

MMT

A decorative blue wavy graphic that flows across the top of the page, starting from the left and curving towards the right.

DC/DC CONVERTER

A decorative green graphic featuring a branch with leaves and water droplets on the left side, and a large, flowing green ribbon-like shape that curves across the bottom of the page.

15 Watt

2019

<http://www.mmtmachrone.com>

FEATURES :

- 2:1Wide Input Voltage
- 15 Watt Package
- Efficiency To 80%
- PI Input Filter
- 1500Vdc Isolation
- MTBF:>1,500,000 hrs
- Operating Temperature:-40°C TO +100°C



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage		Input Current		Output Voltage		Output Current	Efficiency	Capacitor Load
	Vdc	No-Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP	µF TYP		
67D-12S05RNL	9-18	30	1524	5	3000	82	2200		
67D-12S09RNL	9-18	30	1470	9	1666	85	1000		
67D-12S12RNL	9-18	30	1470	12	1250	85	1000		
67D-12S15RNL	9-18	30	1470	15	1000	85	680		
67D-12S18RNL	9-18	30	1470	18	833	85	470		
67D-12S24RNL	9-18	30	1453	24	625	86	470		
67D-12D05RNL	9-18	30	1524	±5	±1500	82	±1000		
67D-12D09RNL	9-18	30	1488	±9	±833	84	±470		
67D-12D12RNL	9-18	30	1488	±12	±625	84	±470		
67D-12D15RNL	9-18	30	1488	±15	±500	84	±330		
67D-12D18RNL	9-18	30	1470	±18	±416	85	±220		
67D-12D24RNL	9-18	30	1470	±24	±312	85	±220		
67D-24S05RNL	18-36	25	744	5	3000	84	3300		
67D-24S09RNL	18-36	25	735	9	1666	85	1000		
67D-24S12RNL	18-36	25	735	12	1250	85	1000		
67D-24S15RNL	18-36	25	726	15	1000	86	680		
67D-24S18RNL	18-36	25	726	18	833	86	470		
67D-24S24RNL	18-36	25	718	24	625	87	470		
67D-24D05RNL	18-36	25	753	±5	±1500	83	±1000		
67D-24D09RNL	18-36	25	735	±9	±833	85	±470		
67D-24D12RNL	18-36	25	735	±12	±625	85	±470		
67D-24D15RNL	18-36	25	735	±15	±500	85	±220		
67D-24D18RNL	18-36	25	718	±18	±416	87	±220		
67D-24D24RNL	18-36	25	718	±24	±312	87	±220		

DC-DC Converter

67D SERIES

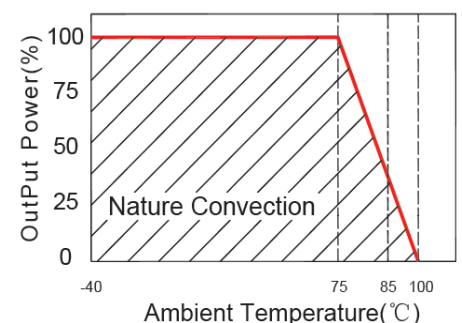
15Watt 1.5KV Isolated
2 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Temperature Derating Graph



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Efficiency	Capacitor Load
	Vdc	No-Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP	uF TYP
67D-48S05RNL	36-72	20	372	5	3000	84	3300
67D-48S09RNL	36-72	20	367	9	1666	85	1000
67D-48S12RNL	36-72	20	363	12	1250	86	1000
67D-48S15RNL	36-72	20	359	15	1000	87	680
67D-48S18RNL	36-72	20	359	18	833	87	470
67D-48S24RNL	36-72	20	359	24	625	87	470
67D-48D05RNL	36-72	20	372	±5	±1500	84	±1000
67D-48D09RNL	36-72	20	367	±9	±833	85	±470
67D-48D12RNL	36-72	20	363	±12	±625	86	±470
67D-48D15RNL	36-72	20	359	±15	±500	87	±330
67D-48D18RNL	36-72	20	359	±18	±416	87	±220
67D-48D24RNL	36-72	20	359	±24	±312	87	±220

Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				2:1	
Filter	Pi TYPE				

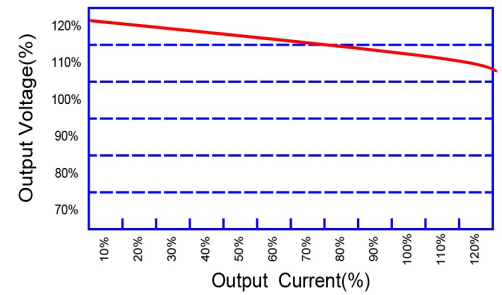
Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit Protection	Hiccup, automatic recovery				
Line Regulation				±0.5	%
Load Regulation	Single (25% to 100%)			±1.0	%
Load Regulation	Dual (25% to 100%,Balance Load)			±2.0	%
Cross Regulation	DUAL (25% to 100%)			±5.0	%
Ripple & Noise	BW=DC To 20MHz			100	mVp-p
Transient response setting time	50% load step change		350		us

General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			300		KHz
Operating Temperature	With derating	-40		100	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	Nickel Coated With Non-Conductive Base				
Weight			36.5		g
Dimensions			50.8x25.4x10.6		mm
Potting Material			Epoxy (UL94V-0 rated)		

Tolerance Envelope Graph

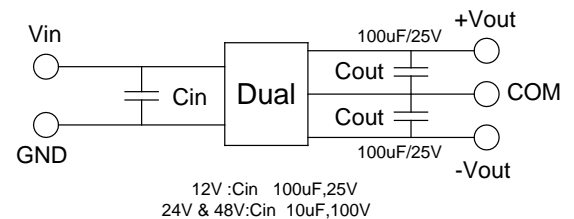
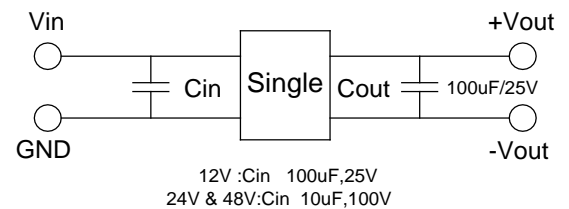


