1 Watt, Unregulated DC/DC Converters Series DV1M-SH7R

Features

- SIP Package
- Isolation Voltage 6K VDC / 4,2K VAC
- Efficiency up to 81%
- Internal SMD Construction
- Meet Reinforced I/O Isolation
- Operating Temperature Range -40°C to +85°C
- RoHS Compliance
- International standard pin-out
- Meet EN60601-1 (1x MOPP / 2x MOOP)

MODEL NUMBER	INPUT VOLTAGE [VDC]	OUTPUT VOLTAGE [VDC]	OUTPUT CURRENT [mA] MAX.	OUTPUT CURRENT [mA] MIN.	EFFICIENCY [%] TYP.	MAX. CAPACITIVE LOAD [µF]
DV1M05D05SH7R	5 (4,5 – 5,5)	±5	±100	±10	78	470
DV1M05D09SH7R		±9	±56	±6	80	470
DV1M05D12SH7R		±12	±42	±5	74	220
DV1M05D15SH7R		±15	±34	±4	76	220
DV1M05S03SH7R		3,3	303	31	73	1000
DV1M05S05SH7R		5	200	20	78	1000
DV1M05S12SH7R		12	84	9	76	470
DV1M05S15SH7R		15	67	7	76	470
DV1M12D05SH7R	12 (10,8 – 13,2)	±5	±100	±10	77	470
DV1M12D09SH7R		±9	±56	±6	80	470
DV1M12D12SH7R		±12	±42	±5	73	220
DV1M12D15SH7R		±15	±34	±4	75	220
DV1M12S05SH7R		5	200	20	77	1000
DV1M12S12SH7R		12	84	9	81	470
DV1M12S15SH7R		15	67	7	81	470
DV1M24D05SH7R	24 (21,6 – 26,4)	±5	±100	±10	75	470
DV1M24D09SH7R		±9	±56	±6	79	470
DV1M24D12SH7R		±12	±42	±5	76	220
DV1M24D15SH7R		±15	±34	±4	76	220
DV1M24S05SH7R		5	200	20	76	1000
DV1M24S12SH7R		12	84	9	78	470
DV1M24S15SH7R		15	67	7	78	470

Note: other models on request.

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INPUT SPECIFICATIONS:

Input Voltage Range		see table
Input Current (no load)	5V input	60mA max.
	12V input	40mA max.
	24V input	25mA max.
Surge Voltage (1 sec. max.)	5V input	9 VDC max.
	12V input	18 VDC max.
	24V input	30 VDC max.
Reflected Ripple Current		0,2A typ.
Input Filter		Capacitor Filter

OUTPUT SPECIFICATIONS:

Output Voltage Accuracy		See tolerance envelope graph
Temperature Drift Coefficient		±0,03%/°C max.
Ripple & Noise, 20 MHz BW	3,3V output	150mVp-p max.
	Others	120mVp-p max.
Line Regulation (Input Voltage Change ±1%)	3,3V output	±1,5% max.
	Others	±1,2% max.
Load Regulation(10%-100% Load)	3,3V output	20% typ.
	Others	15% typ.
Output Short circuit Protection		3 sec. max.

GENERAL SPECIFICATIONS:

Isolation Voltage I/O	Tested for 1 minute	4200VAC / 6000VDC min.
Patient Leakage Current	250VAC, 50/60Hz	2uA max.
Isolation Resistance I/O	Test at 500VDC	1000 MΩ min.
Isolation Capacitance I/O	100KHz/0,1V	5pF typ.
Switching Frequency	100% load, nominal input voltage	100KHz typ.
Operating Temperature Range		-40°C to +85°C
Derating above 85°C		see Derating Graph
Temperature Rise at Full Load	Ta=25°C.	25°C typ.
Cooling		Free-Air Convection
Storage Temperature Range		-55°C to +125°C
Pin Welding Resistance Temperature (Welding spot is 1.5mm away from the casing, 10 seconds)		300°C max
MTBF		>3.500.000 hours
Dimensions		19,50 x 9,80 x 12,50 mm
Case Material		Plastic (UL94-V0)
Weight		4,2g

Note:
1. If the converter is not operated under the min. required load, the performance cannot be guaranteed to meet all specifications listed.
2. Test Ripple and Noise by “parallel cable” method.
3. All Specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load. Unless Otherwise Noted.
4. Supply voltage must be discontinued at the end of short circuit duration which is less than 3s.

