



200W



# DC-DC Converters

*Isolated single, dual & triple output*

- <1W to 300W+

*Point-of-Load*

- 1A to 30A



# Powering Innovation

## About Murata Power Solutions

We are the #1 supplier of board mount power and among the top suppliers of overall power electronics. From 0.25W isolated converters to 2100W front-end power supplies, along with filtering and isolation solutions, our current offering exceeds 3,500 standard models developed in our design and manufacturing centers located in the US, Canada, England, Japan and China.

Murata's worldwide network of Technical Sales Managers, FAEs, Customer Support and industry-leading Distributors, reliably support the power requirements of local and global manufacturers of telecommunications equipment, data management systems, industrial controls, transportation electronics, energy systems, and more.

## Our DC-DC Converters

This catalog provides specifications for our entire offering of:

### Point-of-Load Converters

- DOSA compatible designs
- OKAMI, the new breed of DC/DCs

### Isolated DC to DC Converter Products

- Single, dual, triple and quad output
- Power from 0.25 to 340 Watts; Currents from 0.02 to 80 Amps

### Bricks

- DOSA compliant 1/32 to full size
- 1 x 1" and 2 x 2" encapsulated

**To sum it all up for you, Murata Power Solutions delivers:**

- ✓ Innovation and reliability
- ✓ The largest variety of industry-standard DC/DCs
- ✓ Modified-standards and custom design expertise

**Your preferred power partner . . . delivering innovative solutions you can rely on . . . again and again.**



# Contents

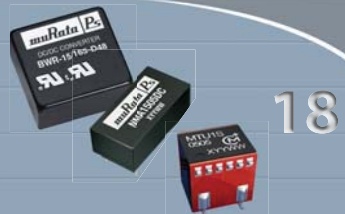
## PoL Converters



## Isolated Single



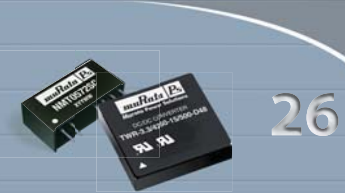
## Isolated Dual/Bipolar



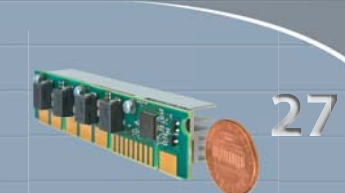
## Isolated Dual/Asymmetric



## Isolated Triple



## VRM Processor Support



## How to use this databook

Products are listed according to output voltage.

**1 Find** your **output voltage** from the product data tables.

– or –

**2 Refer** to **Quick Selection Guides** for

- **Output power** (isolated)
- **Output current** (PoLs)

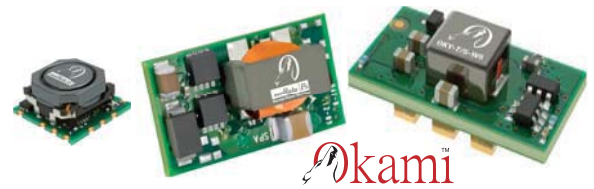
**3 Choose** the ideal product series for your application.

**Visit [murata-ps.com](http://murata-ps.com)** for data sheets and complete specifications.



# Point-of-Load

## Non-Isolated DC DC Converter Series



Murata Power Solutions offers more non-isolated, point-of-load (PoL) DC/DCs, in standard packages and pinouts, than any other company.

Our PoL output voltages range from 0.75 to 6V at current levels from 2 to 50A. Input voltages are centered around traditional 3, 5 and 12V levels, with some devices operating

from 7.5 to 40V. Standard packages include SMT and SIP models.

The newest Okami SMT and SIP models offer user programmable outputs (0.6-15.5V) while operating from wide-range inputs (2.4-5.5V, 2.9-14V, 4.5-14V, 6-14V, 8.3-14V, 9-32V, 16-40V, or 19-40V). For many applications, they can be genuine “one-size-fits-all” solutions.

PoLs may be powered from AC to DC converters and DC to DC regulators, among other design options. Also, many designers find them a quick, cost-effective solution when isolation is not required and in-house designs are too expensive and time consuming.

