

C3-S/D01(02)-2W Series

2W Unregulated Single & Dual Separate output



Features

- SIP7 / DIP14 Package
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Efficiency up to 85%
- Non-Conductive Black Plastic Case
- Operation Temperature Range -40 ~ 100°C max.



PART NUMBER STRUCTURE

C3 - **12** **05** **D** **01** **H**
(1) (2) (3) (4) (5) (6)

(1) Series

(2) Input Voltage Range

05 - 4.5-5.5 V
12 - 10.8-13.2 V
24 - 21.6-26.4 V

(4) Case & Output Type

S - SIP Case, Dual Output
D - DIP Case, Dual Output

(3) Dual Separate Output Voltage

3R3S/D01 - 5.0 V, 3.3 V
7R2S/D01 - 5.0 V, 7.2 V
09S/D01 - 5.0 V, 9.0 V
12S/D01 - 5.0 V, 12 V
15S/D01 - 5.0 V, 15 V
18S/D01 - 5.0 V, 18 V
24S/D01 - 5.0 V, 24 V

(5) Different output voltage

(6) Isolation Voltage (Optional)

Blank - 1 KVDC
H - 3 KVDC

3R3S/D02 - 3.3 V, 3.3 V
05S/D02 - 5.0 V, 5.0 V
7R2S/D02 - 7.2 V, 7.2 V
09S/D02 - 9.0 V, 9.0 V
12S/D02 - 12 V, 12 V
15S/D02 - 15 V, 15 V
18S/D02 - 18 V, 18 V
24S/D02 - 24 V, 24 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 Full Load (mA)	Efficiency @FL (% , typ.)	Capacitive Load @ FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)				
C3-053R3S01	4.5-5.5	35	500	5 , 3.3	200 , 303	80	220
C3-057R2S01	4.5-5.5	35	500	5 , 7.2	200 , 139	80	220
C3-0509S01	4.5-5.5	30	494	5 , 9	200 , 111	81	220
C3-0512S01	4.5-5.5	35	488	5 , 12	200 , 83	82	220
C3-0515S01	4.5-5.5	40	500	5 , 15	200 , 67	80	220
C3-0518S01	4.5-5.5	35	500	5 , 18	200 , 55	80	220
C3-0524S01	4.5-5.5	35	500	5 , 24	200 , 41	80	220
C3-123R3S01	10.8-13.2	20	208	5 , 3.3	200 , 303	80	220
C3-127R2S01	10.8-13.2	20	201	5 , 7.2	200 , 139	83	220
C3-1209S01	10.8-13.2	25	208	5 , 9	200 , 111	80	220
C3-1212S01	10.8-13.2	25	208	5 , 12	200 , 83	80	220
C3-1215S01	10.8-13.2	25	208	5 , 15	200 , 67	80	220
C3-1218S01	10.8-13.2	25	208	5 , 18	200 , 55	80	220
C3-1224S01	10.8-13.2	25	208	5 , 24	200 , 41	80	220
C3-243R3S01	21.6-26.4	12	103	5 , 3.3	200 , 303	81	220
C3-247R2S01	21.6-26.4	12	104	5 , 7.2	200 , 139	80	220
C3-2409S01	21.6-26.4	12	104	5 , 9	200 , 111	80	220
C3-2412S01	21.6-26.4	10	107	5 , 12	200 , 83	78	220
C3-2415S01	21.6-26.4	12	100	5 , 15	200 , 67	83	220
C3-2418S01	21.6-26.4	12	104	5 , 18	200 , 55	80	220
C3-2424S01	21.6-26.4	15	103	5 , 24	200 , 41	81	220
C3-053R3D01	4.5-5.5	35	500	5 , 3.3	200 , 303	80	220
C3-057R2D01	4.5-5.5	30	482	5 , 7.2	200 , 139	83	220
C3-0509D01	4.5-5.5	35	500	5 , 9	200 , 111	80	220
C3-0512D01	4.5-5.5	35	500	5 , 12	200 , 83	80	220
C3-0515D01	4.5-5.5	35	500	5 , 15	200 , 67	80	220
C3-0518D01	4.5-5.5	35	500	5 , 18	200 , 55	80	220
C3-0524D01	4.5-5.5	35	500	5 , 24	200 , 41	80	220
C3-123R3D01	10.8-13.2	25	208	5 , 3.3	200 , 303	80	220
C3-127R2D01	10.8-13.2	25	208	5 , 7.2	200 , 139	80	220
C3-1209D01	10.8-13.2	25	208	5 , 9	200 , 111	80	220
C3-1212D01	10.8-13.2	25	208	5 , 12	200 , 83	80	220
C3-1215D01	10.8-13.2	25	208	5 , 15	200 , 67	80	220
C3-1218D01	10.8-13.2	25	208	5 , 18	200 , 55	80	220
C3-1224D01	10.8-13.2	20	216	5 , 24	200 , 41	77	220
C3-243R3D01	21.6-26.4	12	104	5 , 3.3	200 , 303	80	220
C3-247R2D01	21.6-26.4	12	104	5 , 7.2	200 , 139	80	220
C3-2409D01	21.6-26.4	12	104	5 , 9	200 , 111	80	220
C3-2412D01	21.6-26.4	12	104	5 , 12	200 , 83	80	220
C3-2415D01	21.6-26.4	10	104	5 , 15	200 , 67	80	220
C3-2418D01	21.6-26.4	12	104	5 , 18	200 , 55	80	220
C3-2424D01	21.6-26.4	10	99	5 , 24	200 , 41	84	220