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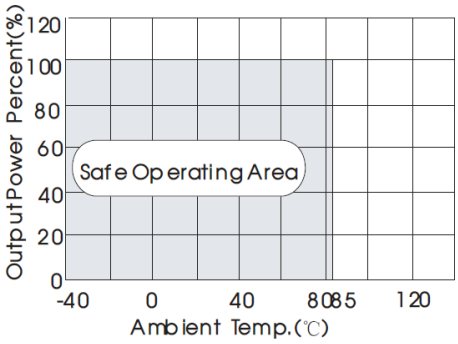
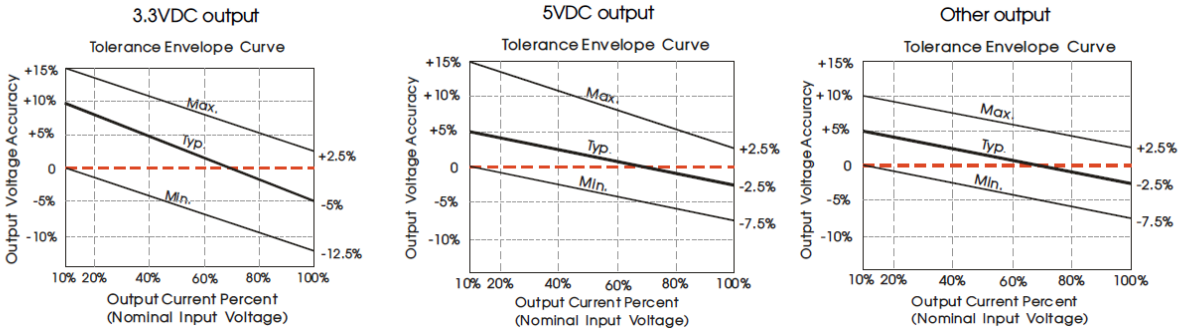
Derating Curve

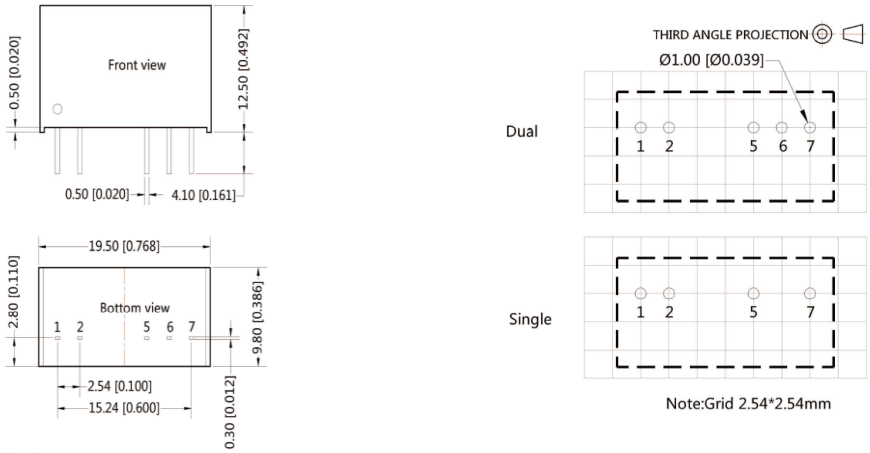


Product Characteristic Curve



CASE

Note:
Unit: mm (inch); Pin tolerances: ±0.10mm (±0.004inch); General tolerances: ±0.25mm (±0.010inch)



Pin	Function
	Dual Output
1	Vin
2	GND
5	-Vout
6	OV
7	+Vout

Pin	Function
	Single Output
1	Vin
2	GND
5	0V
6	No Pin
7	+Vout

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Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.3. Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensured the modules running well, the recommended capacitive load values as shown in Table 1. The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (see Fig. 4).

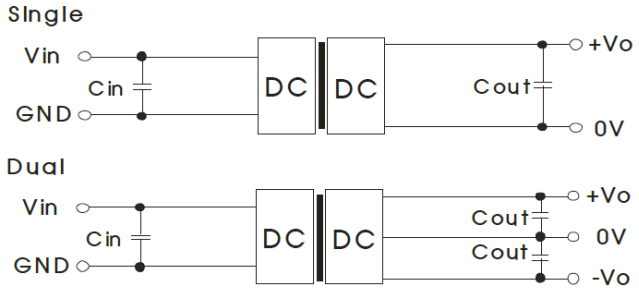

Fig. 3

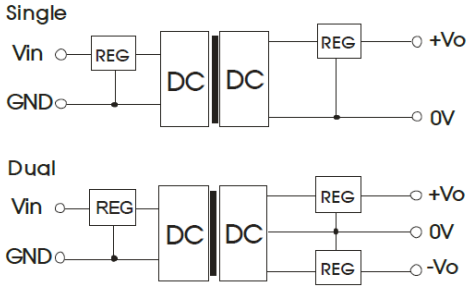

Fig. 4

EXTERNAL CAPACITOR TABLE 1					
Vin (VDC)	Cin (µF)	Single Vout (VDC)	Cout (µF)	Dual Vout (VDC)	Cout (µF)
5	10	3,3 / 5	10	±5	4,7
12	4,7	12	2.2	±9	2,2
24	2,2	15	1	±12/±15	1

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