### User programmable output voltages

Part Number* <small>Note: Root part numbers may be shown. Please refer to datasheets for available options.</small>	Output Characteristics			Input Voltage			Efficiency	Package				Package Dimensions						Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>
	Rated Output Current	Rated Output Voltage	Total Output Power	Nom.	Min.	Max.		SM	TH	DIP	SIP	Inches			mm			
												L	W	H	L	W	H	
OKL-T/1-W12x-C	1A	0.9-5.5V	5W	12V	2.9V	14V	90%	•				0.49	0.18	0.49	12.4	4.57	12.4	OKL-T/1-W12
OKR-T/1.5-W12-C	1.5A	0.591-6V	7.5W	12V	4.5V	14V	93%			•		0.41	0.24	0.40	10.4	6.1	10.16	OKR-T/1.5-W12
OKL-T/3-W5x-C	3A	0.6-3.63V	9.9W	5V	2.4V	5.5V	95%	•				0.48	0.24	0.48	12.2	6.2	12.2	OKL-T/3-W5
OKL-T/3-W12x-C		0.591-5.5V	15W	12V	4.5V	14V	93%	•				0.48	0.24	0.48	12.2	6.2	12.2	OKL-T/3-W12
OKL-T/6-W5x-C	6A	0.6-3.3V	19.8W	5V	2.4V	5.5V	94%	•				0.48	0.28	0.48	12.2	7.2	12.2	OKL-T/6-W5
OKL-T/6-W12x-C		0.591-5.5V	30W		4.5V		•					0.48	0.28	0.48	12.2	7.2	12.2	OKL-T/6-W12
OKX-T/3-D12-C	3A	0.75-5.5V	15W	12V	8.3V	14V	93%			•		0.40	0.09	0.28	10.16	22.9	7.2	OKX-T/3-D12
OKY-T/3-D12x-C												•				0.47	0.082	0.28
OKX-T/5-D12-C	5A	0.75-5.5V	25W	12V	8.3V	14V	93%			•		0.40	0.09	0.28	10.16	22.9	7.2	OKX-T/5-D12
OKY-T/5-D12x-C												•				0.47	0.082	0.28
OKX-T/3-W5-C	3A	0.7525-3.63V	9.9W	5V	2.4V	5.5V	94%			•		0.40	0.09	0.28	10.16	22.9	7.2	OKX-T/3-W5
OKY-T/3-W5x-C												•				0.47	0.082	0.28
OKX-T/5-W5-C	5A	0.7525-3.63V	16.5W	5V	2.4V	5.5V	94%			•		0.40	0.09	0.28	10.16	22.9	7.2	OKX-T/5-W5
OKY-T/5-W5x-C												•				0.47	0.082	0.28
OKY-T/10-D12x-C	10A	0.7525-5.5V	50W	12V	8.3V	14V	95%	•				0.53	0.33	1.3	33	8.4	33	OKY-T/10, T/16-D12
OKY-T/16-D12x-C	16A		80W				94%	•			0.53	0.33	1.3	33	8.4	33		
OKY-T/10-W5x-C	10A	0.7525-3.63V	33W	5V	2.4V	5.5V	95%	•				1.3	0.33	0.53	13.5	8.3	13.5	OKY-T/10, T/16-W5
OKY-T/16-W5x-C	16A		52.8W					•				1.3	0.33	0.53	13.5	8.3	13.5	
LSM2-T/30-D12R-C	30A	0.8-5V	125W		6V		94%	•				0.53	0.36	1.3	33	9.1	33	LSM2-T/30-D12
OKX-T/10-D12x-C	10A	0.7525-5.5V	50W	12V	8.3V	14V	95%			•		0.5	0.37	2	50.8	9.4	50.8	OKX-T/10, T/16-D12
OKX-T/16-D12x-C	16A		80W				94%	•			0.5	0.37	2	50.8	9.4	50.8		
OKX-T/10-W5x-C	10A	0.7525-3.63V	33W	5V	2.4V	5.5V	96%			•		2	0.5	0.37	9.4	12.7	9.4	OKX-T/10, T/16-W5
OKX-T/16-W5x-C	16A		52.8W				95%	•			2	0.5	0.37	9.4	12.7	9.4		
OKR-T/3-W12-C	3A	0.591-6V	15W	12V	4.5V	14V	93%			•		0.65	0.22	0.41	10.4	5.6	10.4	OKR-T/3-W12
OKR-T/6-W12-C	6A		30W				96%	•			0.65	0.3	0.41	10.4	7.6	10.4	OKR-T/6-W12	
OKR-T/10-W12-C	10A	50W					92%			•		0.65	0.3	0.41	10.4	7.6	10.4	OKR-T/10-W12
OKI-T/3-W32x-C	3A	0.7525-4.5V	13.5W	24V	9V	32	89%	•				0.82	0.34	0.47	11.9	8.5	11.9	OKI-T/3-W32
OKI-T/3-W40x-C		0.7525-5.5V	15W		16V	40V	88%	•				0.82	0.34	0.47	11.9	8.5	11.9	OKI-T/3-W40
OKI-T/36W-W40x-C		5.021-15.5V	36W		19V	40V	95%	•				0.82	0.34	0.47	11.9	8.6	11.9	OKI-T/36W-W40