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Model Number	Input Voltage Range (VDC)	Input Current		Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency @FL (% , typ.)	Capacitive Load @ FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)				
C3-053R3S02	4.5-5.5	50	519	3.3 , 3.3	303 , 303	77	220
C3-0505S02	4.5-5.5	40	494	5 , 5	200 , 200	81	220
C3-057R2S02	4.5-5.5	25	476	7.2 , 7.2	139 , 139	84	220
C3-0509S02	4.5-5.5	32	506	9 , 9	111 , 111	79	220
C3-0512S02	4.5-5.5	35	494	12 , 12	83 , 83	81	220
C3-0515S02	4.5-5.5	46	494	15 , 15	67 , 67	81	220
C3-0518S02	4.5-5.5	43	494	18 , 18	55 , 55	81	220
C3-0524S02	4.5-5.5	55	500	24 , 24	41 , 41	80	220
C3-123R3S02	10.8-13.2	25	208	3.3 , 3.3	303 , 303	80	220
C3-1205S02	10.8-13.2	25	206	5 , 5	200 , 200	81	220
C3-127R2S02	10.8-13.2	18	219	7.2 , 7.2	139 , 139	76	220
C3-1209S02	10.8-13.2	25	211	9 , 9	111 , 111	79	220
C3-1212S02	10.8-13.2	20	203	12 , 12	83 , 83	82	220
C3-1215S02	10.8-13.2	18	201	15 , 15	67 , 67	83	220
C3-1218S02	10.8-13.2	25	203	18 , 18	55 , 55	82	220
C3-1224S02	10.8-13.2	25	203	24 , 24	41 , 41	82	220
C3-243R3S02	21.6-26.4	12	102	3.3 , 3.3	303 , 303	82	220
C3-2405S02	21.6-26.4	10	102	5 , 5	200 , 200	82	220
C3-247R2S02	21.6-26.4	13	108	7.2 , 7.2	139 , 139	77	220
C3-2409S02	21.6-26.4	15	107	9 , 9	111 , 111	78	220
C3-2412S02	21.6-26.4	15	105	12 , 12	83 , 83	79	220
C3-2415S02	21.6-26.4	20	104	15 , 15	67 , 67	80	220
C3-2418S02	21.6-26.4	13	102	18 , 18	55 , 55	82	220
C3-2424S02	21.6-26.4	15	102	24 , 24	41 , 41	82	220
C3-053R3D02	4.5-5.5	50	519	3.3 , 3.3	303 , 303	77	220
C3-0505D02	4.5-5.5	32	494	5 , 5	200 , 200	81	220
C3-057R2D02	4.5-5.5	35	494	7.2 , 7.2	139 , 139	81	220
C3-0509D02	4.5-5.5	35	494	9 , 9	111 , 111	81	220
C3-0512D02	4.5-5.5	35	488	12 , 12	83 , 83	82	220
C3-0515D02	4.5-5.5	35	500	15 , 15	67 , 67	80	220
C3-0518D02	4.5-5.5	35	500	18 , 18	55 , 55	80	220
C3-0524D02	4.5-5.5	35	500	24 , 24	41 , 41	80	220
C3-123R3D02	10.8-13.2	25	208	3.3 , 3.3	303 , 303	80	220
C3-1205D02	10.8-13.2	25	208	5 , 5	200 , 200	80	220
C3-127R2D02	10.8-13.2	25	208	7.2 , 7.2	139 , 139	80	220
C3-1209D02	10.8-13.2	25	198	9 , 9	111 , 111	84	220
C3-1212D02	10.8-13.2	20	206	12 , 12	83 , 83	81	220
C3-1215D02	10.8-13.2	25	206	15 , 15	67 , 67	81	220
C3-1218D02	10.8-13.2	25	206	18 , 18	55 , 55	81	220
C3-1224D02	10.8-13.2	25	206	24 , 24	41 , 41	81	220
C3-243R3D02	21.6-26.4	12	103	3.3 , 3.3	303 , 303	81	220
C3-2405D02	21.6-26.4	8	100	5 , 5	200 , 200	83	220
C3-247R2D02	21.6-26.4	15	103	7.2 , 7.2	139 , 139	81	220
C3-2409D02	21.6-26.4	15	103	9 , 9	111 , 111	81	220
C3-2412D02	21.6-26.4	15	103	12 , 12	83 , 83	81	220
C3-2415D02	21.6-26.4	10	98	15 , 15	67 , 67	85	220
C3-2418D02	21.6-26.4	15	103	18 , 18	55 , 55	81	220
C3-2424D02	21.6-26.4	17	104	24 , 24	41 , 41	80	220