Part Number

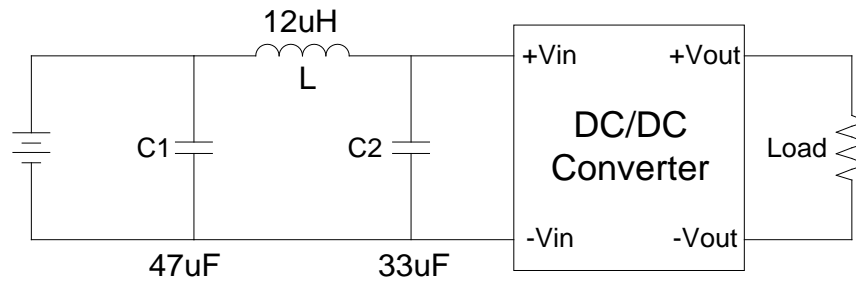
67D - 12 S 05 R NL
A B C D E F

- A:Series
- B:Input Voltage
- C:Single(S)Dual(D)
- D:Output Voltage
- E:Regulated(R)
- F:RoHS Version

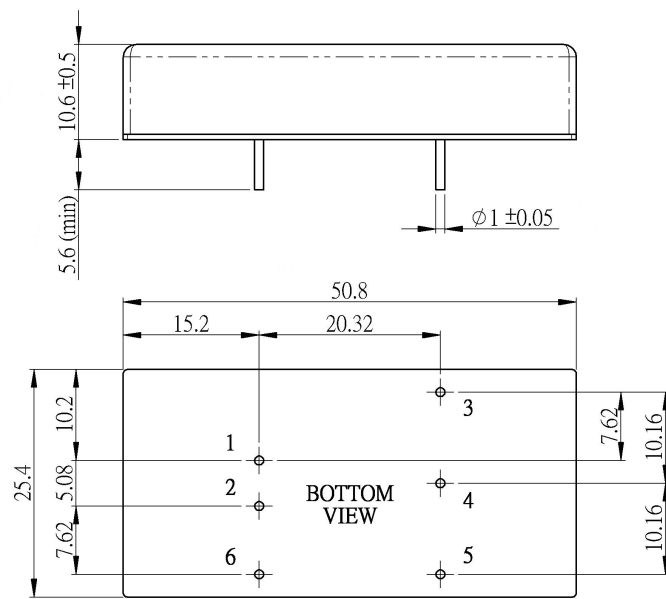
Recommended Test Circuit



Suggest adding input external filter(C1,C2,L)to meet conducted emissions(EN55022 class A)



Markings and dimensions



Unit : mm
Tolerance : XX.X ± 0.5 , XX.XX ± 0.25

PIN Connection

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	NO PIN	-Vout	NO PIN
Dual	+Vin	-Vin	+Vout	COM	-Vout	NO PIN

FEATURES :

- 15W DIL PACKAGE
- 2:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Efficiency	Capacitor Load
	Vdc	No-Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP	uF MAX
67D-12S03R3	9-18	70	1310	3.3	4000	84	1500
67D-12S05R3	9-18	70	1453	5	3000	86	1500
67D-12S12R3	9-18	30	1453	12	1250	86	120
67D-12S15R3	9-18	30	1453	15	1000	86	120
67D-12D05R3	9-18	70	1488	±5	±1500	84	±1000
67D-12D12R3	9-18	30	1454	±12	±625	86	±120
67D-12D15R3	9-18	30	1454	±15	±500	86	±120
67D-24S03R3	18-36	70	655	3.3	4000	84	3300
67D-24S05R3	18-36	70	727	5	3000	86	3300
67D-24S12R3	18-36	30	727	12	1250	86	330
67D-24S15R3	18-36	30	727	15	1000	86	330
67D-24D05R3	18-36	70	744	±5	±1500	84	±2000
67D-24D12R3	18-36	30	727	±12	±625	86	±330
67D-24D15R3	18-36	30	727	±15	±500	86	±330
67D-48S03R3	36-75	40	327	3.3	4000	84	5600
67D-48S05R3	36-75	40	363	5	3000	86	5600
67D-48S12R3	36-75	30	363	12	1250	86	680
67D-48S15R3	36-75	30	363	15	1000	86	680
67D-48D05R3	36-75	40	372	±5	±1500	84	±3300
67D-48D12R3	36-75	30	368	±12	±625	85	±220
67D-48D15R3	36-75	30	368	±15	±500	85	±220

Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				2:1	
Filter	Pi TYPE				

DC-DC Converter

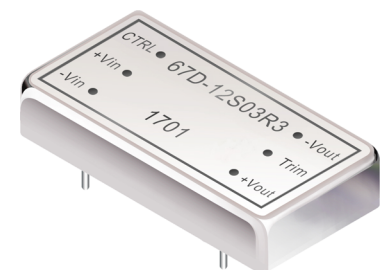
67D-R3 SERIES

15Watt 1.5KV Isolated

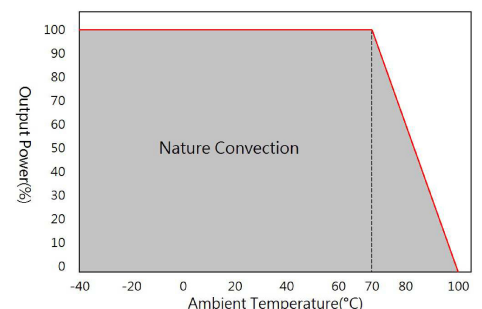
2 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Temperature Derating Graph



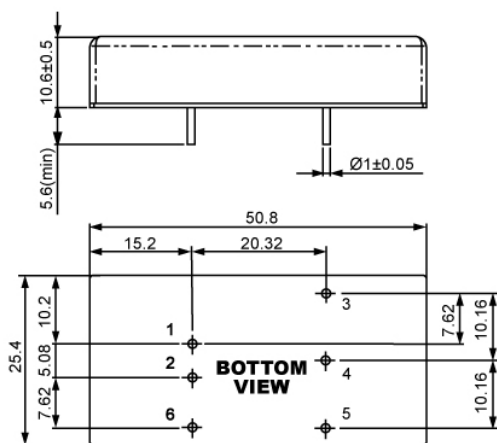
Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit Protection	Hiccup, automatic recovery				
Line Regulation				±0.5	%
Load Regulation	Single			±0.5	%
	Dual (Balance Load)			±1.0	%
Cross Regulation	DUAL (25% to 100% Load)			±5	%
Ripple & Noise	Output:3-15V TYPES BW=DC To 20MHz			100	mVp-p
Ripple & Noise	Output > 15V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient response setting time	25% load step change		300		us

