

- SIL7 Package
- Input Range $\pm 10\%$
- Efficiency up to 92 %
- Semi-regulated Output
- Low Ripple and Noise
- Isolation 1000 VDC, up to 3000 VDC
- Operation Temperature Range $-40 \sim 86^\circ\text{C}$ max.
- Non Conductive Black Plastic Case

RoHS



Picture similar

Number Structure

RS2	-	05	05	SS	30	A	1	v2
Series / Package	Input Voltage	Output Voltage	Output Type	Power	Int. Code	Isolation Voltage	Version	
RS2 = SIL7	05 = 5.0 Vdc 12 = 12 Vdc	05 = 5.0 Vdc 09 = 9.0 Vdc 12 = 12 Vdc 15 = 15 Vdc	SS = Semi-Reg. - Single Out. SD = Semi-Reg. - Dual Out.	30 = 3 W	Logistics Code	1 = 1000 Vdc 3 = 3000 Vdc		

Model Selection Guide

Model Number	Input Voltage Range (VDC)	Input Current		Output Voltage (VDC)	Output Current Full Load (mA)	Load Regulation (%)	Efficiency @ FL (% , typ.)	Capacitive Load @ FL (μF , max.)
		No-Load (mA, max.)	Full Load (mA, typ.)					
RS2-0505SS30AXv2	4.5 ~ 5.5	80	732	5	600	8	82	220
RS2-0509SS30AXv2	4.5 ~ 5.5	70	698	9	333.33	7	86	220
RS2-0512SS30AXv2	4.5 ~ 5.5	80	706	12	250	6	85	100
RS2-0515SS30AXv2	4.5 ~ 5.5	80	698	15	200	6	86	100
RS2-1205SS30AXv2	10.8 ~ 13.2	25	298	5	600	6	84	220
RS2-1209SS30AXv2	10.8 ~ 13.2	25	287	9	333.33	4	87	220
RS2-1212SS30AXv2	10.8 ~ 13.2	25	278	12	250	4	90	100
RS2-1215SS30AXv2	10.8 ~ 13.2	20	272	15	200	3	92	100
RS2-0505SD30AXv2	4.5 ~ 5.5	80	723	± 5	± 300	7	83	± 100
RS2-0509SD30AXv2	4.5 ~ 5.5	70	698	± 9	± 166.67	6	86	± 100
RS2-0512SD30AXv2	4.5 ~ 5.5	70	690	± 12	± 125	6	87	± 47
RS2-0515SD30AXv2	4.5 ~ 5.5	80	690	± 15	± 100	5	87	± 47
RS2-1205SD30AXv2	10.8 ~ 13.2	25	291	± 5	± 300	5	86	± 100
RS2-1209SD30AXv2	10.8 ~ 13.2	25	278	± 9	± 166.67	4	90	± 100
RS2-1212SD30AXv2	10.8 ~ 13.2	25	281	± 12	± 125	3	89	± 47
RS2-1215SD30AXv2	10.8 ~ 13.2	20	275	± 15	± 100	3	91	± 47

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

Input Specifications					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	5.0 Vdc Input	4.5	5.0	5.5	VDC
	12 Vdc Input	10.8	12	13.2	
Input Current (No Load)		See Table			mA
Input Current (Full Load)		See Table			mA
Input Filter		Capacitor			-
Input Reflected Ripple Current ⁽¹⁾	5.0 Vdc Input		25		mApk-pk
	12 Vdc Input		25		
Recommended input fuse (slow blow)	5 Vdc Input		1.6		A
	12 Vdc Input		0.8		
Note : 1. Measured with a simulated source inductance of 12 μH and a source capacitor Cin (47 μF, ESR < 1 Ω at 100 kHz).					

Output Specifications					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		-4		+2	%
Line Regulation	For 1 % Vin Change	-1.2		+1.2	%
Load Regulation	From 10 % to 100 % Load	See Table			%
Ripple & Noise ⁽¹⁾	20 MHz Bandwidth			50	mVpk-pk
Temperature Coefficient		-0.02		+0.02	%/°C
Maximum Capacitive Load	Minimum Vin and constant resistive load	See Table			
Note : 1. Measured with a 1.0μF MLCC.					