\*x = N (negative) or P (positive) polarity

### OKI-78SR Series fixed output voltages

OKI-78SR3.3/1.5-W36-C	1.5A	3.3V	4.95W	24V	7V	36V	86%			•	0.65	0.3	0.41	16.5	7.62	10.4	OKI-78SR
OKI-78SR3.3/1.5-W36H-C										•	0.65	0.3	0.41	16.5	7.62	10.4	
OKI-78SR5/1.5-W36-C		5V	7.5W				91%			•	0.65	0.3	0.41	16.5	7.62	10.4	
OKI-78SR5/1.5-W36H-C										•	0.65	0.3	0.41	16.5	7.62	10.4	

# Single Output Isolated DC to DC Converter Series

Power from 0.25 to 300 Watts; currents from 0.02 to 80 Amps; voltages from 1.2 to 96 Volts; inputs from 3 to 75 Volts . . . Murata Power Solutions offers the broadest line of single-output, isolated DC/DC converters in the entire power industry . . . without a doubt.

Our low-power encapsulated products (mini SIPs, DIPs and SMDs) are among the smallest available. Many use contemporary ceramic-substrates and copper-lead-frame technologies to achieve their small size.

At the other extreme, our high-power 1/32, 1/16, 1/8, 1/4, and 1/2 bricks are open-frame assemblies using multi-layer, heavy-copper pc boards and planar magnetics. Their high efficiencies enable full-power operation to high ambient temperatures, and optional baseplates deliver the best thermal performance in the industry.

If you can't find the DC/DC power solution you need in the tables below, contact us, and we'll develop one for you.



## Quick Selection Guide Listed by output power

Output Power	Output Voltages							Series	
	3.3V	5V	6V	9V	12V	15V	24V		
<1W								LME	
								NMF	
1-2W								MEE1	
								MER1	
								MEV1	
								MTE1	
								MTU1	
								NKE	
								NME	
								NMJ	
								NMR	
								NMV	
								NTE	
								NTF	
								PWR13XXC	
2-3W								LP02U	
								NDL	
								MEJ2	
								NMG	
								NMK	
								NML	
3-4W								UST 3W	
								MEE3	
								MEV3	
								NDTS	
								NDY	
								UWR 3W	
5W								HB04UC	
								UWR 5W	
6-10W								NCS6	
								NDS6	
								UWR 6-10W	
								UWR 9.6W	
	10-15W								NPH10
									UWR 14-20W
									UWR 15W
15-18W								NPH15	
								RUW15	
								UEI15	
18-25W								UWR 14-20W	
								UEI25	
								UHE 12-30W	
25-35W								UWR 14-20W	
								NPH25	
								UCE	
								UEI30	
								ULS-30W	
35-50W								ULT	
								UWR 26-40W	
								UCE	
								UCQ	
								UEI 50-60W	
50-75W								UEE	
								ULQ	
								ULS 100W	
								UQQ	
								UVQ	
								UWE 100-120W	
75-100W								UCE	
								UCQ	
								UEE	
								ULQ	
								ULS 100W	
100-120W								UQQ	
								UVQ	
								UWE 100-120W	
								UCE	
								UCQ	
120-240W								UCR	
								UVQ	
								UWE 100-120W	
								EMH	
								HPQ 165W	
240-300W								HPQ 182.6W	
								PAQ	
300-450W								RBE	
								ULQ	
								UWQ	
								HPQ 300W	
300-450W								PAH 350W	
								PAH 450W	
								PAH 450W	
								RBQ	