General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage			1500		Vdc
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			300		KHz
Operating Temperature	With derating	-40		100	°C
Storage Temperature		-55		125	°C
Humidity	Non Condensing	5		95	%
Cooling	Free air Convection				
Case material	Nickel coated copper with no-conductive base				
MTBF	MIL-HDBK-217F@25°C	2.318x10 ⁶			Hours
Weight			32.6		g
Dimensions		50.8x25.4x10.6			mm

Markings and dimensions



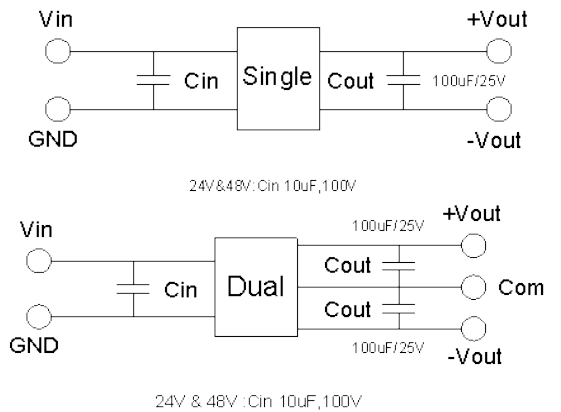
UNIT : mm
Tolerances : XX.X ±0.5, XX.XX±0.25

Part Number

67D - 12 S 03 R 3
A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output(S), Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: Package

Recommended Test Circuit



24V & 48V :Cin 10uF,100V

24V & 48V :Cin 10uF,100V

PIN Assignment

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	Trim	-Vout	Remote On/Off
Dual	+Vin	-Vin	+Vout	Com	-Vout	Remote On/Off

FEATURES :

- 4:1Wide Input Voltage
- 15 Watt Package
- Efficiency To 80%
- PI Input Filter
- 1500Vdc Isolation
- MTBF:>1,500,000 hrs
- Operating Temperature:-40°C TO +100°C



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage		Input Current		Output Voltage		Output Current	Efficiency	Capacitor Load
	Vdc	No-Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP	uF TYP		
67DW-24S05RNL	9-36	25	753	5	3000	83	3300		
67DW-24S09RNL	9-36	25	744	9	1666	84	680		
67DW-24S12RNL	9-36	25	735	12	1250	85	680		
67DW-24S15RNL	9-36	25	726	15	1000	86	470		
67DW-24D05RNL	9-36	25	753	±5	±1500	83	±2200		
67DW-24D09RNL	9-36	25	744	±9	±833	84	±470		
67DW-24D12RNL	9-36	25	735	±12	±625	85	±470		
67DW-24D15RNL	9-36	25	726	±15	±500	86	±330		
67DW-48S05RNL	18-72	20	376	5	3000	83	3300		
67DW-48S09RNL	18-72	20	372	9	1666	84	680		
67DW-48S12RNL	18-72	20	367	12	1250	85	680		
67DW-48S15RNL	18-72	20	363	15	1000	86	470		
67DW-48D05RNL	18-72	20	376	±5	±1500	83	±2200		
67DW-48D09RNL	18-72	20	372	±9	±833	84	±470		
67DW-48D12RNL	18-72	20	367	±12	±625	85	±470		
67DW-48D15RNL	18-72	20	363	±15	±500	86	±330		

DC-DC Converter

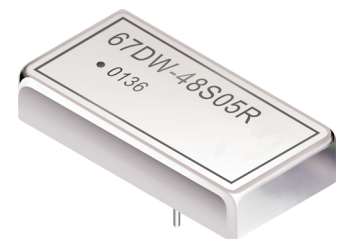
67DW SERIES

15Watt 1.5KV Isolated

4 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Input Specifications

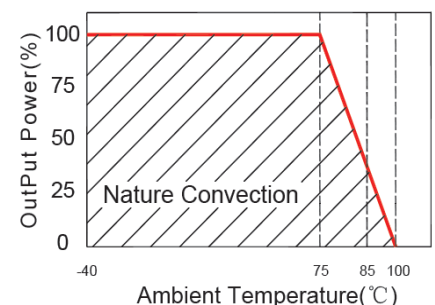
Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				4:1	
Filter	Pi TYPE				

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit Protection	Hiccup, automatic recovery				
Line Regulation				±0.5	%
Load Regulation	Single (25% to 100%)			±1.0	%
Load Regulation	Dual (25% to 100%,Balance Load)			±2.0	%
Cross Regulation	DUAL (25% to 100% F.L)			±5.0	%
Ripple & Noise	BW=DC To 20MHz			100	mVp-p
Transient response setting time	50% load step change		350		us



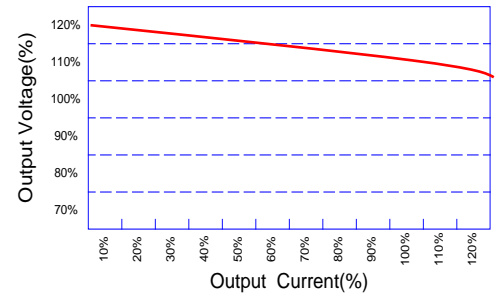
Temperature Derating Graph



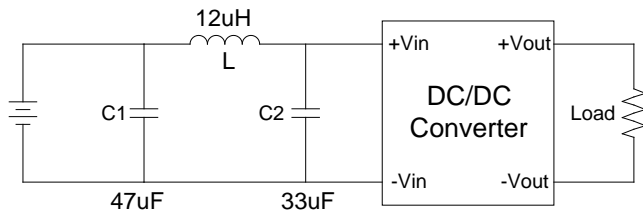
General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			300		KHz
Operating Temperature	With derating	-40		100	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	Nickel Coated With Non-Conductive Base				
Weight			36.5		g
Dimensions			50.8x25.4x10.6		mm
Potting Material	Epoxy (UL94V-0 rated)				

Tolerance Envelope Graph



Exceeding the absolute ratings of the unit could cause damage, It is not allowed for continuous operating