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INPUT SPECIFICATIONS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	5 V Input	4.5	5	5.5	VDC
	12 V Input	10.8	12	13.2	
	24 V Input	21.6	24	26.4	
Input Filter		Capacitor			
Input Reflected Ripple Current (1)			20		mApk-pk
Start up Time	Nominal Vin and constant resistive load		20		ms
Recommended input fuse (slow blow)	5 V Input	1.25			A
	12 V Input	0.5			
	24V Input	0.25			
Note : 1. Measured with a simulated source inductance of 12μH and a source capacitor Cin (47μF, ESR<1.0Ω at 100kHz).					

ABSOLUTE MAXIMUM RATINGS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (100 ms)	5 V Input			7	VDC
	12 V Input			15	
	24 V Input			28	
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.					

OUTPUT SPECIFICATIONS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		-3		+3	%
Line Regulation	For 1% Vin Change	-1.2		+1.2	%
Load Regulation	From 20% to 100% Load			+10	%
	Output 3.3V Model			+20	%
Ripple & Noise	20MHz bandwidth			75	mVpk-pk
Short Circuit Protection		Short Term (1sec)			
Temperature Coefficient		-0.02		+0.02	%/°C
Maximum Capacitive Load	Minimum Vin and constant resistive load	See Table			

GENERAL SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, and rated for 60sec	Standard Type	1000			VDC
		Suffix “H”	3000			
Isolation Resistance	Input-output		1000			MΩ
Isolation Capacitance	Input-output			60		pF
Switching Frequency				80		kHz
MTBF	MIL-HDBK-217 F @ 25°C		1.121			M hours
Safety Standard	IEC / EN / UL 62368-1		Designed to meet			
Environmental compliance			RoHS			

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ENVIRONMENT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating Ambient Temperature	See the Derating Curve	-40		100	°C
Maximum Case Temperature				100	°C
Thermal Impedance		52.68			°C/W
Storage Humidity				95	% rel. H
Storage Temperature		-55		125	°C
Cooling	Natural Convection	30-65 LFM			

PHYSICAL SPECIFICATIONS

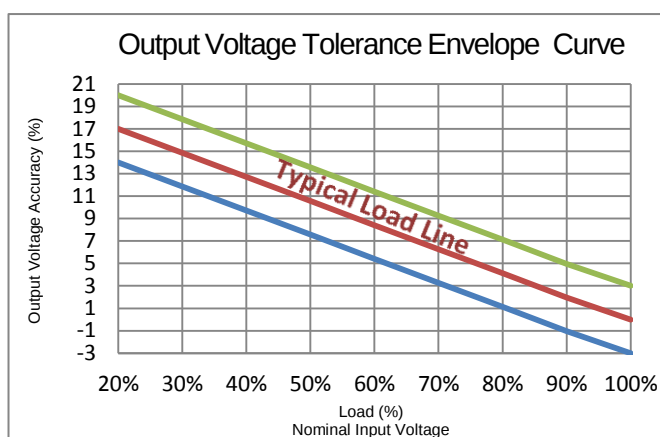
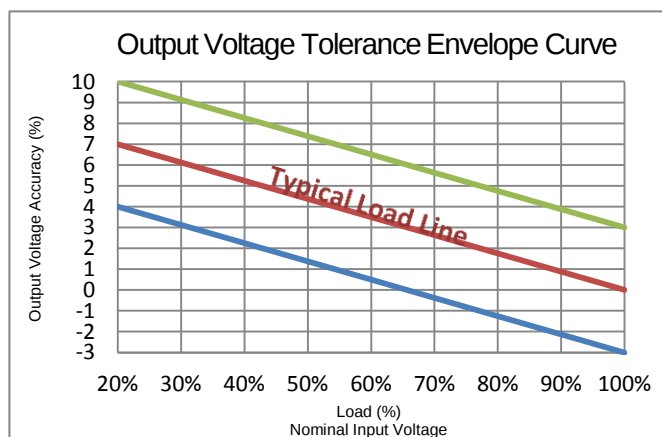
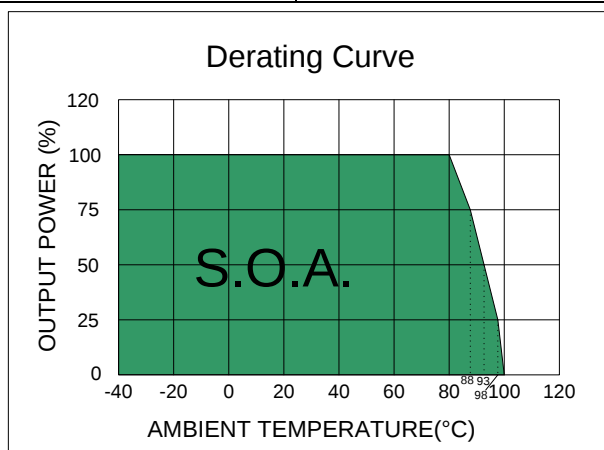
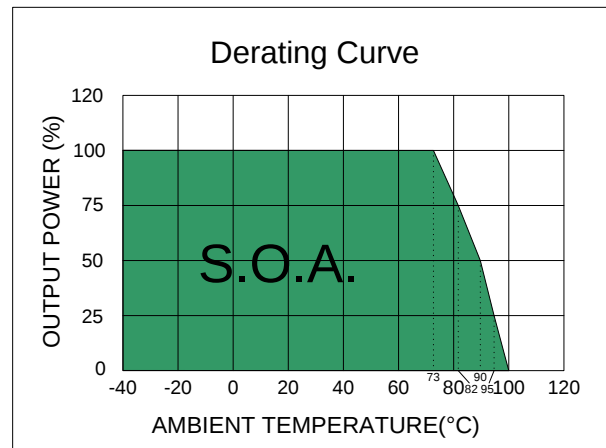
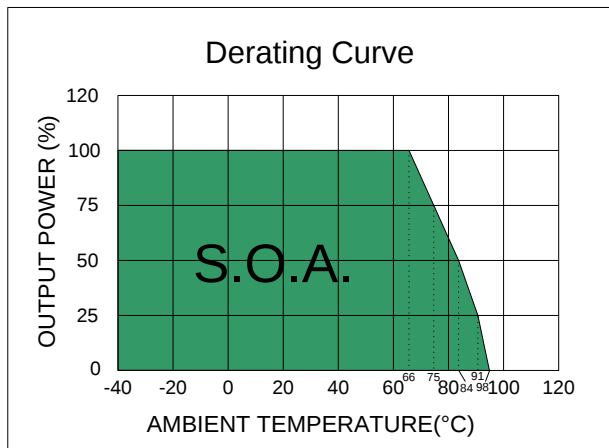
Parameter		Value
Case Material		Nonconductive Black Plastic (UL94V-0 rated)
Pin Material		Alloy 42
Potting Material		Epoxy (UL94V-0 rated)
Weight	SIP Case	2.3 / 2.7 g, typ.
	DIP Case	2.7 g, typ.
Dimensions	SIP Case	0.76" x 0.24" x 0.39" / 0.76" x 0.28" x 0.39"
	DIP Case	0.80" x 0.40" x 0.27"

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ELECTRICAL CHARACTERISTIC CURVES



C3-S/D01(02)-2W Series

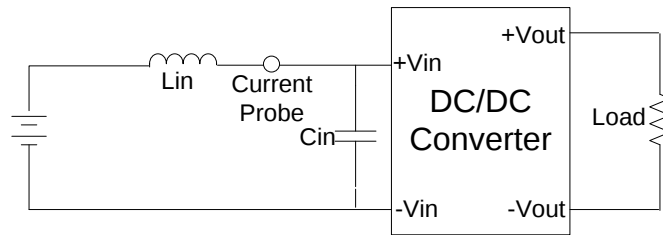
2W Unregulated Single & Dual Separate output



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 100kHz) at nominal input and full load.



DESIGN & FEATURE CONFIGURATIONS

Isolation Voltage

This series is designed to meet the functional insulation of UL, both input and output should be maintained within SELV limits (less than 42.4V peak, or 60VDC).