Absolute Maximum Ratings					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (100 ms)	5.0 Vdc Input			9	VDC
	12 Vdc Input			18	
Soldering Temperature	1.5 mm from case 10 sec. 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
Efficiency			See Table			%
Isolation Voltage	Input-output, and rated for 60 sec.	Suffix “1”	1000			VDC
		Suffix “3”	3000			
Isolation Resistance	Input-output		1000			MΩ
Isolation Capacitance	Input-output			60		pF
Switching Frequency				70		kHz
Reliability Calculated MTBF	MIL-HDBK-217 F @ 25 °C		1800			k hours
Safety Standard	IEC / EN / UL 62368-1		Designed to meet			
Environmental compliance	RoHS		Designed to meet			

Environmental Specifications					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating Ambient Temperature	See the Derating Curve	-40		86	°C
Maximum Case Temperature				100	°C
Thermal Impedance		51.5			°C/W
Storage Humidity				95	% rel. H
Storage Temperature		-55		125	°C
Cooling	Natural Convection	30 - 65 LFM			

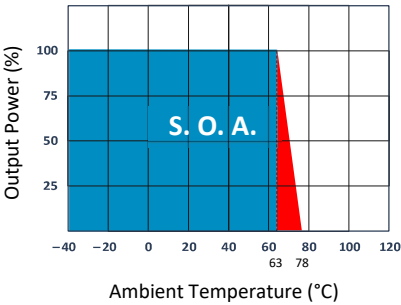
EMC Specifications			
Parameter	Standard	Condition	Criterion
Conducted Emissions	EN55032	with external components	B
Radiated Emissions	EN55032		B
ESD	IEC 61000-4-2	Air ±8 kV	A
RS	IEC 61000-4-3	10 V/m	A
EFT	IEC 61000-4-4	±2.0 kV with external components	A
CS	IEC 61000-4-6	10 Vrms	A
PFMF	IEC 61000-4-8	1 A/m	A

Physical Specifications	
Parameter	Value
Case Material	Nonconductive Black Plastic (UL94V-0 rated)
Pin Material	Tinned copper
Potting Material	Epoxy (UL94V-0 rated)
Weight	2.8 g, typ.
Dimensions	0.76" x 0.28" x 0.39"

Thermal Derating

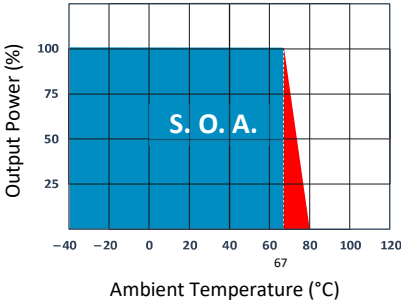
To enhance the system reliability, the power module should always be operated below the maximum operating temperature. If the temperature exceeds the maximum operating temperature, reliability of the unit may be affected.

