

- SIL8 Package
- Wide Input Range 2:1
- Regulated Output
- Isolation 1600 VDC
- Efficiency up to 86 %
- Low Ripple and Noise
- Continuous Short Circuit Protection
- Remote ON OFF Control (Optional)
- Operation Temperature Range -40 ~ 85 °C max.
- Non Conductive Black Plastic Case

RoHS



Picture similar

Number Structure

RS5	-	05	05	RS	30	A	1	(C)
Series / Package		Input Voltage	Output Voltage	Output Type	Power	Int. Code	Isolation Voltage	Pinning
RS5 = SIL8		05 = 5.0 Vdc 12 = 12 Vdc 24 = 24 Vdc 48 = 48 Vdc	03 = 3.3 Vdc 05 = 5.0 Vdc 12 = 12 Vdc 15 = 15 Vdc	RS = Regulated - Single Out. RD = Regulated - Dual Out.	30 = 3 W	Logistics Code	1 = 1600 Vdc	C = Optional Control Pin

* Control Pin (Optional)

Model Selection Guide

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)		
RS5-0503RS30AX	4.5 ~ 9	65	608	3.3	175	700	76	2200
RS5-0505RS30AX	4.5 ~ 9	85	750	5	150	600	80	1000
RS5-0512RS30AX	4.5 ~ 9	80	732	12	62.5	250	82	470
RS5-0515RS30AX	4.5 ~ 9	85	732	15	50	200	82	220
RS5-1203RS30AX	9 ~ 18	25	244	3.3	175	700	79	2200
RS5-1205RS30AX	9 ~ 18	25	305	5	150	600	82	1000
RS5-1212RS30AX	9 ~ 18	25	297	12	62.5	250	84	470
RS5-1215RS30AX	9 ~ 18	35	301	15	50	200	83	220
RS5-2403RS30AX	18 ~ 36	15	127	3.3	175	700	76	2200
RS5-2405RS30AX	18 ~ 36	15	154	5	150	600	81	1000
RS5-2412RS30AX	18 ~ 36	25	151	12	62.5	250	83	470
RS5-2415RS30AX	18 ~ 36	25	145	15	50	200	86	220
RS5-4803RS30AX	36 ~ 72	10	63	3.3	175	700	76	2200
RS5-4805RS30AX	36 ~ 72	6	78	5	150	600	80	2200
RS5-4812RS30AX	36 ~ 72	15	76	12	62.5	250	82	470
RS5-4815RS30AX	36 ~ 72	20	75	15	50	200	83	220
RS5-0505RD30AX	4.5 ~ 9	100	769	±5	±75	±300	78	±470
RS5-0512RD30AX	4.5 ~ 9	100	723	±12	±31.25	±125	83	±220
RS5-0515RD30AX	4.5 ~ 9	100	698	±15	±25	±100	86	±100
RS5-1205RD30AX	9 ~ 18	55	309	±5	±75	±300	81	±470
RS5-1212RD30AX	9 ~ 18	45	291	±12	±31.25	±125	86	±220
RS5-1215RD30AX	9 ~ 18	60	301	±15	±25	±100	83	±100
RS5-2405RD30AX	18 ~ 36	20	152	±5	±75	±300	82	±470
RS5-2412RD30AX	18 ~ 36	25	151	±12	±31.25	±125	83	±220
RS5-2415RD30AX	18 ~ 36	25	149	±15	±25	±100	84	±100
RS5-4805RD30AX	36 ~ 72	20	79	±5	±75	±300	79	±470
RS5-4812RD30AX	36 ~ 72	25	76	±12	±31.25	±125	82	±220
RS5-4815RD30AX	36 ~ 72	20	76	±15	±25	±100	82	±100

