

CRW-8W Series

8W Ultra Wide Input Range Regulated Single & Dual output



Features

- Ultra Wide Input Range
- 3000VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 87%
- Under Voltage lock-out circuit
- Over Voltage Protection
- Over Load Protection
- Remote ON/OFF
- EN 50155 approval for railway applications
- Operating Temperature Range -40 ~ 98°C max.



PART NUMBER STRUCTURE

CRW - 24 05 S 8
(1) (2) (3) (4) (5)

(1) Series

(2) Input Voltage Range

24 - 13-70 V

110 - 42-176 V

(4) Output Type

S - Single Output

D - Dual Output

(5) Watt

(3) Output Voltage

3R3 - 3.3 V

05 - 5.0 V

12 - 12 V

15 - 15 V

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

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)		
CRW-243R3S8	13-70	30	379	3.3	0	2400	87	1330
CRW-2405S8	13-70	20	375	5	0	1600	89	1330
CRW-2412S8	13-70	10	375	12	0	665	89	330
CRW-2415S8	13-70	10	375	15	0	535	89	220
CRW-2405D8	13-70	10	392	±5	0	±800	85	±900
CRW-2412D8	13-70	10	375	±12	0	±335	89	±220
CRW-2415D8	13-70	10	379	±15	0	±265	88	±100
CRW-1103R3S8	42-176	10	86	3.3	0	2400	84	1330
CRW-11005S8	42-176	10	86	5	0	1600	86	1330
CRW-11012S8	42-176	5	85	12	0	665	86	330
CRW-11015S8	42-176	5	85	15	0	535	86	220
CRW-11005D8	42-176	10	89	±5	0	±800	82	±900
CRW-11012D8	42-176	5	86	±12	0	±335	85	±220
CRW-11015D8	42-176	5	86	±15	0	±265	86	±100

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INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	24V Input	13	24	70	VDC
	110V Input	42	110	176	
Input Filter		Pi Type			
Input Reflected Ripple Current (1)			20		mApk-pk
Start up Time	Nominal Vin and constant resistive load		30		ms
Remote ON/OFF Control (2)	Module ON (Open Circuit)	3.0		12	VDC
	Module OFF (Short circuit pin 1 and pin 2/3)	0		1.2	
		OFF idle current		5.0	
Recommended input fuse (slow blow)	24V Input	1.0			A
	110V Input	0.4			

Note :

1. Measured with a simulated source inductance of 12μH and a source capacitor Cin (33μF, ESR<1.0Ω at 100kHz).
2. The remote ON/OFF control pin is referenced to -Vin (pin2, pin3).

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			-1.0		+1.0	%
Line Regulation			-0.5		+0.5	%
Load Regulation	From 0% to 100% Load		-0.5		+0.5	%
Cross Regulation	Asymmetrical Load 25% / 100% for Dual Output		-5		+5	%
Ripple & Noise (1)	20MHz bandwidth				75	mVpk-pk
Over Voltage Protection (Zener diode clamp)	3.3V Output			3.9		VDC
	5V Output			6.2		
	12V Output			15		
	15V Output			18		
Short Circuit Protection			Indefinite (Automatic Recovery)			
Temperature Coefficient			-0.02		+0.02	%/°C
Maximum Capacitive Load	Nominal Vin and constant resistive load		See Table			
Transient Recovery Time	Nominal Vin and 25% load step change (75%-50%-25% of Io)	For All models		250		μs
Transient Response Deviation		3.3V Single Output	-5		+5	%
		Other Output	-3		+3	

Note :

1. Measured with a 0.1μF MLCC and 10μF electrolytic capacitor.

ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (100 ms)	24V Input			100	VDC
	110V Input			185	
Soldering Temperature	1.5mm from case 10sec max.			260	°C

Note : These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

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GENERAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, and rated for 60sec	3000			VDC
	Case-I/O, and rated for 60sec	1000			
Isolation Resistance	Input-output	1000			MΩ
Isolation Capacitance	Input-output		1000		pF
Switching Frequency	24V models		330		kHz
	110V models		220		
MTBF	MIL-HDBK-217 F @ 25°C	800			k hours
Safety Standard	IEC / EN / UL 62368-1	Designed to meet			
Safety Approval	EN 62368-1	WD-SE-R-190474-A0			
Environmental compliance		RoHS			

ENVIRONMENT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating Ambient Temperature	See the Derating Curve	-40		98	°C
Maximum Case Temperature				105	°C
Thermal Impedance		25.81			°C/W
Storage Humidity				95	% rel. H
Storage Temperature		-55		125	°C
Cooling	Natural Convection	30-65 LFM			
Thermal Shock		IEC60068			
Shock		EN61373			
Vibration		EN61373			