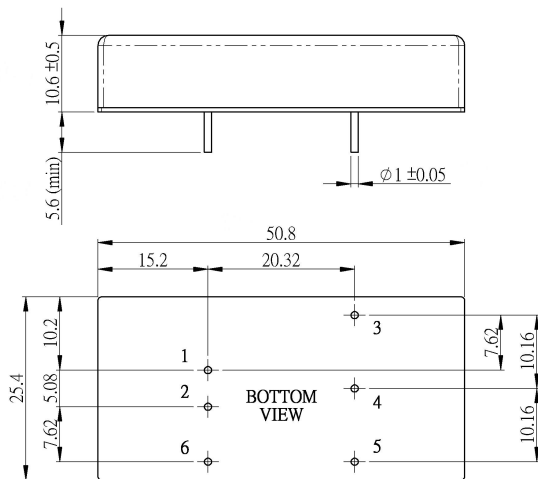


Part Number

67DW - 24 S 05 R NL
A B C D E F

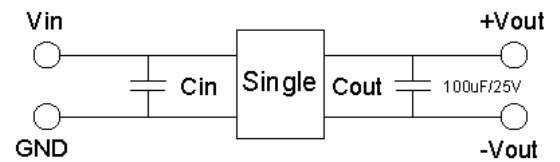
- A:Series
- B:Input Voltage
- C:Single(S)Dual(D)
- D:Output Voltage
- E:Regulated(R)
- F:RoHS Version

Markings and dimensions

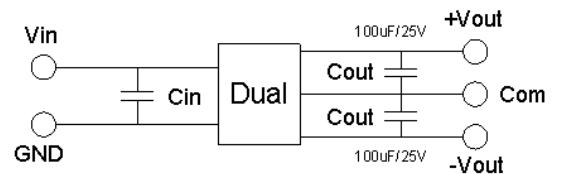


Unit : mm
Tolerance : XX.X ± 0.5 , XX.XX ± 0.25

Recommended Test Circuit



24V & 48V : Cin 10uF, 100V



24V & 48V : Cin 10uF, 100V

PIN Connection

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	NO PIN	-Vout	NO PIN
Dual	+Vin	-Vin	+Vout	COM	-Vout	NO PIN

FEATURES :

- 15W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Efficiency	Capacitor Load
	Vdc	No-Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP	uF MAX
67DW-24S03R3	9-36	60	663	3.3	4000	83	3300
67DW-24S05R3	9-36	60	727	5	3000	86	3300
67DW-24S12R3	9-36	40	727	12	1250	86	330
67DW-24S15R3	9-36	20	727	15	1000	86	330
67DW-24D05R3	9-36	70	754	±5	±1500	83	±2000
67DW-24D12R3	9-36	40	726	±12	±625	86	±330
67DW-24D15R3	9-36	40	726	±15	±500	86	±330
67DW-48S03R3	18-75	30	331	3.3	4000	83	5600
67DW-48S05R3	18-75	30	363	5	3000	86	5600
67DW-48S12R3	18-75	30	363	12	1250	86	680
67DW-48S15R3	18-75	30	363	15	1000	86	680
67DW-48D05R3	18-75	30	377	±5	±1500	83	±3300
67DW-48D12R3	18-75	30	363	±12	±625	86	±220
67DW-48D15R3	18-75	30	363	±15	±500	86	±220

Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				4:1	
Filter	PI TYPE				

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit Protection	Hiccup, automatic recovery				
Line Regulation				±0.5	%
Load Regulation	Single Dual(Balance Load)			±0.5 ±1.0	%
Cross Regulation	Dual (25% to 100% Load)			±5	%
Ripple & Noise	Output:3-15V TYPES BW=DC To 20MHz			100	mVp-p
Ripple & Noise	Output > 15V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient response setting time	25% load step change		300		us



DC-DC Converter

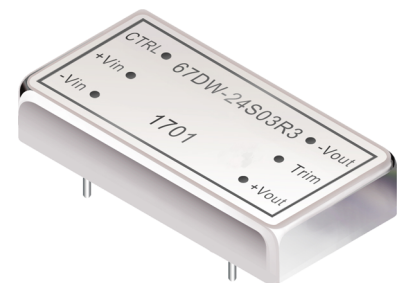
67DW-R3 SERIES

15Watt 1.5KV Isolated

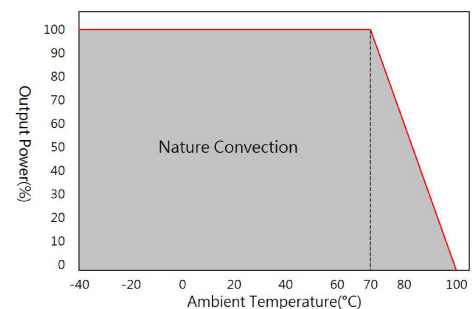
4 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Temperature Derating Graph



General Specifications

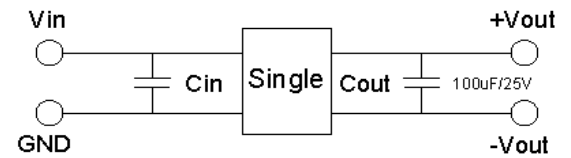
Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage			1500		Vdc
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			300		KHz
Operating Temperature	With derating	-40		100	°C
Storage Temperature		-55		125	°C
Humidity	Non Condensing	5		95	%
Cooling	Free air Convection				
Case material	Nickel coated copper with no-conductive base				
MTBF	MIL-HDBK-217F@25°C	2.43x10 ⁶			Hours
Weight			32.6		g
Dimensions		50.8x25.4x10.6			mm

Part Number

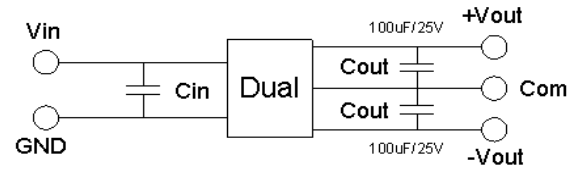
67DW - 24 S 03 R 3
 A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output(S), Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: Package

Recommended Test Circuit

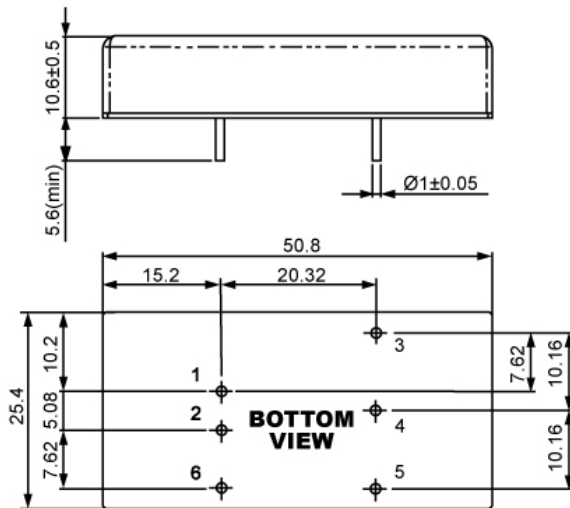


24V&48V: Cin 10uF, 100V



24V & 48V :Cin 10uF, 100V

Markings and dimensions



UNIT : mm
 Tolerances : XX.X ±0.5, XX.XX±0.25

PIN Assignment

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	Trim	-Vout	Remote On/Off
Dual	+Vin	-Vin	+Vout	Com	-Vout	Remote On/Off