## Single Output Isolated

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style							Package Dimensions						Further Information											
Rated Output Voltage	Rated Output Current	Total Output Power	Nom.	Min.	Max.			Bricks							Inches			mm			Part Number <i>Note: Root part numbers may be shown. Please refer to datasheets for available options.</i>	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>										
								1/32	1/16	1/8	1/4	1/2	SM	TH	DIP	SIP	L	W	H	L			W	H								
<b>1.2V</b>	<b>30A</b>	<b>36W</b>	48V	36V	75V	2.25kV	83%											2.3	1.45	0.4	58.4	36.8	10.2	UCQ-1.2/30-D48N-C	UCQ							
<b>1.5V</b>	<b>20A</b>	<b>30W</b>	48V	36V	75V	2.25kV	87%											2.3	0.9	0.37	58.4	22.9	9.4	UCE-1.5/20-D48N-C	UCE							
	<b>25A</b>	<b>37.5W</b>	48V	36V	75V	2.25kV	83%											2.3	1.45	0.4	58.4	36.8	10.2	UCQ-1.5/25-D48N-C	UCQ							
	<b>40A</b>	<b>60W</b>	48V	36V	75V	2.25kV	86%												2.3	1.45	0.4	58.4	36.8	10.2	UCQ-1.5/40-D48N-C	UCQ						
24V			18V	36V	2kV	88%													2.3	1.45	0.42	58.4	36.8	10.7	UVQ-1.5/40-D24P-C	UVQ						
<b>1.8V</b>	<b>30A</b>	<b>54W</b>	48V	36V	75V	2.25kV	88%											2.3	0.9	0.37	58.4	22.9	9.4	UCE-1.8/30-D48N-C	UCE							
							86%																2.3	1.45	0.4	58.4	36.8	10.2	UCQ-1.8/30-D48N-C	UCQ		
<b>2.5V</b>	<b>20A</b>	<b>50W</b>	48V	36V	75V	2.25kV	88%											2.3	0.9	0.37	58.4	22.9	9.4	UCE-2.5/20-D48	UCE							
																							2.3	0.9	0.41	58.4	22.9	10.4	ULE-2.5/20-D48N-C	ULE		
	<b>30A</b>	<b>75W</b>	48V	36V	75V	2.25kV	87%												2.3	1.45	0.4	58.4	36.8	10.2	UCQ-2.5/30-D48N-C	UCQ						
																							2.3	1.45	0.42	58.4	36.8	10.7	UVQ-2.5/35-D24P-C	UVQ		
	<b>40A</b>	<b>100W</b>	24V	18V	36V	2.25kV	84%													2.3	1.45	0.4	58.4	36.8	10.2	UCQ-2.5/40-D24P-C	UCQ					
																							2.3	1.45	0.42	58.4	36.8	10.7	UVQ-2.5/40-D48N-C	UVQ		
<b>3.3V</b>	<b>0.3A</b>	<b>1W</b>	3.3V	2.97V	3.63V	1kV	76%												0.39	0.45	0.27	9.8	11.5	6.8	MEE1S0303DC	MEE1						
																								0.24	0.45		0.39	6	11.5	10	MEE1S0303SC	
							78%																	0.5	0.43		0.27	12.7	11	7.05	MTE1S0303MC	MTE1
																								0.30	0.5	0.26	7.7	12.7	6.6	NTE0303MC	NTE	
						3kV	75%																		0.39	0.45	0.21	9.8	11.5	5.4	NKE0303DC	NKE
																									0.24	0.45	0.29	6	11.5	7.5	NKE0303SC	
			5.2kV	66%																		0.39	0.77	0.49	9.8	19.5	12.5	NMJ0303SAC	NMJ			
			5V	4.5V	5.5V	1kV	76%																0.39	0.45	0.27	9.8	11.5	6.8	MEE1S0503DC	MEE1		
																								0.24	0.45	0.39	6	11.5	10		MEE1S0503SC	
							79%																	0.5	0.43	0.27	12.7	11	7.05		MTE1S0503MC	MTE1
																								0.39	0.45	0.21	9.8	11.5	5.4	NKE0503DC	NKE	
																								0.24	0.45	0.29	6	11.5	7.5	NKE0503SC		
	5.2kV	64%																				0.39	0.77	0.49	9.8	19.5	12.5	NMJ0503SAC	NMJ			
																				0.30	0.5	0.26	7.7	12.7	6.6	NTE0503MC	NTE					
	<b>0.606A</b>	<b>2W</b>	3.3V	2.97	3.63	5.2kV	70%														0.77	0.39	0.5	19.65	9.95	12.65	MEJ2S0303SC	MEJ2				
																								0.77	0.39	0.5	19.65		9.95	12.65	MEJ2S0503SC	
							12	10.8V	13.2V	73%															0.77	0.39	0.5		19.65	9.95	12.65	MEJ2S1203SC
	<b>0.9A</b>	<b>3W</b>	5V	4.5V	9V	1kV	63%														0.58	1.27	0.28	14.7	32.3	7	NDTS0503C	NDTS				
																								0.58	1.27	0.28	14.7		32.3	7	NDTS1203C	
							12V	9V	18V	71%															0.58	1.27	0.28		14.7	32.3	7	NDTS2403C
							24V	18V	36V	71%															0.58	1.27	0.28		14.7	32.3	7	NDTS4803C
										71%															0.58	1.27	0.28		14.7	32.3	7	NDY2403C
	<b>1.52A</b>	<b>6W</b>	12V	9V	36V	1.5kV	78%														1.26	0.79	0.39	32	20	10	NCS6S1203C	NCS6				
							48V	18V	75V	76%															1.26	0.79	0.39		32	20	10	NCS6S4803C
	<b>2.94A</b>	<b>10W</b>	24V	18V	36V	1.5kV	79%														0.98	1.26	0.39	25	32	10	NPH10S2403EIC	NPH10S				
																								0.98	1.26	0.39	25		32	10	NPH10S2403IC	
																									0.98	1.26	0.39		25	32	10	NPH10S4803EIC
							48V	36V	75V	80%															0.98	1.26	0.39		25	32	10	NPH10S4803IC
<b>4.25A</b>	<b>14W</b>	5V	4.7V	7.5V	1.5kV	77%														2	2	0.45	50.8	50.8	11.4	UWR-3.3/4250-D5-C	UWR14-20W					
																							2	1	0.49	50.8		25.4	12.5	UWR-3.3/4250-D12A-C		
						12V	10V	18V	86%															2	1	0.49		50.8	25.4	12.5	UWR-3.3/4250-D24A-C	
						24V	18V	36V	87%															2	1	0.49		50.8	25.4	12.5	UWR-3.3/4250-D48A-C	
<b>4.4A</b>	<b>15W</b>	24V	18V	36V	1.5kV	81%														1	2	0.39	25	50	10	NPH15S2403EIC	NPH15S					
																							1	2	0.39	25		50	10	NPH15S2403IC		
																								1	2	0.39		25	50	10	NPH15S4803EIC	
						48V	36V	75V	83%															1	2	0.39		25	50	10	NPH15S4803IC	
<b>4.5A</b>	<b>14.9W</b>	24V	9V	36V	1.5kV	87.5%														1.1	0.96	0.36	27.9	24.4	9.1	UEI15-033-Q12P-C	UEI 15W					
																								2	2	0.45		50.8	50.8	11.4	UWR-3.3/4850-D12-C	
<b>4.85A</b>	<b>16W</b>	24V	9V	36V	1.5kV	79%														2	2	0.45	50.8	50.8	11.4	UWR-3.3/4850-D48-C	UWR14-20W					
																								2	2	0.45		50.8	50.8	11.4	UWR-3.3/4850-D48-C	
<b>5A</b>	<b>16.5W</b>	48V	18V	75V	1.5kV	88%													1.1	0.96	0.36	27.9	24.4	9.1	UEI15-033-Q48NR-C	UEI15W						

