

Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

BASIC CHARACTERISTICS

Parameter	Condition		Min.	Typ.	Max.
Input Filter			Pi-Type		
Input Voltage Range	nom. Vin = 12VDC nom. Vin = 24VDC nom. Vin = 48VDC		9VDC 18VDC 36VDC	12VDC 24VDC 48VDC	18VDC 36VDC 75VDC
Input Surge Voltage	100ms max.	nom. Vin = 12VDC nom. Vin = 24VDC nom. Vin = 48VDC			36VDC 50VDC 100VDC
Input Reflected Ripple Current ⁽⁵⁾				20mA _{p-p}	
Minimum Load ⁽⁶⁾			10%		
Start-up Time	Power up			20ms	
ON/OFF CTRL ⁽⁷⁾	Positive Logic	DC-DC ON DC-DC OFF	Open or 3.5VDC < V _{CTRL} < 12VDC Short or 0VDC < V _{CTRL} < 1.2VDC		
	Negative Logic	DC-DC ON DC-DC OFF	Short or 0VDC < V _{CTRL} < 1.2VDC Open or 3.5VDC < V _{CTRL} < 12VDC		
Input Current of CTRL pin	DC-DC ON		-0.5mA		+1.0mA
Standby Current	DC-DC OFF			20mA	
Internal Operating Frequency	Single		450kHz	500kHz	550kHz
	Dual		270kHz	300kHz	330kHz
Ripple and Noise	20MHz BW	Single		50mV _{p-p}	
		Dual		75mV _{p-p}	

Notes:

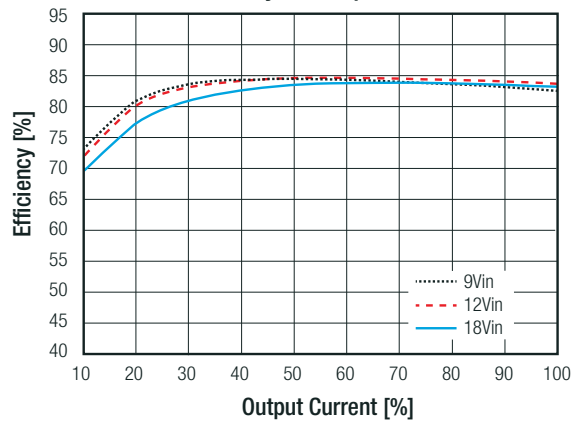
Note5: Simulated source impedance of 12μH. 12μH inductor in series with +Vin

Note6: The RP15-F series requires a minimum of 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification

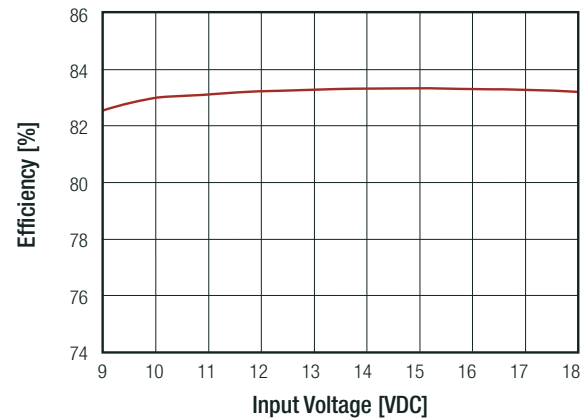
Note7: If no suffix is specified, the control pin will be omitted. If fitted, the ON/OFF control function can be positive or negative logic. The pin voltage is referenced to -Vin pin

RP15-1205SF

Efficiency vs. Output Current



Efficiency vs. Input Voltage full load

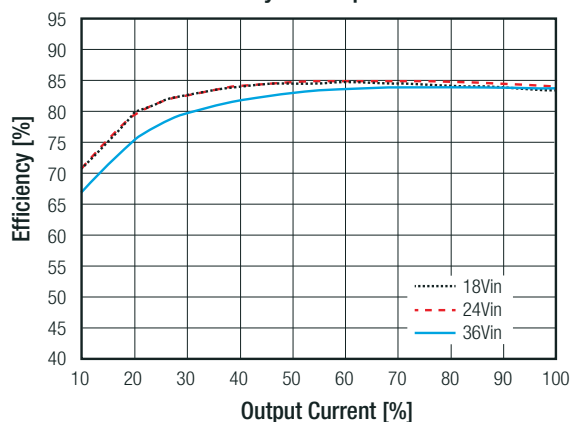


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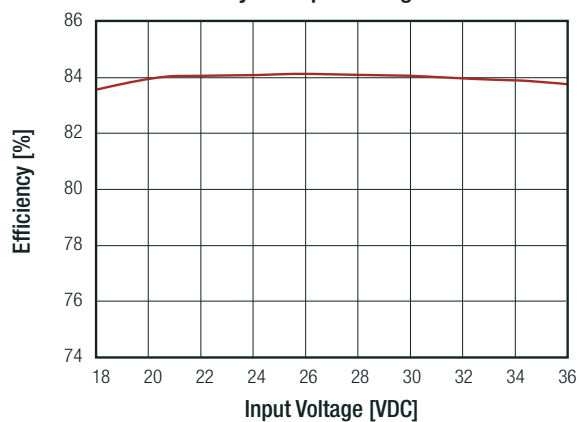
Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