EMC SPECIFICATIONS

Parameter	Standard	Condition	Criterion
Conducted Emissions	EN50121-3-2	99dBuV from 0.15 ~ 0.5MHz · 93dBuV from 0.5 ~ 30MHz	
Radiated Emissions	EN50121-3-2	40dBuV from 30 ~ 230MHz · 47dBuV from 230 ~ 1000MHz	
ESD	IEC 61000-4-2	Air: ±8kV / Contact: ±6kV	A
RS	IEC 61000-4-3	20V/m	A
EFT	IEC 61000-4-4	±2kV with external components	A
Surge	IEC 61000-4-5	±2kV with external components	A
CS	IEC 61000-4-6	10Vrms	A
PFMF	IEC 61000-4-8	10A/m	A

PHYSICAL SPECIFICATIONS

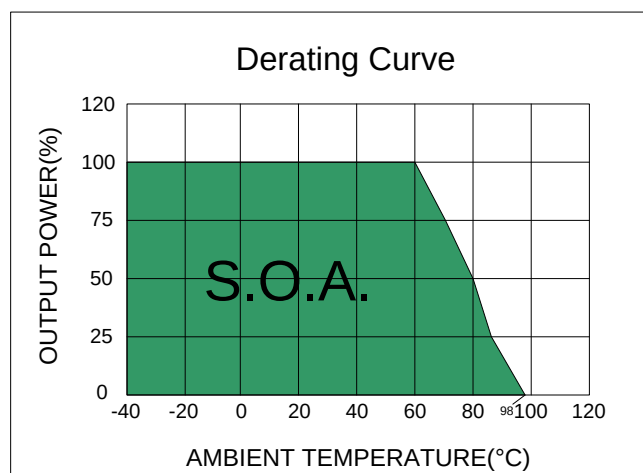
Parameter	Value
Case Material	Copper
Base Material	Nonconductive Black Plastic (UL94V-0 rated)
Pin Material	Ø0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	18.0 g, typ.
Dimensions	1.25" x 0.8" x 0.4"

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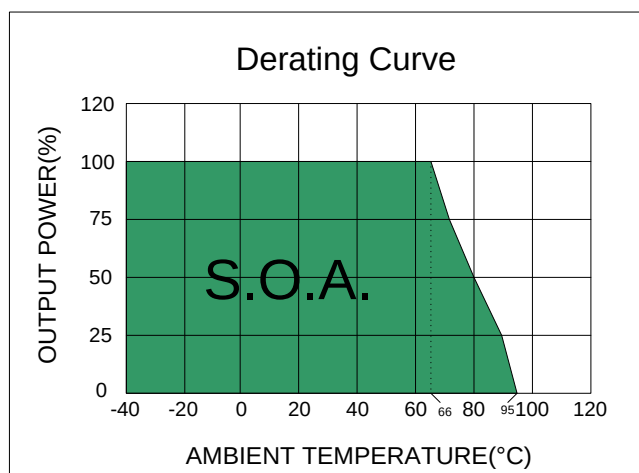
8W Ultra Wide Input Range Regulated Single & Dual output



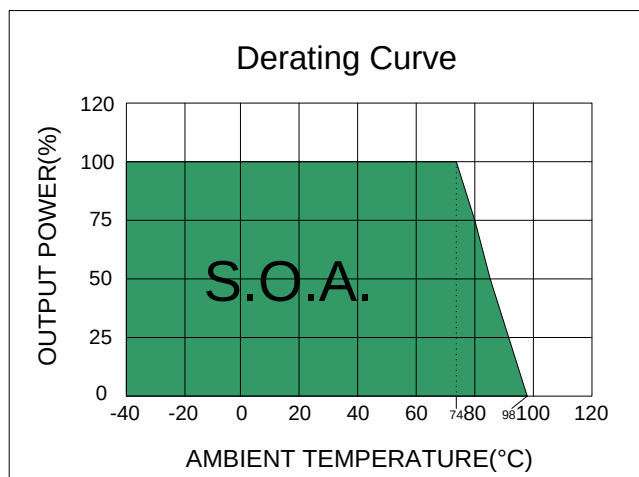
ELECTRICAL CHARACTERISTIC CURVES



RW-11005D8



Efficiency 84% ~ 86% Models

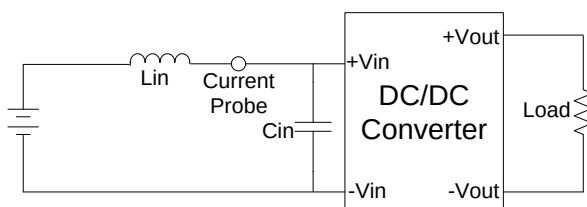


Efficiency 87% ~ 89% Models

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} (33 μ F, ESR<1.0 Ω at 100kHz) at nominal input and full load.