Single Output Isolated

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style								Package Dimensions						Further Information			
Rated Output Voltage	Rated Output Current	Total Output Power	Nom.	Min.	Max.			Bricks								Inches			mm			Part Number <i>Note: Root part numbers may be shown. Please refer to datasheets for available options.</i>	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>		
								1/32	1/16	1/8	1/4	1/2	SM	TH	DIP	SIP	L	W	H	L	W			H	
3.3V	7.3A	25W	24V	18V	36V	1.5kV	81%											1.38	1.97	0.39	35	50	10	NPH25S2403EIC	NPH25S
																		1.38	1.97	0.39	35	50	10	NPH25S2403IC	
	7.5A	24.75W	24V	9V	36V	1.5kV	88%											2	1.6	0.4	50.8	40.6	10.2	UHE-3.3/7500-Q12-C	UHE12-30W
				18V			89.5%											2	1.6	0.4	50.8	40.6	10.2	UHE-3.3/7500-Q48-C	
		48V	36V	75V	1.5kV	85.5%											0.92	0.75	0.35	23.4	19.1	8.9	ULT-3.3/7.5-D48	ULT	
					2.25kV	89.5%											2	1.6	0.4	50.8	40.6	10.2	UHE-3.3/7500-D48-C	UHE12-30W	
		25W																1.1	0.32	0.96	27.9	8.13	24.4	UEI25-033-D48	UEI25
	8A	26.4W	12V	10V	18V	1.5kV	87.5%											2	2	0.45	50.8	50.8	11.4	UWR-3.3/8-D12A-C	UWR26-40W
			48V	36V	75V	2.25kV	90%										0.9	1.3	0.36	22.9	33	9.14	ULS-3.3/8-D48	ULS-30W	
	9A	29.7W	24V	9V	36V	2.25kV	89%										1.92	0.35	0.92	48.8	8.9	23.4	UEI30-033-Q12P-C	UEI30	
				18V			1.5kV	88.5%									2	2	0.45	50.8	50.8	11.4	UWR-3.3/9-D24A-C	UWR26-40W	
			48V	75V	2.25kV	89.5%											1.92	0.35	0.92	48.8	8.9	23.4	UEI30-033-Q48N-C	UEI30	
					1.5kV	88.5%											2	2	0.45	50.8	50.8	11.4	UWR-3.3/9-D48A-C	UWR26-40W	
	10A	33W	24V	18V	36V	2.25kV	89%									2.4	2.3	0.4	61	58.4	10.2	UCH-3.3/10-D24P-C	UCH		
			48V	36V	75V	2.25kV										2.4	2.3	0.4	61	58.4	10.2	UCH-3.3/10-D48N-C			
	15A	49.5W	24V	9V	36V	1.5kV	87.5%									1.95	1.55	0.375	49.5	39.4	9.5	UEI-3.3/15-Q12PR-C	UEI-50/60		
				18V	75V	2.25kV	89%									0.91	1.31	0.36	23.1	33.27	9.14	UWS-3.3/15-Q48	UWS		
			48V	36V	75V	2.25kV	90%										2.3	0.9	0.37	58.4	22.9	9.4	UCE-3.3/15-D48N-C	UCE	
						2.25kV	89%											2.4	2.3	0.4	61	58.4	10.2	UCH-3.3/15-D48N-C	UCH
				50W													2.3	1.45	0.38	58.4	36.8	9.5	ULQ-3.3/15-D48N-C	ULQ-15A	
															2.3	0.9	0.4	58.4	22.9	10.2	UEE-3.3/15-D48	UEE			
	18A	59.4W	48V	18V	75V	2.25kV	89.5%									1.95	1.55	0.375	49.5	39.4	9.5	UEI-3.3/18-Q48NR-C	UEI-50/60		
	20A	66W	12V	9V	36V	2.25kV	89%									2.3	0.38	0.9	58.4	9.7	22.9	UWE-3.3/20-Q12P-C	UWE		
				18V	36V	2kV	89%									2.3	0.9	0.41	58.4	22.9	10.4	ULE-3.3/20-D24P-C	ULE20A		
			24V	18V	36V	2kV	89.5%									2.3	1.45	0.38	58.4	36.8	9.5	ULQ-3.3/20-D24P-C	ULQ-15A		
	20A	66W	48V	18V	75V	2.25kV	89.5%									2.3	0.38	0.9	58.4	9.7	22.9	UWE-3.3/20-Q48N-C	UWE		
				36V			90%									2.3	1.45	0.4	58.4	36.8	10.2	UCQ-3.3/20-D48N-C	UCQ		
			48V	36V	75V	2.25kV	89%									2.3	0.9	0.41	58.4	22.9	10.4	ULE-3.3/20-D48N-C	ULE20A		
						2.25kV	90%										2.3	1.45	0.38	58.4	36.8	9.5	ULQ-3.3/20-D48N-C	ULQ-15A	
																	1.3	0.4	0.9	33.02	10.16	22.86	ULS-3.3/20-D48N-C	ULS	
25A	82.5W	48V	18V	75V	2.25kV	90%									2.3	0.9	0.4	58.4	22.9	10.2	UEE-3.3/25-D48	UEE			
		12V	9V	36V	2kV	88%									2.22	1.45	0.43	56.4	36.8	10.9	UQQ-3.3/25-Q12P-C	UQQ7-15A			
					2.25kV	88.5%										2.22	1.45	0.43	56.4	36.8	10.9		UQQ-3.3/25-Q48N-C		
30A	99W	24V	18V	36V	2kV	89%									2.3	1.45	0.42	58.4	36.8	10.7	UVQ-3.3/30-D24P-C	UVQ			
			18V	75V	2.25kV	89.5%									2.3	0.9	0.39	58.4	22.9	9.9	UWE-3.3/30-Q48-C	UWE-100-120W			
		48V	36V	75V	2.25kV	91%										2.3	0.9	0.37	58.4	22.9	9.4	UCE-3.3/30-D48N-C	UCE		
					2.25kV	90%										2.3	1.45	0.4	58.4	36.8	10.2	UCQ-3.3/30-D48N-C	UCQ		
					2.25kV	89%											2.3	0.9	0.4	58.4	22.9	10.2	UEE-3.3/30-D48	UEE	
					2.25kV	91%											2.4	2.3	0.4	61	58.4	10.2	UCH-3.3/30-D48N-C	UCH	
													1.3	0.9	0.4	33	22.9	10.2	ULS-3.3/30-D48	ULS-100W					
35A	115.5W	24V	18V	36V	2.25kV	89%									2.4	2.3	0.4	61	58.4	10.2	UCH-3.3/35-D24P-C	UCH			
						90%									2.3	1.45	0.4	58.4	36.8	10.2	UCQ-3.3/35-D24P-C	UCQ			
		48V	36V	75V	2.25kV	92%									2.3	1.45	0.42	58.4	36.8	10.7	UVQ-3.3/35-D48N-C	UVQ			
50A	165W	48V	36V	75V	2.25kV	90%								2.3	1.45	0.4	58.4	36.8	10.2	HPQ-3.3/50-D48N-C	HPQ				
70A	231W					90%								2.4	2.3	0.4	61	58.4	10.2	HPH-3.3/70-D48N-C	HPH				
5V	0.05A	0.25W	3.3V	2.97V	3.63V	1kV	70%								0.24	0.45	0.39	6	11.5	10	LME0305SC	LME			
			5V	4.5V	5.5V	1kV	70%								0.39	0.45	0.27	9.8	11.5	6.8	LME0505DC				
																0.24	0.45	0.39	6	11.5	10		LME0505SC		
			12V	10.8V	13.2V	1kV	70%									0.39	0.45	0.27	9.8	11.5	6.8		LME1205DC		
	0.1A	0.5W	5V	4.75V	5.25V	1kV	50%								0.39	0.77	0.27	9.8	19.5	6.8	NMF0505DC	NMF			
																0.24	0.77	0.39	6	19.5	10		NMF0505SC		
			12V	11.4V	12.6V	1kV	50%									0.39	0.77	0.27	9.8	19.5	6.8		NMF1205DC		
																		0.24	0.77	0.39	6		19.5	10	NMF1205SC
			24V	22.8V	25.2V	1kV	50%									0.39	0.77	0.27	9.8	19.5	6.8		NMF2405DC		
																		0.24	0.77	0.39	6		19.5	10	NMF2405SC









# Single Output Isolated

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style							Package Dimensions						Further Information											
Rated Output Voltage	Rated Output Current	Total Output Power	Nom.	Min.	Max.			Bricks							Inches			mm			Part Number <i>Note: Root part numbers may be shown. Please refer to datasheets for available options.</i>	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>										
								1/32	1/16	1/8	1/4	1/2	SM	TH	DIP	SIP	L	W	H	L			W	H								
<b>6V</b>	<b>0.167A</b>	<b>1W</b>	5V	4.5V	5.5V	1kV	84%										0.5	0.43	0.27	12.7	11	7.05	MTE1S0506MC	MTE1								
							72%										0.30	0.5	0.26	7.7	12.7	6.6	NTE0506MC	NTE								
<b>8.3V</b>	<b>22A</b>	<b>182.6W</b>	48V	36V	75V	2.25kV	92.5%				●						2.3	0.4	1.45	58.4	10.2	36.8	HPQ-8.3/22-D48	HPQ								
<b>9V</b>	<b>0.028A</b>	<b>0.25W</b>	5V	4.5V	5.5V	1kV	75%							●	●		0.39	0.45	0.27	9.8	11.5	6.8	LME0509DC	LME								
																		●	●		0.24	0.45	0.39		6	11.5	10	LME0509SC				
			12V	10.8V	13.2V	1kV	75%									●	●		0.39	0.45	0.27	9.8	11.5		6.8	LME1209DC						
																●	●		0.24	0.45	0.39	6	11.5		10	LME1209SC						
	<b>0.1A</b>	<b>0.9W</b>	24V	22.8V	25.2V	1kV	62%								●	●		0.39	0.77	0.27	9.8	19.5	6.8	NMF2409DC	NMF							
																			●	●		0.24	0.77	0.39		6	19.5	10	NMF2409SC			
							3.3V	2.97V	3.63V	1kV	79%											●	●			0.39	0.45	0.27	9.8	11.5	6.8	MEE1S0309DC
											85%													●		●		0.24	0.45	0.39	6	11.5
				77%															●	●		0.30	0.5	0.26	7.7	12.7	6.6	NTE0309MC				
				3kV	75%										●	●		0.39	0.45	0.21	9.8	11.5	5.4	NKE0309DC	NKE							
																												NKE0309SC				
	5V	4.5V	5.5V	1kV	80%																							MEE1S0509DC	MEE1			
					87%																										MEE1S0509SC	
					85%								●								0.5	0.43	0.27	12.7	11	7.05	MTE1S0509MC					
					86%								●								0.323	0.331	0.335	8.2	8.4	8.5	MTU1S0509MC					
				3kV	86.5%												●	●		0.39	0.77	0.27	9.8	19.5	6.8	MEV1S0509DC	MEV1					
																														MEV1S0509SC		
				3kV	75%																								NKE0509DC	NKE		
																													NKE0509SC			
				1kV	77%																								NME0509DC	NME		
																													NME0509SC			
	5.2kV	72%																								NMJ0509SAC	NMJ					
	3kV	75%																								NMV0509DAC	NMV					
																										NMV0509SAC						
	1kV	75%																								NTE0509MC	NTE					
	12V	10.8V	13.2V	1kV	79%																						MEE1S1209DC	MEE1				
					86.5%																								MEE1S1209SC			
					86%																									MER1S1209SC		
86%																													MTE1S1209MC			
3kV				86%																							MEV1S1209DC	MEV1				
																											MEV1S1209SC					
																												NKE1209DC	NKE			
																												NKE1209SC				
1kV				87%																								MTU1S1209MC	MTU1			
																												NME1209DC	NME			
																												NME1209SC				
5.2kV				73%																								NMJ1209SAC	NMJ			
3kV	74%																								NMV1209DAC	NMV						
																									NMV1209SAC							
1kV	73%																								NTE1209MC	NTE						
15V	13.5V	16.5V	1kV	77%																						MEE1S1509DC	MEE1					
				86.5%																								MEE1S1509SC				
				86%																									MER1S1509SC			
			3kV	86.5%																							MTE1S1509MC	MTE1				
																											MEV1S1509DC					
																													MEV1S1509SC			
24V	21.6V	26.4V	1kV	74%																						MEE1S2409DC	MEE1					
				86.5%																								MEE1S2409SC				
				85%																									MER1S2409SC			
				86%																									MTE1S2409MC			















# Dual Output

## Bipolar Isolated DC-DC Converters



For analog/linear and other applications requiring bipolar/symmetric rail voltages, Murata Power Solutions' isolated duals generate  $\pm 3.3V$ ,  $\pm 5V$ ,  $\pm 12V$  or  $\pm 15V$  outputs from a single input voltage. Not surprisingly, our offering is the industry's broadest.