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	9	VDC
	12 Vdc Input	9	12	18	
	24 Vdc Input	18	24	36	
	48 Vdc Input	36	48	72	
Input Current (No Load)		See Table			mA
Input Current (Full Load)		See Table			mA
Input Filter		Capacitor			-
Input Reflected Ripple Current ⁽¹⁾			35		mApk-pk
Start up Time	Nominal Vin and constant resistive load		20		ms
Remote ON OFF Control	Module ON	open or high impedance			
	Module OFF	3 mA - 6 mA input current (via 1 kΩ)			
	OFF idle current			3	mA
Recommended input fuse (slow blow)	5.0 Vdc Input		1.6		A
	12 Vdc Input		0.8		
	24 Vdc Input		0.5		
	48 Vdc Input		0.315		
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		-1.0		+1.0	%
Line Regulation		-0.5		+0.5	%
Load Regulation	From 25 % to 100 % Load	-1.0		+1.0	%
Cross Regulation	Asymmetrical Load 25 % / 100 % for Dual	-5		+5	%
Ripple & Noise ⁽¹⁾	20 MHz Bandwidth			75	mVpk-pk
Short Circuit Protection		Indefinite (Automatic Recovery)			-
Temperature Coefficient		-0.02		+0.02	%/°C
Maximum Capacitive Load	Minimum Vin and constant resistive load	See Table			-
Transient Recovery Time ⁽²⁾	see Note 2		300		μ s
Transient Response Deviation ⁽²⁾	see Note 2	-3.0		+3.0	%
Note : 1. Measured with a 0.1 μ F MLCC and 10 μ F Electrolytic capacitor 2. Nominal Vin and 25% load step change (75%-50%-25% of load)					

Absolute Maximum Ratings					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (100 ms)	5.0 Vdc Input			15	VDC
	12 Vdc Input			36	
	24 Vdc Input			50	
	48 Vdc Input			100	
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"	1600			VDC
Isolation Resistance	Input-output		1000			MΩ
Isolation Capacitance	Input-output			680		pF
Switching Frequency			100		650	kHz
Reliability Calculated MTBF	MIL-HDBK-217 F @ 25 °C		1340			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		85	°C
Maximum Case Temperature					100	°C
Thermal Impedance			40			°C/W
Storage Humidity					95	% rel. H
Storage Temperature			-55		125	°C
Cooling	Natural Convection		30 - 65 LFM			

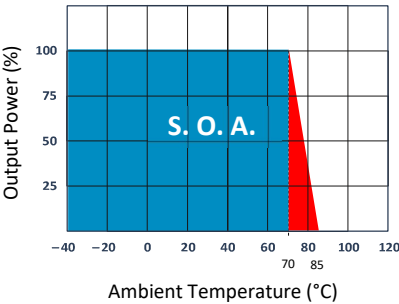
EMC Specifications			
Parameter	Standard	Condition	Criterion
Conducted Emissions	EN55032	with external components	A
Radiated Emissions	EN55032		A
ESD	IEC 61000-4-2	Air: ±8 kV / Indirect: ±6 kV	A
RS	IEC 61000-4-3	20 V/m	A
EFT	IEC 61000-4-4	±2 kV with external components	A
Surge	IEC 61000-4-5	±1 kV with 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	4.5 g , typ.
Dimensions	0.86" x 0.36" x 0.44"

Thermal Derating

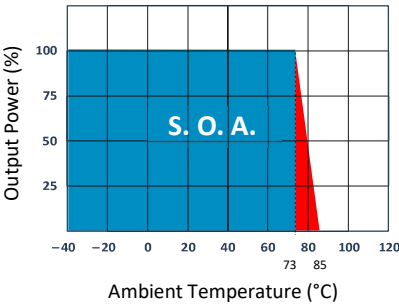
To enhance the system reliability, the power module should always be operated below the maximum operating temperature. If the temperature exceeds the maximum operating temperature, reliability of the unit may be affected.