FEATURES :

- 15W DIL PACKAGE
- 2:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Efficiency
	Vdc	No Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP
68D15-12S03RNL	9-18	60	1294	3.3	4000	85
68D15-12S05RNL	9-18	60	1453	5	3000	86
68D15-12S12RNL	9-18	30	1420	12	1250	88
68D15-12S15RNL	9-18	30	1420	15	1000	88
68D15-12D12RNL	9-18	30	1420	±12	±625	88
68D15-12D15RNL	9-18	30	1420	±15	±500	88
68D15-24S03RNL	18-36	50	647	3.3	4000	85
68D15-24S05RNL	18-36	50	718	5	3000	87
68D15-24S12RNL	18-36	20	702	12	1250	89
68D15-24S15RNL	18-36	20	702	15	1000	89
68D15-24D12RNL	18-36	20	710	±12	±625	88
68D15-24D15RNL	18-36	20	710	±15	±500	88
68D15-48S03RNL	36-75	40	323	3.3	4000	85
68D15-48S05RNL	36-75	40	363	5	3000	86
68D15-48S12RNL	36-75	20	359	12	1250	87
68D15-48S15RNL	36-75	20	351	15	1000	89
68D15-48D12RNL	36-75	20	355	±12	±625	88
68D15-48D15RNL	36-75	20	355	±15	±500	88

Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				2:1	
Filter			PI Network		

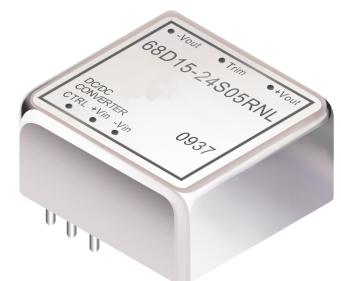
DC-DC Converter

68D15 SERIES

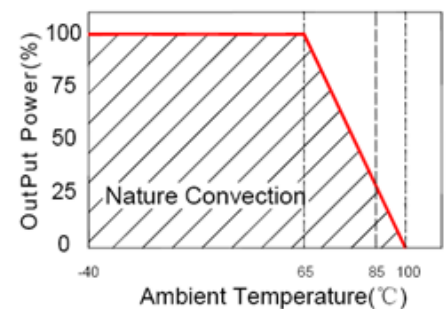
15Watt 1.5KV Isolated
2 : 1 Input Voltage Range

Single & Dual Output

1" x 1"



Temperature Derating Graph



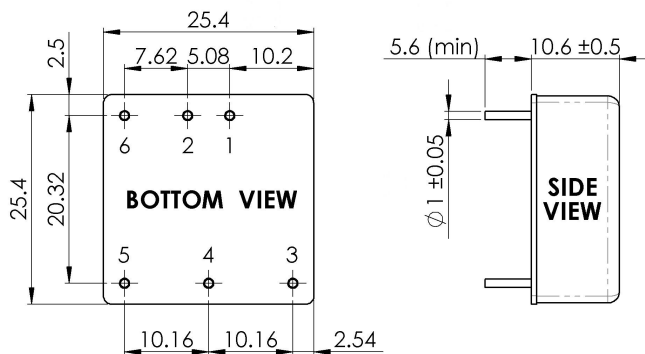
Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit Protection	Hiccup, automatic Recovery				
Line Regulation				±0.5	%
Load Regulation	Single Dual(Balance Load)			±0.5 ±1	%
Cross Regulation	Dual (25% To 100% Load)			±5	%
Ripple & Noise	Output:3-15V TYPES BW=DC To 20MHz			100	mVp-p
Ripple & Noise	Output > 15V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient response setting time	25% load step change		250		us

General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage			1500		Vdc
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			400		KHz
Operating Temperature	With derating	-40		100	°C
Storage Temperature		-55		125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	Nickel coated copper with no-conductive base				
MTBF	MIL-HDBK-217F@25°C	560000			Hours
Weight			16.5		g
Dimensions			25.4x25.4x10.6		mm

Markings and dimensions



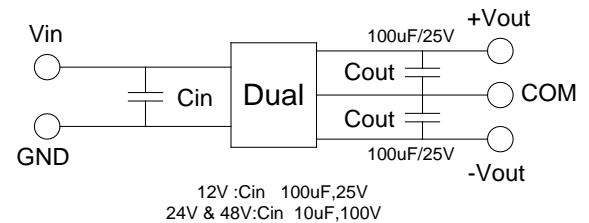
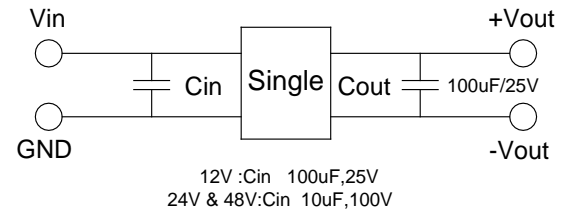
Unit : mm
Tolerance : XX.X +0.5 , XX.XX +0.25

Part Number

68D15 - 24 S 05 R NL
A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output (S),Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: RoHs Version

Recommended Test Circuit



PIN Assignment

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	Trim	-Vout	Remote On/Off
Dual	+Vin	-Vin	+Vout	Com	-Vout	Remote On/Off

FEATURES :

- 15W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off



DC-DC Converter

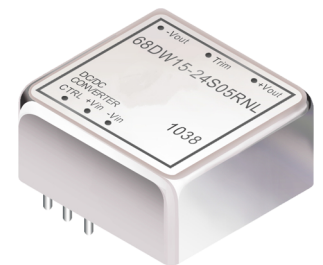
68DW15 SERIES

15Watt 1.5KV Isolated

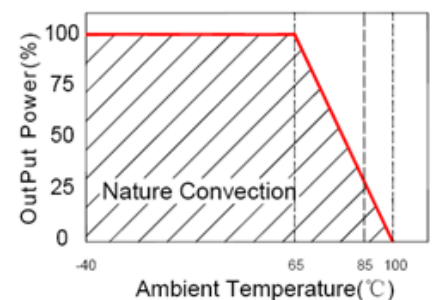
4 : 1 Input Voltage Range

Single & Dual Output

1" x 1"