RP15-2405SF

Efficiency vs. Output Current

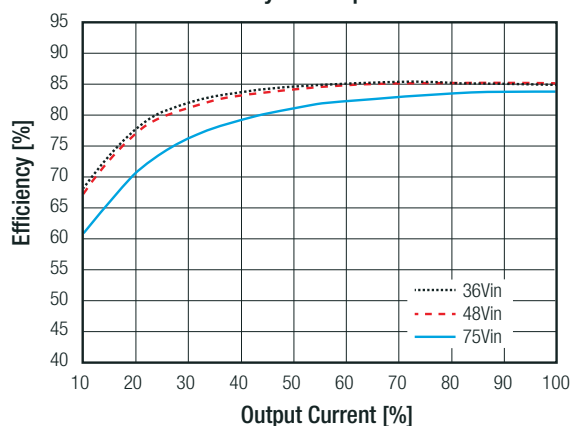


Efficiency vs. Input Voltage full load

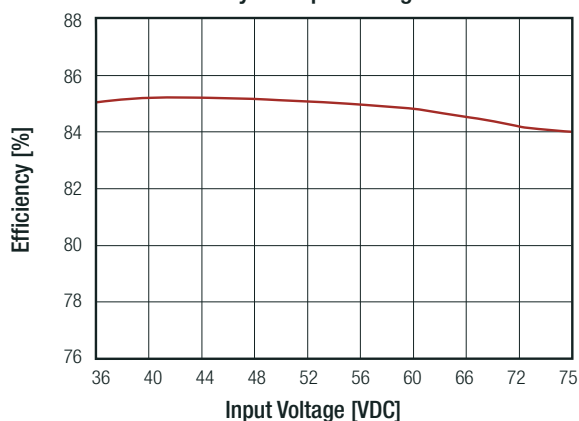


RP15-4805SF

Efficiency vs. Output Current



Efficiency vs. Input Voltage full load



REGULATIONS

Parameter	Condition		Value
Output Accuracy			±1.0%
Line Regulation	low line to high line, full load		±0.5%
Load Regulation	10% to 100% load	Single	±0.5%
		Dual	±0.1%
Cross Regulation	asymmetrical 25%<>100% load		±5.0%
Transient Response Recovery Time	25% load step change		250µs typ.

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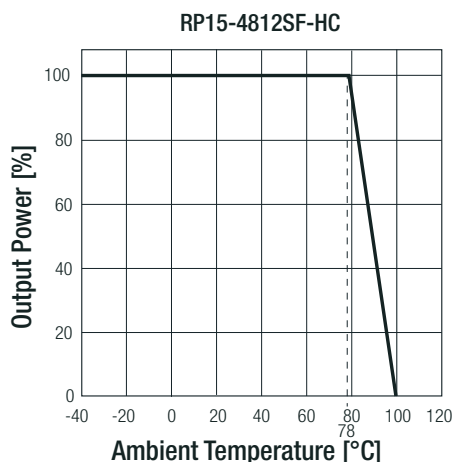
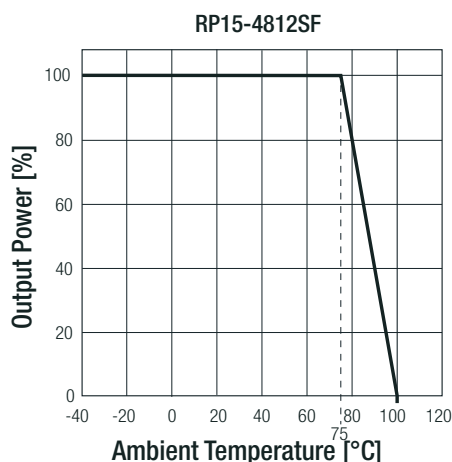
PROTECTIONS