The isolation test voltage represents a measure of immunity to transient voltages and the part should never be used as an element of a safety isolation system. The part could be expected to function correctly with hundreds of volts offset applied continuously across the isolation barrier; but then the circuitry on both sides of the barrier must be regarded as operating at an unsafe voltage and further isolation/insulation systems must form a barrier between these circuits and any user-accessible circuitry according to safety standard requirements.

Repeated High-Voltage Isolation Testing

Repeated high-voltage isolation testing of a barrier component can actually degrade isolation capability, to a lesser or greater degree depending on materials, construction and environment.

This series has isolation transformers without additional insulation between primary and secondary windings of enameled wire.

While parts can be expected to withstand several times the stated test voltage, the isolation capability does depend on the wire insulation.

Any material including the enamel (typically polyurethane) is susceptible to eventual chemical degradation when subject to very high applied voltage, thus implying that the number of tests should be strictly limited.

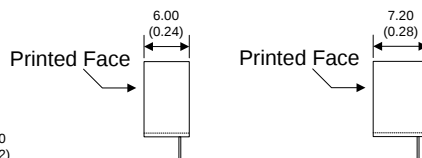
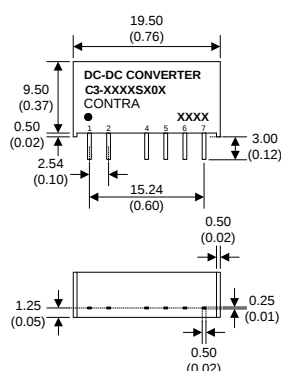
We strongly advise against repeated high voltage isolation testing, but if it is absolutely required, the isolation test voltage should be reduced by 20% from specified test voltage.

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MECHANICAL SPECIFICATIONS



SIP7 Package

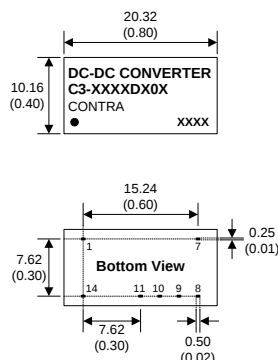
- Notes : All dimensions are typical in millimeters (inches).
1. Pin dimension tolerance: ± 0.05 (± 0.002)
 2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
 3. Pin to case tolerance: ± 0.5 (± 0.02)
 4. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS	
PIN NUMBER	Dual Separate
1	+Vin
2	-Vin
4	+V1 Output
5	-V1 Output
6	+V2 Output
7	-V2 Output

(The Pin Connection of high isolation one is the same with normal one.)

The thickness of the following models is 6.0mm

The 5 Vin Models		The 12 Vin Models		The 24 Vin Models	
C3-0515S02	C3-0515S02H	C3-1205S02	C3-1205S02H	C3-2412S01	C3-2412S01H
		C3-1212S02	C3-1212S02H	C3-2405S02	C3-2405S02H
				C3-247R2S02	C3-247R2S02H
				C3-2409S02	C3-2409S02H
				C3-2412S02	C3-2412S02H



DIP14 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)

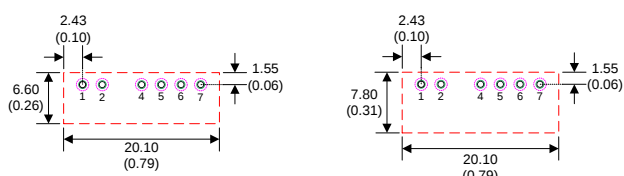
PIN CONNECTIONS	
PIN NUMBER	Dual Separate
1	-Vin
7	N.C
8	-V2 Output
9	+V2 Output
10	-V1 Output
11	+V1 Output
14	+Vin

*N.C. : No Connection

(The Pin Connection of high isolation one is the same with normal one.)

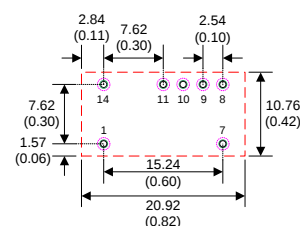
RECOMMENDED FOOTPRINT DETAILS

SIP7 Package



- Notes : 1. All dimensions are typical in millimeters (inches).
- Through hole (black) 1 ~ 7: $\varnothing 0.80$ (0.031)
- Top view pad (green) 1 ~ 7: $\varnothing 1.00$ (0.039)
- Bottom view pad (pink) 1 ~ 7: $\varnothing 1.60$ (0.063)

DIP14 Package



- Notes : 1. All dimensions are typical in millimeters (inches).
- Through hole (black) 1 ~ 14: $\varnothing 0.80$ (0.031)
- Top view pad (green) 1 ~ 14: $\varnothing 1.00$ (0.039)
- Bottom view pad (pink) 1 ~ 14: $\varnothing 1.60$ (0.063)