Temperature Derating Graph



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Efficiency
	Vdc	No Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP
68DW15-24S03RNL	9-36	50	639	3.3	4000	86
68DW15-24S05RNL	9-36	40	718	5	3000	87
68DW15-24S12RNL	9-36	20	710	12	1250	88
68DW15-24S15RNL	9-36	20	710	15	1000	88
68DW15-24D12RNL	9-36	20	710	±12	±625	88
68DW15-24D15RNL	9-36	20	710	±15	±500	88
68DW15-48S03RNL	18-75	30	319	3.3	4000	86
68DW15-48S05RNL	18-75	40	359	5	3000	87
68DW15-48S12RNL	18-75	10	355	12	1250	88
68DW15-48S15RNL	18-75	10	355	15	1000	88
68DW15-48D12RNL	18-75	10	355	±12	±625	88
68DW15-48D15RNL	18-75	10	355	±15	±500	88

Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				4:1	
Filter			PI Network		

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit Protection	Hiccup, automatic Recovery				
Line Regulation				±0.5	%
Load Regulation	Single			±0.5	%
	Dual(Balance Load)			±1	%
Cross Regulation	Dual (25% To 100% Load)			±5	%
Ripple & Noise	Output:3-15V TYPES BW=DC To 20MHz			100	mVp-p
Ripple & Noise	Output > 15V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient response setting time	25% load step change		300		us

General Specifications

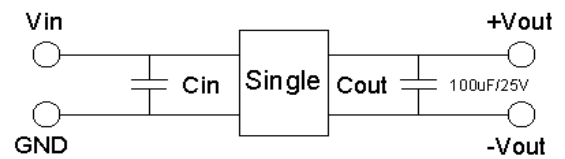
Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage			1500		Vdc
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			400		KHz
Operating Temperature	With derating	-40		100	°C
Storage Temperature		-55		125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	Nickel coated copper with no-conductive base				
MTBF	MIL-HDBK-217F@25°C	560000			Hours
Weight			16.5		g
Dimensions			25.4x25.4x10.6		mm

Part Number

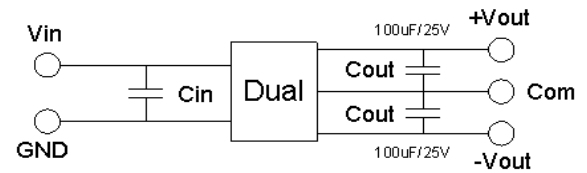
68DW15 - 24 S 05 R NL
 A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output (S),Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: RoHs Version

Recommended Test Circuit

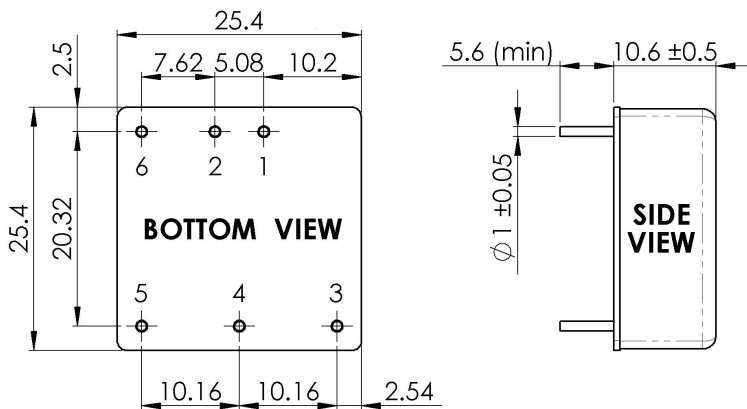


24V&48V: Cin 10uF,100V



24V & 48V :Cin 10uF,100V

Markings and dimensions



Unit : mm
 Tolerance : XX.X ± 0.5 , XX.XX ± 0.25

PIN Assignment

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	Trim	-Vout	Remote On/Off
Dual	+Vin	-Vin	+Vout	COM	-Vout	Remote On/Off

FEATURES :

- 15Watt Isolated Output
- Recognized By UL 60950-1
- Singles Dual And Triples
- Efficiency To 80%
- Remote ON/OFF Control
- Wide 4:1 Input Voltage Range
- 8PIN Package
- SIX-Sided Shielding
- 1500Vdc Isolation
- MTBF:>1,500,000 hrs
- Operating Temperature:-40°C TO +100°C



DC-DC Converter

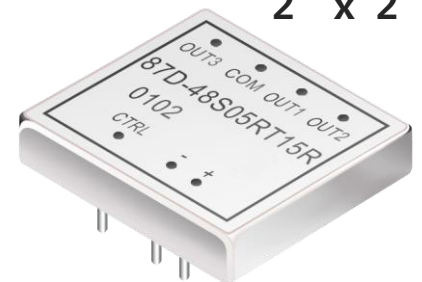
87D SERIES

15Watt 1.5KV Isolated

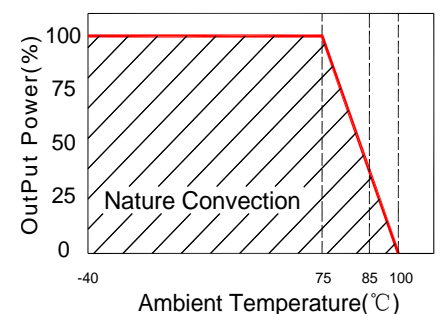
4 : 1 Input Voltage Range

Triple Output

2" x 2"



Temperature Derating Graph



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Output 1 Voltage	Output 2 Voltage	Output 3 Voltage
	Vdc	Vdc	Vdc	Vdc
87D-24S05RNL	9-36	5@3A		
87D-24S12RNL	9-36	12@1.25A		
87D-24S15RNL	9-36	15@1A		
87D-24D12RNL	9-36		12@0.625A	-12@0.625A
87D-24D15RNL	9-36		15@0.5A	-15@0.5A
87D-24S05RT12RNL	9-36	5@1.5A	12@0.31A	-12@0.31A
87D-24S05RT15RNL	9-36	5@1.5A	15@0.25A	-15@0.25A
87D-48S05RNL	20-72	5@3A		
87D-48S12RNL	20-72	12@1.25A		
87D-48S15RNL	20-72	15@1A		
87D-48D12RNL	20-72		12@0.625A	-12@0.625A
87D-48D15RNL	20-72		15@0.5A	-15@0.5A
87D-48S05RT12RNL	20-72	5@1.5A	12@0.31A	-12@0.31A
87D-48S05RT15RNL	20-72	5@1.5A	15@0.25A	-15@0.25A