Parameter	Condition		Value
Short Circuit Protection (SCP)			continuous, automatic recovery
Over Voltage Protection (OVP)	zener diode clamp	3.3Vout 5Vout 12Vout 15Vout	3.9VDC 6.2VDC 15VDC 18VDC
Over Load Protection (OLP)	% of lout rated		150% typ.
Isolation Voltage ⁽⁸⁾	I/P to O/P I/P to O/P to case		1.6kVDC/ 1 minute 1.6kVDC/ 1 minute
Isolation Resistance	Viso= 500VDC		1GΩ min.
Isolation Capacitance			300pF typ.
Notes:			
Note8: For repeat Hi-Pot testing, reduce the time and/or the test voltage			
Note9: This power module is not internally fused. An input line fuse must always be used			

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	without derating with derating		-40°C to +75°C -40°C to +100°C
Maximum Case Temperature			+100°C
Temperature Coefficient			±0.02%/K max.
Thermal Impedance	@ natural convection 0.1m/s	without heat-sink with heat-sink	12K/W 10K/W
Operating Humidity	non-condensing		5% - 95% RH
Operating Altitude			2000m
Thermal Shock			according to MIL-STD-810F
Vibration			according to MIL-STD-810F
MTBF	MIL-HDBK-217F, G.B. Bellcore TR-NWT-000332 ⁽¹⁰⁾		2318 x 10 ³ hours 2041 x 10 ³ hours

Derating Graph⁽¹¹⁾



Notes:

Note10: BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment)

Note11: Derating graphs are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact RECOM Techsupport for detailed information

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SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Condition	Standard
Information Technology Equipment, General Requirements for Safety	E196683	UL60950-1, 2nd Edition, 2011 CAN/CSA-C22.2 No. 60950-1-07, 2nd Edition, 2011
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS2		RoHS-2011/65/EU + AM-2015/863

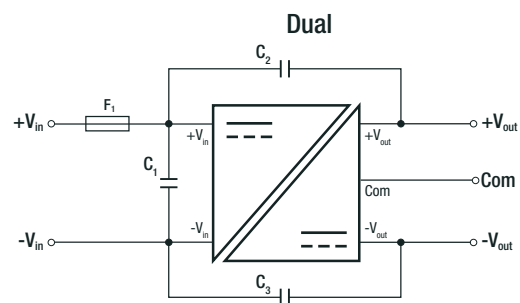
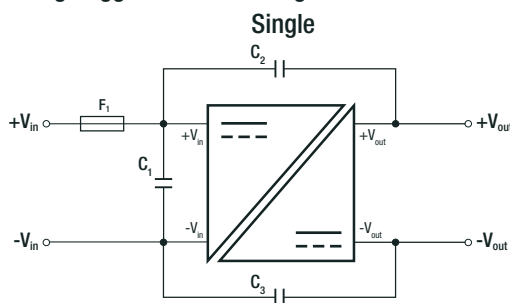
EMC Compliance

Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	EN55032, Class A and B
ESD Electrostatic discharge immunity test	EN61000-4-2, Criteria B
Radiated, radio-frequency, electromagnetic field immunity test	EN61000-4-3, Criteria A
Fast Transient and Burst Immunity ⁽¹²⁾	EN61000-4-4, Criteria B
Surge Immunity ⁽¹²⁾	EN61000-4-5, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	EN61000-4-6, Criteria A
Power Magnetic Field Immunity	EN61000-4-8, Criteria A

Notes:

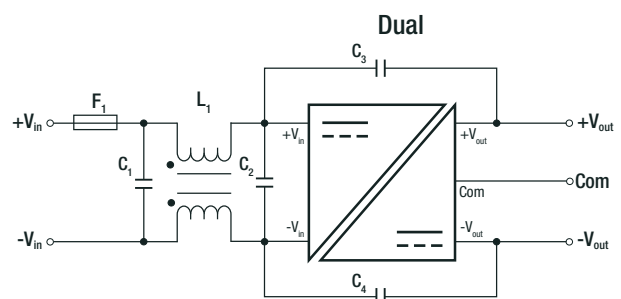
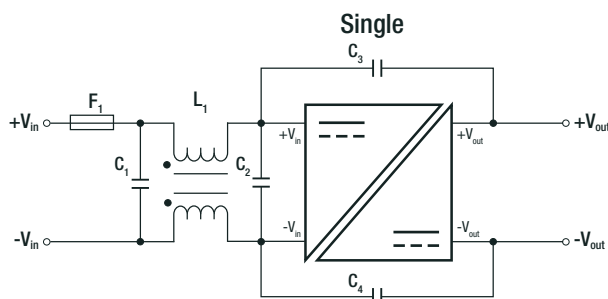
Note12: An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5
Recom suggests Nippon chemi-con KY series 220µF/100V