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DESIGN & FEATURE CONFIGURATIONS

Over Current Protection

The module includes an internal over current protection circuit, which will endure current limiting for an unlimited duration during output over load condition. If the output current exceeds the OCP set point, the module will shut down automatically (hiccup). The module will try to restart after shut down. If the over load condition still exists, the module will shut down again.

Over Voltage Protection

The module includes an internal output over voltage protection circuit, which monitors the voltage on the output terminals. If this voltage exceeds the over voltage set point, the module will activate the control loop of internal circuit to clamp the output voltage.

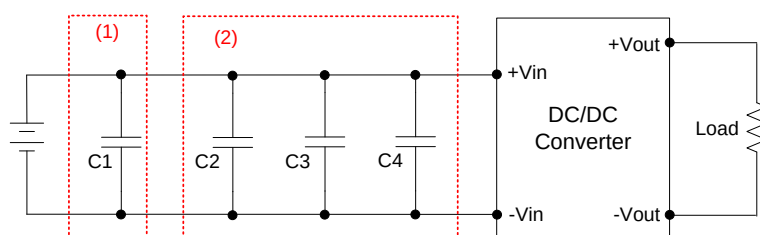
Remote Module ON / OFF

Positive logic turns on the module during high logic and off during low logic. Remote module ON/OFF can be controlled by an external switch between the CTRL terminal and -Vin terminal. For positive logic if the remote feature is not used, please leave the CTRL pin floating.

DESIGN & FEATURE 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.



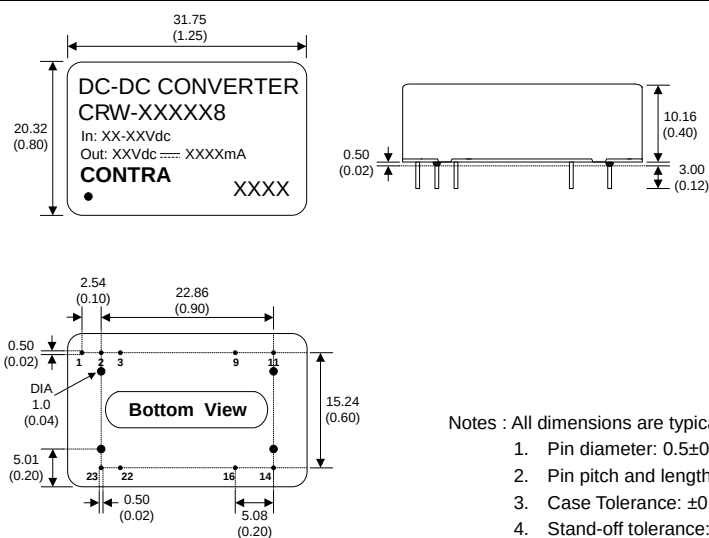
	C1	C2, C3, C4
CRW-24XX8	NIPPON Chemi-con KY Series 330μF, 100V	
CRW-110XX8	RUBY-con BXF Series 100μF, 250V	
		MLCC 1.0μF, 250V

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MECHANICAL SPECIFICATIONS



Notes : All dimensions are typical in millimeters (inches).

1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)
4. Stand-off tolerance: ± 0.1 (± 0.004)

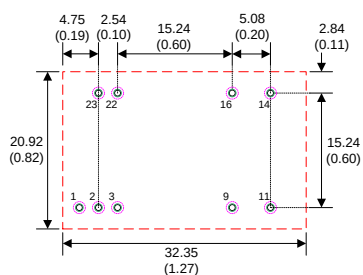
PIN CONNECTIONS

PIN NUMBER	SINGLE	DUAL
1	CTRL	CTRL
2	-Vin	-Vin
3	-Vin	-Vin
9	N.P.	COM
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	COM
22	+Vin	+Vin
23	+Vin	+Vin

*N.P. : No PIN

*N.C. : No Connection

RECOMMENDED FOOTPRINT DETAILS



Notes : 1. All dimensions are typical in millimeters (inches).

Through hole (black) 2 ~ 23: $\varnothing 0.80$ (0.031)

Top view pad (green) 2 ~ 23: $\varnothing 1.00$ (0.039)

Bottom view pad (pink) 2 ~ 23: $\varnothing 1.60$ (0.063)