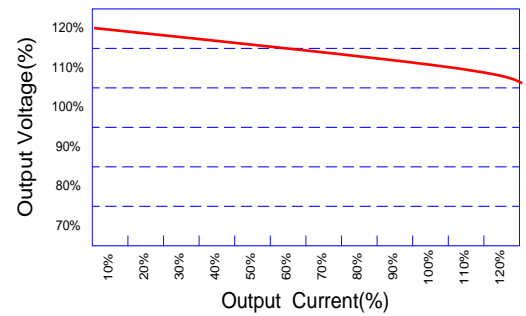
Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				4:1	
Filter	Capacitor				

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance				±2	%
Single Voltage Tolerance				±1	%
Dual +Voltage Tolerance				±3	%
Dual -Voltage Tolerance				±1	%
Triple	5V			±5	%
Triple	12V/15V			±2	%
Triple	-5V			±1	%
Short Circuit Protection	Continuous				
Line Regulation	Single/Dual(H.L To L.L)			±0.2	%
Load Regulation	Single/Dual (F.L To 1/4F.L)			±1.0	%
Ripple & Noise	BW=DC To 20MHz			100	mVp-p
Line Regulation	Triple(H.L To L.L)			±1.0	%
Load Regulation	Triple(F.L To 1/4F.L)			±0.2	%
Transient response setting time	50% load step change		350		us

Tolerance Envelope Graph



Part Number

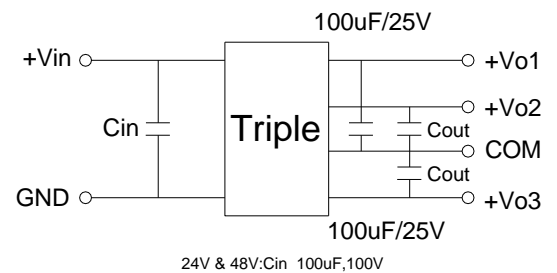
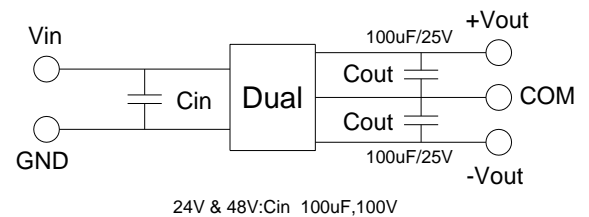
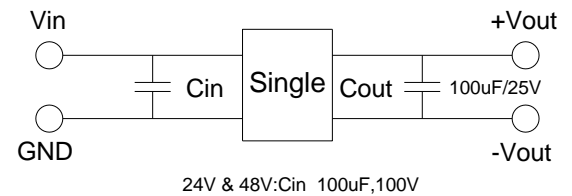
87D - 24 S 05 R T 12 R NL
 A B C D E F G H I

- A: Series
- B: Input Voltage
- C: Single (S) / Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: Triple(T)
- G: Output Voltage
- H: Regulated(R)
- I: RoHs Version

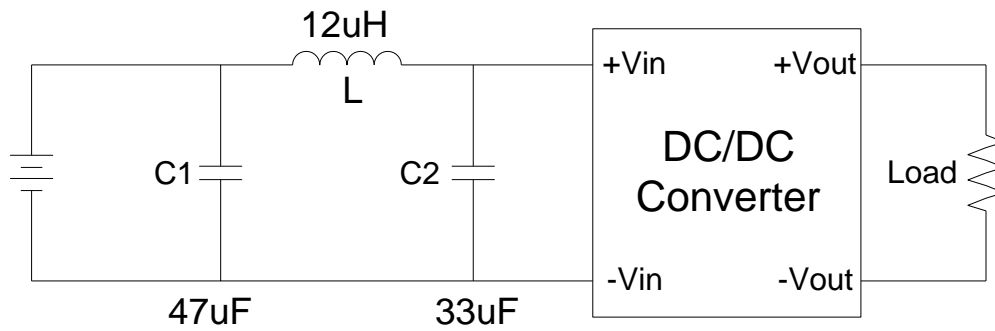
General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			100		KHz
Operating Temperature		-40		100	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	Nickel Coated With Non-Conductive Base or Black Coated Copper With Non-Conductive Base				
Weight			72.8		g
Dimensions			50.8x50.8x13.2		mm
Potting Material	Epoxy (UL94V-0 rated)				
Conducted Emissions	EN55022		CLASS A		
Radiated Emissions	EN55022		CLASS A		

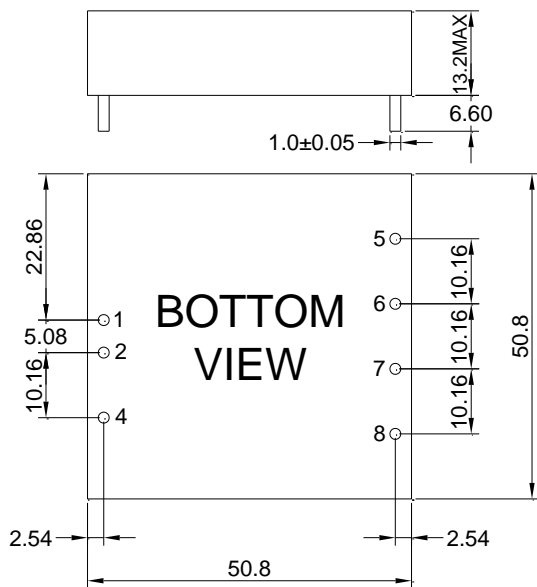
Recommended Test Circuit



Suggest adding input external filter(C1,C2,L)to meet conducted emissions(EN55022 class A)

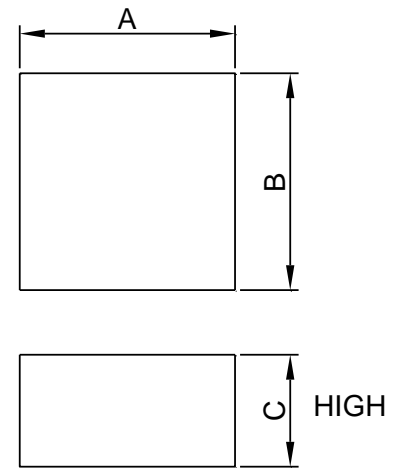


Markings and dimensions



UNIT:mm XX.X±0.5 XX.XX±0.25

Packaging



Size(mm)		
A	B	C
51.50	52.30	27.00

PIN Connection

Pin	1	2	3	4	5	6	7	8
Single	+Vin	-Vin	NO PIN	Control	NO PIN	Output 1	-Output 1	Trim
Dual	+Vin	-Vin	NO PIN	Control	Output 2	Com	Output 3	Trim
Triple	+Vin	-Vin	NO PIN	Control	Output 2	Output 1	Com	Output 3