EMC Filtering Suggestions according to EN55032



Component List Class A

MODEL	C1	C2	C3
RP15-12xxSF, RP15-12xxDF	6.8µF/50V, 1812 MLCC	1000pF/2kV, 1808 MLCC	1000pF/2kV, 1808 MLCC
RP15-24xxSF, RP15-24xxDF	2.2µF/50V, 1812 MLCC	1000pF/2kV, 1808 MLCC	1000pF/2kV, 1808 MLCC
RP15-48xxSF, RP15-48xxDF	1.5µF/100V, 1812 MLCC	1000pF/2kV, 1808 MLCC	1000pF/2kV, 1808 MLCC



Component List Class B

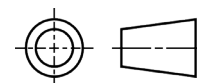
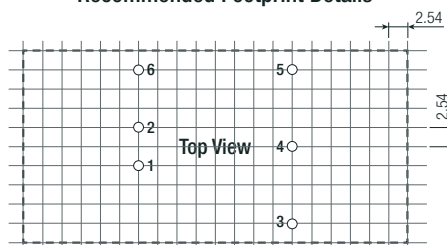
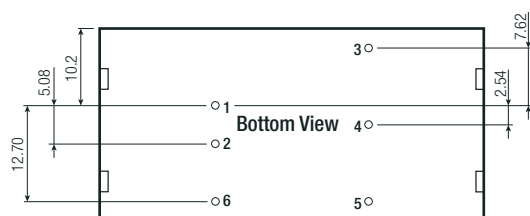
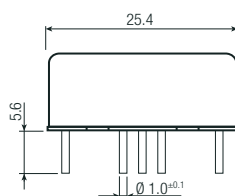
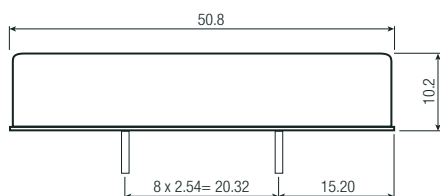
MODEL	C1	C2	C3/C4	L1
RP15-12xxSF RP15-12xxDF	4.7µF/50V 1812 MLCC	N/A	1000pF/2kV 1808 MLCC	CMC: 325µH ref.: WE 744290321 ref.: CMC-06
RP15-24xxSF RP15-24xxDF	3.3µF/50V 1812 MLCC	N/A	1000pF/2kV 1808 MLCC	CMC: 325µH ref.: WE 744290321 ref.: CMC-06
RP15-48xxSF RP15-48xxDF	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	1000pF/2kV 1808 MLCC	CMC: 325µH ref.: WE 744290321 ref.: CMC-06

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DIMENSIONS and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case base potting	nickel coated copper non-conductive black plastic epoxy (UL94V-0)
Dimensions (LxWxH)	without Heat-sink with Heat-sink	50.8 x 25.4 x 10.2mm 56.8 x 25.4 x 16.8mm
Weight	without Heat-sink with Heat-sink	27g 37.89g

Dimension Drawing (mm)



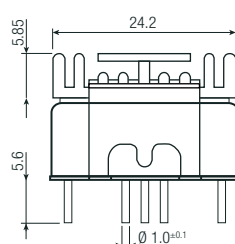
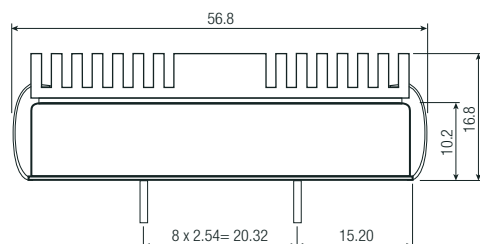
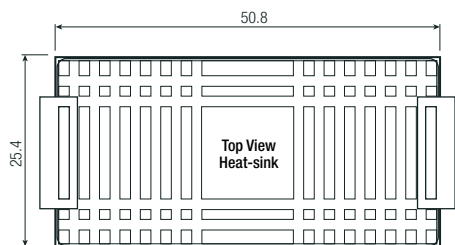
Pinning Information

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	no Pin	Com
5	-Vout	-Vout
6	CTRL ⁽³⁾	CTRL ⁽³⁾

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm

Recommended Footprint Details

Dimension Drawing with Heat-sink (mm)



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PACKAGING INFORMATION

Parameter	Type		Value
Packaging Dimension (LxWxH)	tube	without heat-sink	255.0 x 54.0 x 22.0mm
	tray	with heat-sink	302.5 x 222.0 x 20.0mm
Packaging Quantity	tube	without heat-sink	9pcs
	tray	with heat-sink	20pcs
Storage Temperature Range			-55°C to +125°C
Storage Humidity	non-condensing		5% - 95% RH

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