Temperature Derating Curve



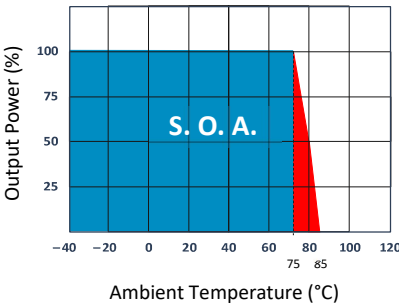
5 VDC Output Models

Temperature Derating Curve



3.3 VDC Output & Efficiency 81 % ~ 83 % Models

Temperature Derating Curve

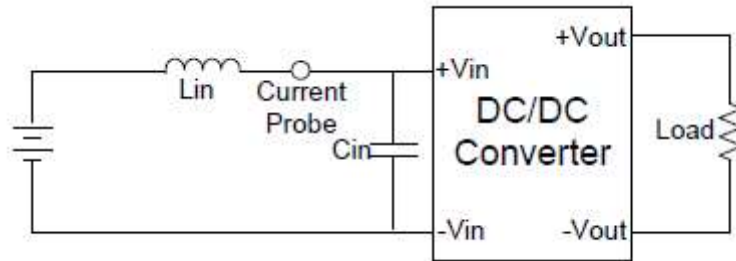


Efficiency 84 % ~ 86 % Models

Test Configurations

Input Reflected Ripple Current Test Step

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

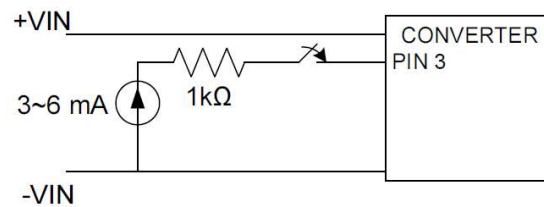


Remote Module ON / OFF

Remote Module ON / OFF

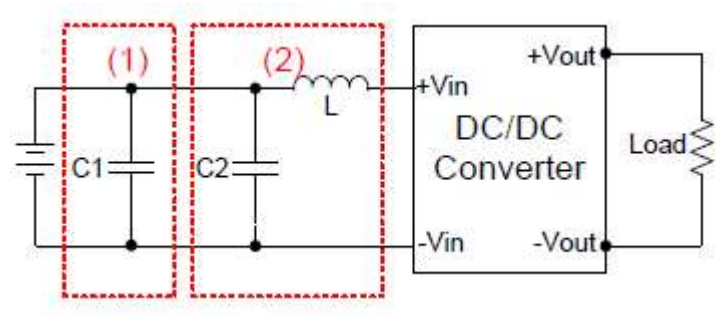
ON: Open or high impedance

OFF: Input current ($3\ \text{mA} \sim 6\ \text{mA}$) via $1\ \text{k}\Omega$ to Pin3



EMC Filter

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



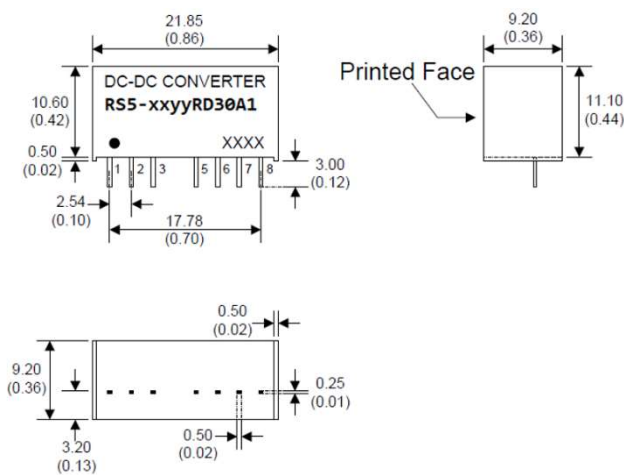
V in	Output	C1	C2	L1
5 V	Single & Dual	Nippon Chemi-con KY-Series 470μF / 100V	Nippon Chemi-con KY-Series 220μF / 25V	5.6μH
12 V	Single		Nippon Chemi-con KY-Series 100μF / 100V	18μH
12 V	Dual		MLCC 2.2μF / 100V	
24 V	Single & Dual		MLCC 10μF / 50V	
48 V	Single & Dual		Nippon Chemi-con KY-Series 100μF / 100V	56μH

Pin Connections

PIN CONNECTIONS				
			+ Control Pin	
PIN NUMBER	SINGLE	DUAL	SINGLE	DUAL
1	-Vin	-Vin	-Vin	-Vin
2	+Vin	+Vin	+Vin	+Vin
3	N.P.	N.C.	CTRL	CTRL
5	N.P.	N.C.	N.C.	N.C.
6	+Vout	+Vout	+Vout	+Vout
7	-Vout	COM	-Vout	COM
8	N.C.	-Vout	N.C.	-Vout
	*N.P. : No PIN			
	*N.C. : No Connection			
	*CTRL : Control Remote ON/OFF			

Mechanical Specifications

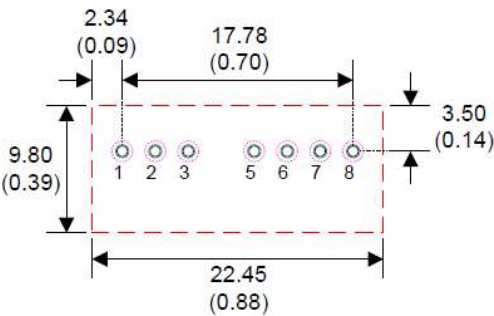
SIL Package



- 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)
 - 5. Stand-off tolerance: ± 0.1 (± 0.004)

Recommended Footprint Details

SIL Package



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

Notes

The information and specification contained in this data sheet are believed to be correct at time of publication. However, Acal BFi accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice.