	±1000/0			81/83	1000
LRD10-48D09	±9	±555/0			83/84	680
LRD10-48D12	±12	±416/0			85/86	470
LRD10-48D15	±15	±333/0			86/87	330
LRD10-48D24	±24	±208/0			85/86	100

Input Characteristics

Parameter	Condition	Min.	Typ.	Max.	Unit
Input Current	24VDC nominal input series	--	501/5	--	mA
	48VDC nominal input series	--	252/4	--	
Reflection ripple current	24VDC nominal input series	--	40	--	VDC
	48VDC nominal input series	--	30	--	
Input surge voltage (1sec.max.)	24VDC nominal input series	-0.7	--	50	VDC
	48VDC nominal input series	-0.7	--	100	
Starting voltage	24VDC nominal input series	--	--	9	VDC
	48VDC nominal input series	--	--	18	
Input under-voltage protection	24VDC nominal input series	--	6.5	--	VDC
	48VDC nominal input series	--	15.5	--	
Input filter type		PI filter			
Hot swap		Not supported			
CTR control logic	On-state	Floating			
	Off-state	Grounded or below 2VDC			
	Input current in off-state		1		mA

Output Characteristic

Parameter	Condition	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy	0% -100% Load	--	±1	±3	%	
Linear Rate of adjustment	At full load, the input voltage ranges from low to high.	--	--	±0.5		
Load regulation rate ①	From 5% to 100% load	positive output	--	--		±1
		negative output	--	--	±1.5	
Ripple noise ②	20MHz bandwidth, 5% -100% load	--	50	100	mVp-p	
Transient recovery time	25% load step	--	400	500	μs	
Transient response deviation	change, nominal input voltage	3.3V/5V/±5V output	--	±5	±8	%
		Other voltages	--	±3	±5	
Temperature drift coefficient	loaded to capacity	--	--	±0.03	%/°C	
Overcurrent protection		120	--	220	%Io	
Short-circuit protection		Sustainable, self-recovering				

General characteristics

Parameter	Condition	Min.	Typ.	Max.	Unit
Isolation voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation resistance	Input/Output, Insulation Voltage 500VDC	1000	--	--	MΩ
Isolating capacitance	Input-output, 100KHz/0.1V	--	1000	--	pF

DC/DC Power Module-10W Wide Voltage



Working temperature		-40	--	+85	°C
Storage temperature		-55	--	+125	
Storage humidity	no condensation	5	--	95	%RH
Pin soldering temperature	The solder joint is 1.5mm away from the housing for 10 seconds.	--	--	+300	°C
Switching frequency		--	300	--	kHz
(MTBF)		1000			kHours

Note: This product series uses frequency reduction technology. The switching frequency is the test value at full load. When the load decreases, the switching frequency decreases accordingly.

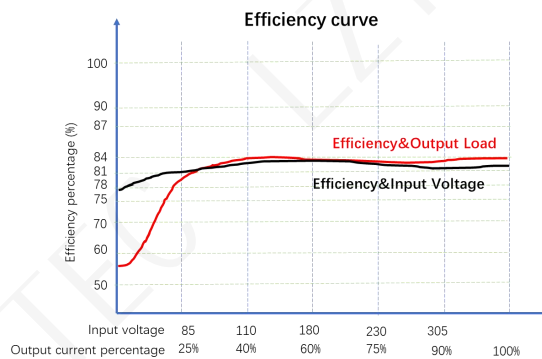
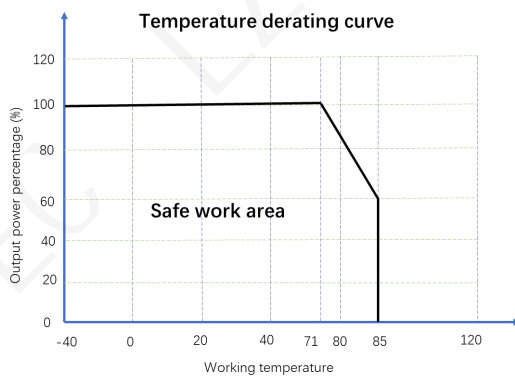
Physical properties

Encapsulation Material	Aluminum Alloy
Encapsulation size	25.50×25.50×12.00mm
Weight	15g
Heat Dissipation Method	Natural Air Cooling