FEATURES :

- 15W 2"X1" DIL Package
- 4:1 Wide Input Voltages Range
- 100% Burned In
- High Efficiency Up To 86%
- Customized Solutions Available
- Remote Control: On/Off
- Operating Temperature From -40°C To +85°C
- UL94V-0 Package Material
- Design refer to AAMI/CSA 60601-1,IEC/EN60601-1 3.1 edition
- Medical /Industry/ITE Application



DC-DC Converter

99DW-R315WM SERIES

15Watt 3KVac Isolated

4 : 1 Input Voltage Range

Single & Dual Output

2" x 1" DIL



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Efficiency	Capacitor load
	Vdc	No Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	%TYP	uF MAX
99DW-24S05R315WM	9-36	10	726	5	3000	86	3300
99DW-24S12R315WM	9-36	10	726	12	1250	86	330
99DW-24S15R315WM	9-36	10	726	15	1000	86	330
99DW-24D05R315WM	9-36	10	744	±5	±1500	84	±2000
99DW-24D12R315WM	9-36	10	726	±12	±625	86	±330
99DW-24D15R315WM	9-36	10	726	±15	±500	86	±330
99DW-48S05R315WM	18-75	7	363	5	3000	86	5600
99DW-48S12R315WM	18-75	7	363	12	1250	86	680
99DW-48S15R315WM	18-75	7	363	15	1000	86	680
99DW-48D05R315WM	18-75	7	372	±5	±1500	84	±3300
99DW-48D12R315WM	18-75	7	367	±12	±625	85	±220
99DW-48D15R315WM	18-75	7	367	±15	±500	85	±220

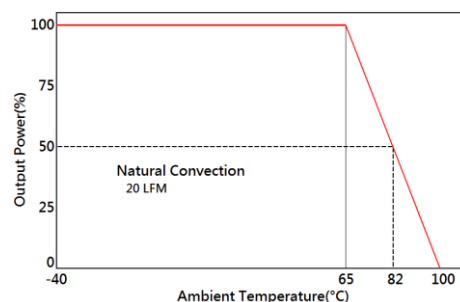
Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				4:1	
Filter	Pi Network				
Protection	Fuse Recommended				
Start up Time	Constant resistive load		15		ms
Remote ON/OFF	DC-DC ON (Referred to -Vin pin)	2.2	OPEN	12	Vdc
	DC-DC OFF	0		1.2	Vdc

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit Protection	Hiccup, automatic Recovery				
Line Regulation				±0.5	%
Load Regulation	Single			±0.5	%
	Dual(Balance Load)			±2	
Cross Regulation	Dual(25% To 100% Load)			±5	%
Ripple & Noise	Output:3-15V TYPES BW=DC To 20MHz			100	mVp-p
Ripple & Noise	Output > 15V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient response setting time	25% load step change		300		us

Temperature Derating Graph



General Specifications

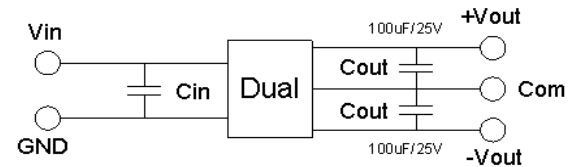
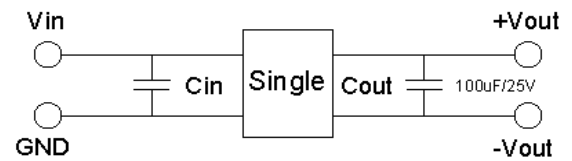
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			350		KHz
Operating Temperature	Refer to temperature derating graph (with derating)	-40		82	°C
Humidity	Non Condensing	5		95	%
Cooling	Natural Convection (20LFM)				
Case material	Plastic				
Weight	22 g				
Dimensions	50.8x25.4x10.2 mm				
Potting Material	Epoxy (UL94V-0 rated)				
Remote ON/OFF	ON	Open			
	OFF	Short to -Vin			
Isolation Voltage				3000	Vac
MTBF	MIL-HDBK-217F @25°C , Ground Benign	500000			Hours
Storage Temperature		-55		+125	°C
Case Temperature				+95	°C

Part Number

99DW- 24 S 05 R 3 15W M
A B C D E F G H

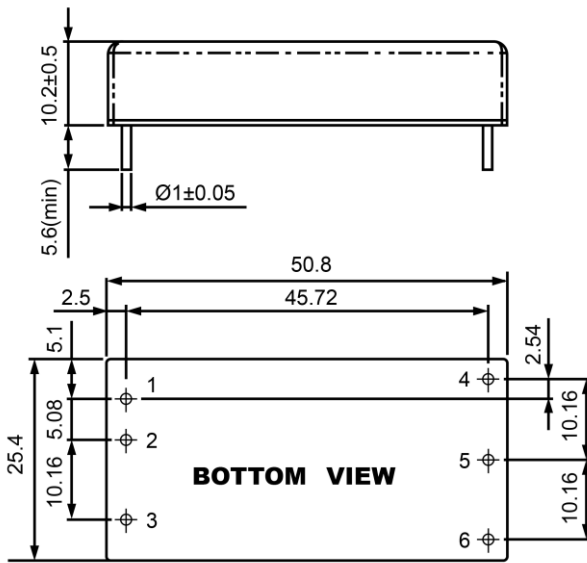
- A: Series**
- B: Input Voltage**
- C: Single Output**
- D: Output Voltage**
- E: Regulated(R)**
- F: Package**
- G: Power Rating**
- H: Medical Application**

Recommended Test Circuit



24V & 48V :Cin 10uF,100V

Markings and dimensions



UNIT : mm
 Tolerances : XX.X ±0.5, XX.XX±0.25

PIN Assignment

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	Remote ON/OFF	+Vout	No Pin	-Vout
Dual	+Vin	-Vin	Remote ON/OFF	+Vout	Com	-Vout