VD-8W Series

8W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 89%
- Operating Temperature Range -40 ~ 100°C max.
- DIP 24 Package

PART NUMBER STRUCTURE

VD - 24 05 S 8

(1) (2) (3) (4) (5)

(1) Series

(2) Input Voltage Range

- **12** - 9-18 V
- **24** - 18-36 V
- **48** - 36-72 V

(3) Output Voltage

- **3R3** - 3.3 V
- **05** - 5.0 V
- **7R2** - 7.2 V
- **09** - 9.0 V
- **12** - 12 V
- **15** - 15 V

(4) Output Type

- **S** - Single Output
- **D** - Dual Output

(5) Watt

ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED

Model Number	Input Voltage Range (VDC)	Input Current		Output Voltage (VDC)	Output Current		Efficiency @FL (%, typ.)	Capacitive Load @FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
VD-123R3S8	9-18	10	705	3.3	0	2000	78	3300
VD-1205S8	9-18	10	753	5	0	1500	83	2200
VD-127R2S8	9-18	10	784	7.2	0	1111	85	1000
VD-1209S8	9-18	10	784	9	0	888	85	470
VD-1212S8	9-18	10	775	12	0	665	86	470
VD-1215S8	9-18	10	784	15	0	535	85	220
VD-1205D8	9-18	10	813	±5	0	±800	82	±1000
VD-127R2D8	9-18	10	803	±7.2	0	±555	83	±470
VD-1209D8	9-18	10	803	±9	0	±444	83	±330
VD-1212D8	9-18	15	784	±12	0	±335	85	±220
VD-1215D8	9-18	15	794	±15	0	±265	84	±100
VD-243R3S8	18-36	10	344	3.3	0	2000	80	3300
VD-2405S8	18-36	10	372	5	0	1500	84	2200
VD-247R2S8	18-36	10	388	7.2	0	1111	86	1000
VD-2409S8	18-36	10	383	9	0	888	87	470
VD-2412S8	18-36	10	383	12	0	665	87	470
VD-2415S8	18-36	10	383	15	0	535	87	220
VD-2405D8	18-36	10	397	±5	0	±800	84	±1000
VD-247R2D8	18-36	10	392	±7.2	0	±555	85	±470
VD-2409D8	18-36	10	392	±9	0	±444	85	±330
VD-2412D8	18-36	10	383	±12	0	±335	87	±220
VD-2415D8	18-36	10	383	±15	0	±265	87	±100
VD-483R3S8	36-72	10	174	3.3	0	2000	79	3300
VD-4805S8	36-72	10	191	5	0	1500	82	2200
VD-487R2S8	36-72	10	201	7.2	0	1111	83	1000
VD-4809S8	36-72	10	201	9	0	888	83	680
VD-4812S8	36-72	10	196	12	0	665	85	470
VD-4815S8	36-72	10	196	15	0	535	85	220
VD-4805D8	36-72	10	201	±5	0	±800	83	±1000
VD-487R2D8	36-72	10	196	±7.2	0	±555	85	±1000
VD-4809D8	36-72	10	196	±9	0	±444	85	±680
VD-4812D8	36-72	10	198	±12	0	±335	84	±220
VD-4815D8	36-72	15	196	±15	0	±265	85	±100

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	12V Input	9	12	18	VDC
	24V Input	18	24	36	
	48V Input	36	48	72	
Input Filter		Pi Type			
Input Reflected Ripple Current (1)			35		mApk-pk
Start up Time	Nominal Vin and constant resistive load		20		ms
Recommended input fuse (slow blow)	12V Input	1.6			A
	24V Input	0.8			
	48V Input	0.5			

Note：
1. Measured with a simulated source inductance of 12μH and a source capacitor Cin (47μF, ESR<1.0Ω at 100kHz).

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			-1.0		+1.0	%
Line Regulation			-0.5		+0.5	%
Load Regulation	From 0% to 100% Load	Single Output	-0.5		+0.5	%
		Dual Output	-1.0		+1.0	
		Only 3.3 V Output	-1.5		+1.5	
Cross Regulation	Asymmetrical Load 25% / 100% for Dual Output		-5		+5	%
Ripple & Noise (1)	20MHz bandwidth				75	mVpk-pk
Over Current Protection				150		% of FL
Short Circuit Protection			Indefinite (hiccup) (Automatic Recovery)			
Temperature Coefficient			-0.02		+0.02	%/°C
Maximum Capacitive Load	Minimum Vin and constant resistive load		See Table			
Transient Recovery Time	Nominal Vin and 25% load step change(75%-50%-25% of Io)			250		μs
Transient Response Deviation		3.3V	-5		+5	%
		other	-3		+3	%

Note：
1. Measured with a 1.0μF MLCC.

ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (100 ms)	12V Input			25	VDC
	24V Input			50	
	48V Input			100	
Soldering Temperature	1.5mm from case 10sec max.			260	°C

Note：These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

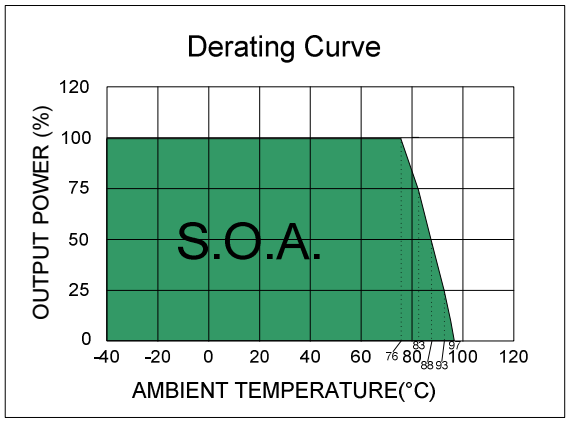
GENERAL SPECIFICATIONS					
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Isolation Voltage	Input-output, and rated for 60sec	1500			VDC
	Case-I/O, and rated for 60sec	1000			
Isolation Resistance	Input-output	1000			MΩ
Isolation Capacitance	Input-output		1000		pF
Switching Frequency			330		kHz
MTBF	MIL-HDBK-217 F @ 25°C	910			k hours
Safety Approval	IEC / EN / UL 62368-1	DK-64825-UL, E252573			
Environmental compliance		RoHS			

ENVIRONMENT SPECIFICATIONS					
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Operating Ambient Temperature	See the Derating Curve	-40		100	°C
Maximum Case Temperature				100	°C
Thermal Impedance	3.3V output	12.7			°C/W
	Others	11.48			
Storage Humidity				95	% rel. H
Storage Temperature		-55		125	°C
Cooling	Natural Convection	30-65 LFM			

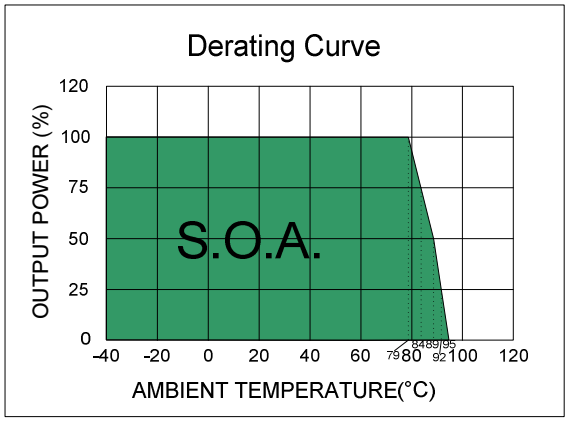
EMC SPECIFICATIONS			
Parameter	**Standard**	**Condition**	Criterion
Conducted Emissions	EN55032	with external components	A
Radiated Emissions	EN55032		A
ESD	IEC 61000-4-2	Air: ± 8kV / Contact: ± 6kV	A
RS	IEC 61000-4-3	10V/m	A
EFT	IEC 61000-4-4	±2kV with external components	A
Surge	IEC 61000-4-5	±1kV with external components	A
CS	IEC 61000-4-6	10Vrms	A
PFMF	IEC 61000-4-8	1A/m	A

PHYSICAL SPECIFICATIONS	
Parameter	**Value**
Case Material	Aluminum
Pin Material	Ø0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	13.0 g, typ.
Dimensions	1.25 " x 0.80" x 0.40"

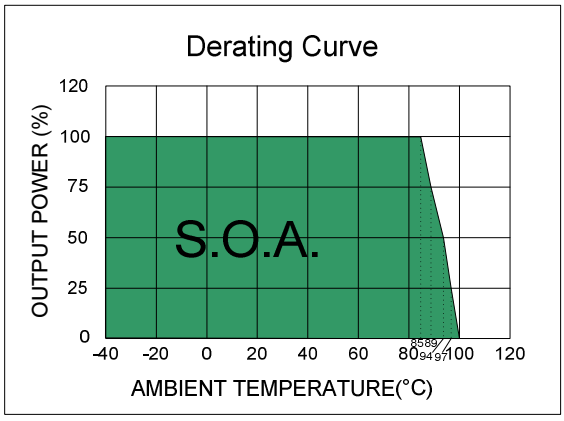
ELECTRICAL CHARACTERISTIC CURVES



Vo 3.3V、5V



(Efficiency : 82 ~ 85%)

