

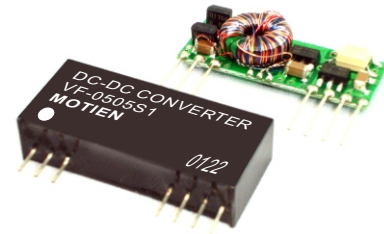
# VF-1.5W Series

1.5W Regulated Single output



## Features

- 12 Pin SIL Package
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 68%
- -25 ~ 71°C Operation Temperature Range



The VF series is a family of cost effective 1.5W single output DC-DC converters. These converters combine miniature package in a 12-pin SIL compatible case with high performance features such as 1000 VDC~3000 VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 5, 12, 24 with output voltage of 3.3, 5, 7.2, 9, 12, 15, 18, 24 Vdc. High performance features include high efficiency operation up to 68% and output voltage accuracy of  $\pm 2\%$  maximum. Standard features include an input range of  $\pm 10\%$  tolerance and low output noise and ripple.

All specifications typical at  $T_a = 25^\circ\text{C}$ , nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS	
Voltage accuracy	$\pm 2\%$
Line regulation	$\pm 0.5\%$
Load regulation	(From 0% to 100% Load) $\pm 0.5\%$ (Output 3.3V Model) $\pm 1.5\%$
Ripple & noise(20 MHz bandwidth)(1)	75mV pk-pk
Short Circuit Protection	Indefinite(Automatic Recovery)
Temperature coefficient	$\pm 0.02\%/^\circ\text{C}$
Capacitor load(2)	See table

INPUT SPECIFICATIONS	
Voltage Range	$\pm 10\%$
Max. Input Current	See table
No-Load Input Current	See table
Input Filter	Capacitor
Input Reflected Ripple Current(3)	20mA pk-pk

GENERAL SPECIFICATIONS	
Efficiency	See table
I/O Isolation Voltage(3 sec)	
Input/Output	1000~3000Vdc
I/O Isolation Capacitance	60 pF Typ.
I/O Isolation Resistance	1000M Ohm
Switching Frequency	50kHz typ
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.12 Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

PHYSICAL SPECIFICATIONS	
Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	0.5mm Alloy42 Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	7.2g
Dimensions	1.26"x0.32"x0.57"

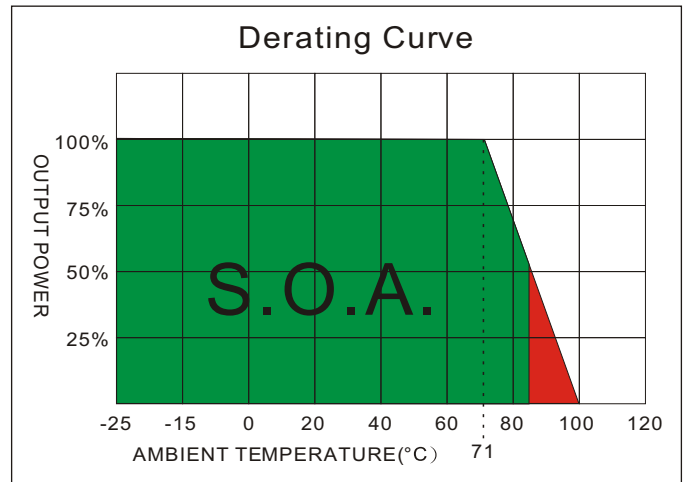
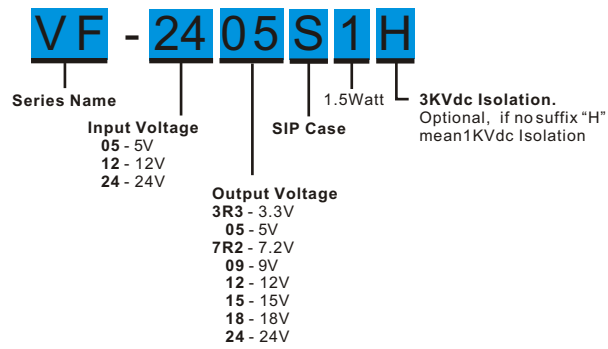
ENVIRONMENT SPECIFICATIONS	
Operating Temperature	$-25^\circ\text{C} \sim 71^\circ\text{C}$ (See Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	$-40^\circ\text{C} \sim 125^\circ\text{C}$
Cooling	Nature Convection

ABSOLUTE MAXIMUM RATINGS(4)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Voltage(100mS)	
5 Modes	0~7 Vdc
12 Modes	0~15 Vdc
24 Modes	0~28 Vdc
Lead Soldering Temperature	260°C
(1.5mm from case 10sec.)	