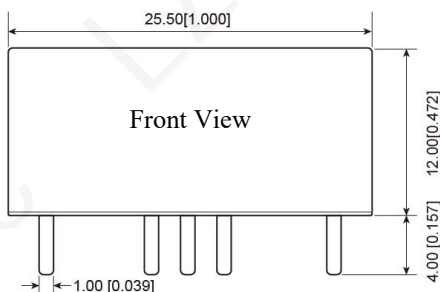
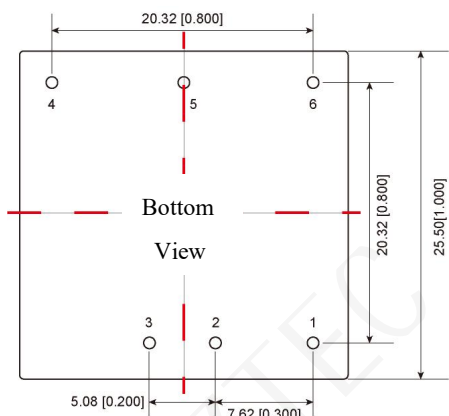
EMC characteristic

EMI	CE	CISPR32/EN55032: CLASS A (bare board) / CLASS B (Recommended circuitry shown in Figure 3)	
	RE	CISPR32/EN55032: CLASS A (bare board) / CLASS B (Recommended circuitry shown in Figure 3)	
EMS	ESD	IEC/EN61000-4-2 Contact±4KV	Perf.Criteria B
	RI	IEC/EN61000-4-3 10V/m	Perf.Criteria A
	EFT	IEC/EN61000-4-4 ±2KV (Recommended circuit is shown in Figure 3)	Perf.Criteria B
	SURGE /	IEC/EN61000-4-5 line to line±2KV (Recommended circuit is shown in Figure 3)	Perf.Criteria B
	CI	IEC/EN61000-4-6 3 Vr.m.s	Perf.Criteria A

Product Feature Curve Diagram



Dimensions/Recommended print layout



PIN	Single	Double
1	CTRL	CTRL
2	GND	GND
3	V _{in}	V _{in}
4	+V _o	+V _o
5	NO PIN	0V
6	-V _o	-V _o

Unit of measurement: mm [inch]

Terminal diameter tolerance: ± 0.10 [± 0.004]

Unspecified tolerance: ± 0.50 [± 0.020]

1. Application Circuit

All DC/DC converters in this series undergo testing according to the recommended test circuit (Figure 2) prior to factory release.

To further reduce input/output ripple, the external input/output capacitors (C_{in} and C_{out}) can be increased in capacitance or replaced with capacitors in series that have lower equivalent impedance. However, the total capacitance must not exceed the product's maximum capacitive load.

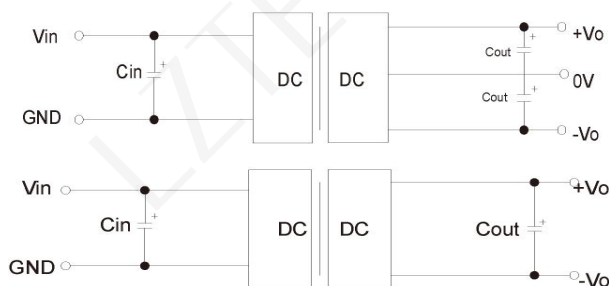


Figure2

V _{in}	24V	48V
C _{in}	100uF	10-47uF
C _{out}	10uF	10uF

2.EMC Solution---Recommended Circuit

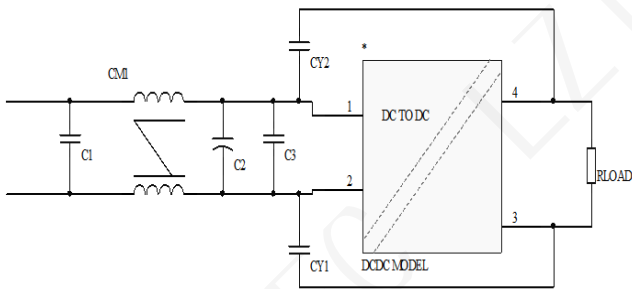


Figure3

Model	Vin: 24V	Vin: 48V
FUSE	Select based on the actual current input by the customer	
C1	1uF/50V	1uF/100V
C2	220uF/50V	220uF/100V
C3	10μF / Voltage to be selected based on actual requirements	
LDM1	4.7mH	
CY1、CY2	1nF/2KV	

NOTE

1. If the product operates below the minimum required load, it cannot be guaranteed that all performance metrics specified in this manual will be met.
2. The maximum capacitive load is tested under the condition of input voltage range and full load.
3. Unless otherwise specified, all measurements in this manual are taken at Ta=25°C, temperature <75% RH, nominal input voltage, and rated output load.
4. All test methods in this manual are based on our company's enterprise standards.
5. We offer customized product solutions. For specific requirements, please contact our technical team directly.

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