Temperature Derating Curve



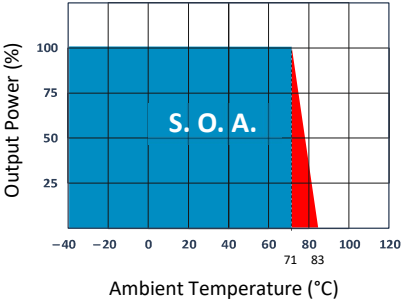
Efficiency 82 % ~ 83 % Models

Temperature Derating Curve



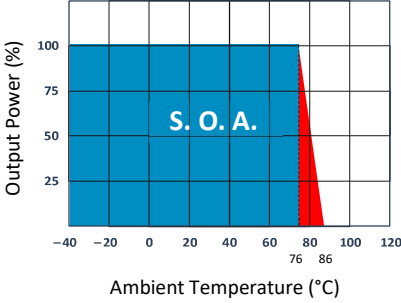
Efficiency 84 % ~ 85 % Models

Temperature Derating Curve



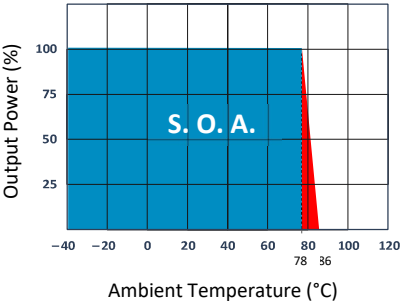
Efficiency 86 % ~ 87 % Models

Temperature Derating Curve



Efficiency 88 % ~ 90 % Models

Temperature Derating Curve

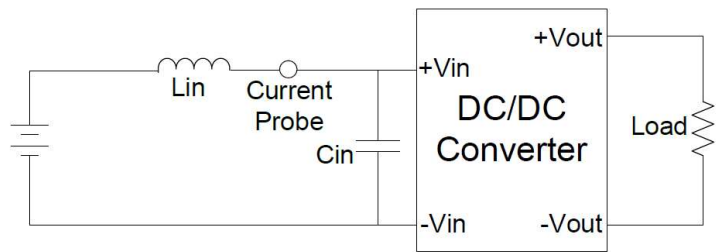


Efficiency 91 % ~ 92 % Models

Test Configurations

Input Reflected Ripple Current Test Step

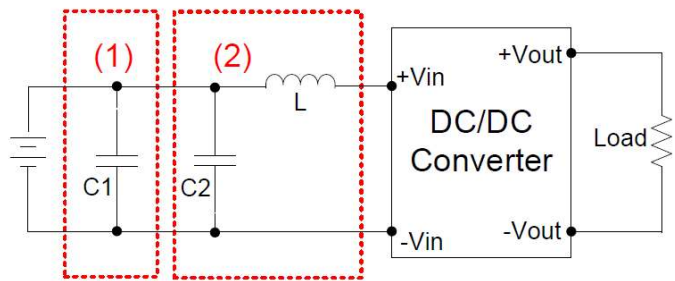
Input reflected ripple current is measured with a source inductor L_{in} (12 μ H) and a source capacitor C_{in} (47 μ F, ESR < 1.0 Ω at 100 kHz) at nominal input and full load.



Test 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.



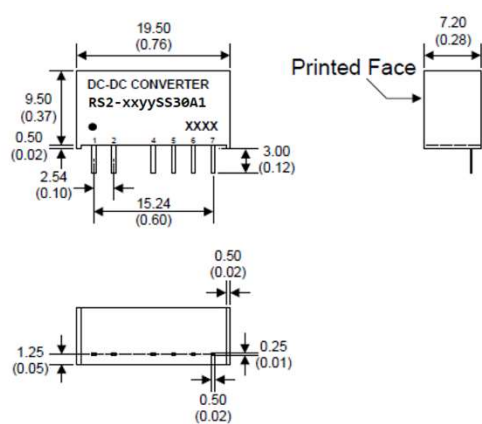
V in	C1	C2	L
05 V	Nippon Chemi-con KY-Series 220 μ F / 100V	MLCC 2,2 μ F / 100V	18 μ H
12 V			

Pin Connections

SIL 7 Package				
	Suffix "1"		Suffix "3"	
PIN NUMBER	SINGLE	DUAL	SINGLE	DUAL
1	+Vin	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin	-Vin
4	-Vout	-Vout	N.P.	N.P.
5	N.P.	COM	-Vout	-Vout
6	+Vout	+Vout	N.P.	COM
7	N.P.	N.P.	+Vout	+Vout
	*N.P. : No Pin			

Mechanical Specifications

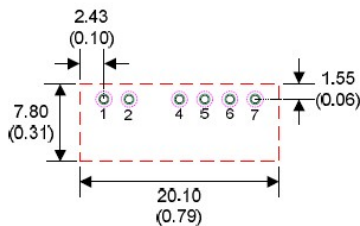
SIL Package



- Notes :
- All dimensions are typical in millimeters (inches).
 - 1. Pin dimension tolerance: ± 0.05 (± 0.002)
 - 2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
 - 3. Pin to case tolerance: ± 0.5 (± 0.02)
 - 4. Case Tolerance: ± 0.5 (± 0.02)

Recommended Footprint Details

SIL Package



- Notes : All dimensions are typical in millimeters (inches).
1. Through hole (black): $\varnothing$ 0.80 (0.031)
 2. Top view pad (green): $\varnothing$ 1.00 (0.039)
 3. Bottom view pad (pink): $\varnothing$ 1.60 (0.063)

Notes

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