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## VF - 1.5W Regulated Single output

### PARTNUMBER STRUCTURE



## MODEL SELECTION GUIDE

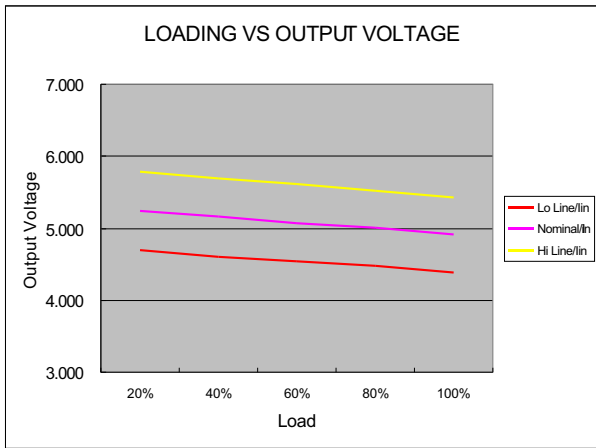
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)				
VF-053R3S1	5	70	432	3.3	400	61	220
VF-0505S1	5	70	454	5	300	66	220
VF-057R2S1	5	70	454	7.2	208.3	66	220
VF-0509S1	5	90	454	9	166.6	66	220
VF-0512S1	5	90	447	12	125	67	220
VF-0515S1	5	90	447	15	100	67	220
VF-0518S1	5	90	447	18	83.3	67	220
VF-0524S1	5	130	441	24	62.5	68	220
VF-123R3S1	12	50	180	3.3	400	61	220
VF-1205S1	12	50	189	5	300	66	220
VF-127R2S1	12	50	186	7.2	208.3	67	220
VF-1209S1	12	50	186	9	166.6	67	220
VF-1212S1	12	50	186	12	125	67	220
VF-1215S1	12	50	183	15	100	68	220
VF-1218S1	12	50	183	18	83.3	68	220
VF-1224S1	12	50	183	24	62.5	68	220
VF-243R3S1	24	25	88	3.3	400	62	220
VF-2405S1	24	25	96	5	300	65	220
VF-247R2S1	24	25	96	7.2	208.3	65	220
VF-2409S1	24	25	96	9	166.6	65	220
VF-2412S1	24	25	93	12	125	67	220
VF-2415S1	24	25	93	15	100	67	220
VF-2418S1	24	25	93	18	83.3	67	220
VF-2424S1	24	25	91	24	62.5	68	220

Suffix "H" means 3KVdc isolation

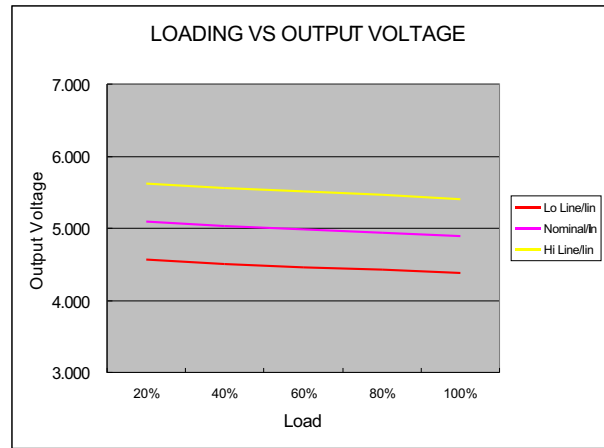
### NOTE

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

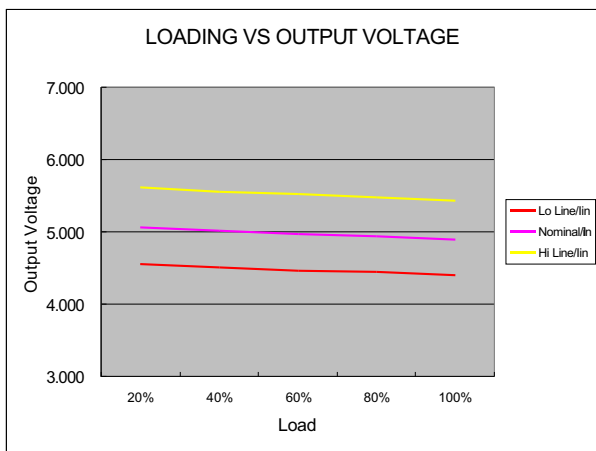
# VF - 1.5W Regulated Single output



05 Models

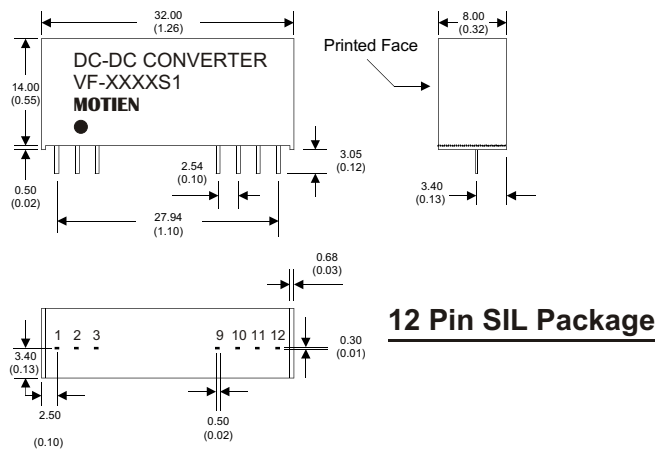


12 Models



24 Models

## MECHANICAL SPECIFICATIONS



**12 Pin SIL Package**

- Notes : All dimensions are typical in millimeters ( inches ).
1. Pin diameter:  $0.5 \pm 0.05$  (  $0.02 \pm 0.002$  )
  2. Pin pitch tolerance:  $\pm 0.35$  (  $\pm 0.014$  )
  3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )

PIN CONNECTIONS		
PIN NUMBER	SINGLE	SINGLE-H
1	+V Input	+V Input
2	N.C.	-V Input
3	N.C.	N.C.
9	N.C.	N.C.
10	-V Output	-V Output
11	+V Output	+V Output
12	-V Input	N.C.