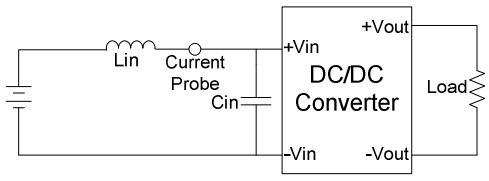


(Efficiency : 86 ~ 87%)

TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

Input reflected ripple current is measured with a source inductor Lin (12μH) and a source capacitor Cin (47μF, ESR<1.0Ω at 100kHz) at nominal input and full load.



DESIGN & FEATURE CONFIGURATIONS

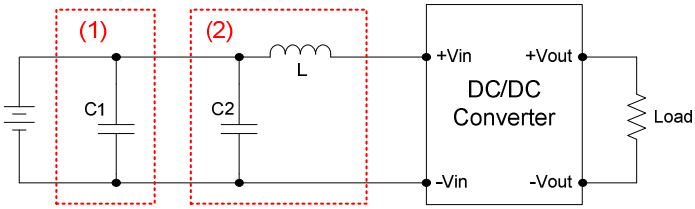
Over Current Protection

The module includes an internal over current protection circuit, which will endure current limiting for an unlimited duration during output over load condition. If the output current exceeds the OCP set point, the module will shut down automatically (hiccup).The module will try to restart after shut down. If the over load condition still exists, the module will shut down again.

DESIGN & FEATURE CONFIGURATIONS

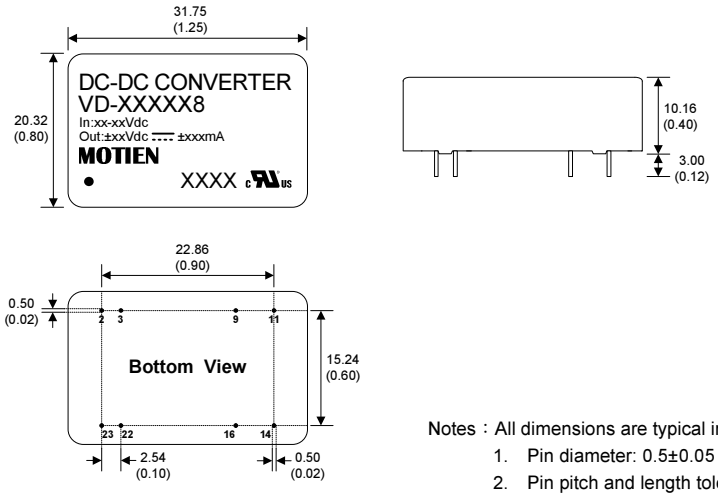
EMC Filter

The part (1) Circuit is used to meet Surge & EFT test, and the part (2) Circuit is used to meet EMI test.



	C1	C2	L
VD-12XXX8	NIPPON Chemi-con KY Series 220μF, 100V	NIPPON Chemi-con KY Series 100μF, 100V	12μH
VD-24XXX8			
VD-48XXX8			

MECHANICAL SPECIFICATIONS



Notes：All dimensions are typical in millimeters (inches).

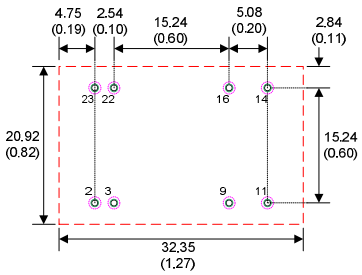
1. Pin diameter: 0.5±0.05 (0.02±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Case tolerance: ±0.5 (±0.02)
4. Stand-off tolerance: ±0.1 (±0.004)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
2	-Vin	-Vin
3	-Vin	-Vin
9	N.P.	COM
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	COM
22	+Vin	+Vin
23	+Vin	+Vin

*N.P.：No PIN

*N.C.：No Connection

RECOMMENDED FOOTPRINT DETAILS



Notes：1. All dimensions are typical in millimeters (inches).

Through hole (black) 2 ~ 23: Ø0.80 (0.031)

Top view pad (green) 2 ~ 23: Ø1.00 (0.039)

Bottom view pad (pink) 2 ~ 23: Ø1.60 (0.063)

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ISO 9001 . ISO 14001 . IECQ QC080000

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