We offer bipolar duals with output power ranges from 0.75 to 20 Watts, input voltage ranges from 3 to 75 Volts, and package styles from sub-miniature SIPs, DIPs and SMDs to traditional 2" x 2" (51 x 51mm) through-hole devices. Isolation voltages run as high as 8,000Vdc. When relevant, all products offer

UL/EN safety certifications, CE marks, and EMI/EMC testing.

If your available voltage is anywhere between 3.3 and 75 Volts and your need is  $\pm 3.3V$ ,  $\pm 5V$ ,  $\pm 12V$  or  $\pm 15V$  at moderate power levels – in a small area – we've got your solution.

### Quick Selection Guide Listed by output power

	Vout					Series
	$\pm 3.3V$	$\pm 5V$	$\pm 9V$	$\pm 12V$	$\pm 15V$	
<b>1W</b>	•	•	•	•	•	MEA1
	•	•	•	•	•	MTU1
	•	•	•	•	•	NKA
	•	•	•	•	•	NMA
	•	•	•	•	•	NMJ
	•	•	•	•	•	NMV
	•	•	•	•	•	NTA
<b>1.5W</b>	•	•	•	•	•	PWR13XXC
	•	•	•	•	•	PWR1726AC

	Vout					Series
	$\pm 3.3V$	$\pm 5V$	$\pm 9V$	$\pm 12V$	$\pm 15V$	
<b>2W</b>	•	•	•	•	•	MEJ2
	•	•	•	•	•	NMH
	•	•	•	•	•	NMK
	•	•	•	•	•	NMS
	•	•	•	•	•	NTH
<b>3W</b>	•	•	•	•	•	BST 3W
	•	•	•	•	•	BWR 3W
	•	•	•	•	•	NDH
	•	•	•	•	•	NDTD
	•	•	•	•	•	PWR70C
<b>4W</b>	•	•	•	•	•	HB04UC
<b>5W</b>	•	•	•	•	•	BWR 5W
	•	•	•	•	•	PWR1546AC

	Vout					Series
	$\pm 3.3V$	$\pm 5V$	$\pm 9V$	$\pm 12V$	$\pm 15V$	
<b>6W</b>	•	•	•	•	•	NCS6
	•	•	•	•	•	NDS6
<b>7W</b>	•	•	•	•	•	BWR 7-10W
<b>8W</b>	•	•	•	•	•	BWR 7-10W
<b>15W</b>	•	•	•	•	•	BEI
	•	•	•	•	•	BWR 15-17W
	•	•	•	•	•	BWR 15-20W
<b>17W</b>	•	•	•	•	•	BWR 15-17W
	•	•	•	•	•	BWR 15-20W

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style						Package Dimensions						Further Information					
Rated Output Voltages	Rated Output Currents	Total Output Power	Nom.	Min.	Max.			Bricks		SM	TH	DIP	SIP	Inches			mm			Part Number	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>				
								1/8	1/4					1/2	L	W	H	L	W			H			
<b><math>\pm 3.3V</math></b>	$\pm 0.152A$	<b>1W</b>	3.3V	2.97V	3.63V	3kV	74%						0.39	0.77	0.21	9.8	19.5	5.4	NKA0303DC	NKA					
						1kV	75%					0.23	0.65	0.3	6.0	16.6	7.6	NKA0303SC							
			5V	4.5V	5.5V	3kV	77%								0.39	0.77	0.21	9.8	19.5	5.4	NKA0503DC	NKA			
						1kV	77%					0.23	0.65	0.3	6	16.6	7.6	NKA0503SC							
	$\pm 0.303A$	<b>2W</b>	5V	4.5V	5.5V	5.2kV	71%							0.5	0.77	0.39	12.7	19.7	10.0	MEJ2D0503SC	MEJ2				
						12	10.8V	13.2V	5.2kV	75%							0.5	0.77	0.39	12.7		19.7	10.0	MEJ2D1203SC	
			5V	4.5V	9V	1kV	1kV	67%								0.58	1.27	0.27	14.7	32.3	7.0	NDTD0503C	NDTD		
							12V	9V	18V	1kV	73%							0.58	1.27	0.27	14.7	32.3		7.0	NDTD1203C
							24V	18V	36V	1kV	73%							0.58	1.27	0.27	14.7	32.3		7.0	NDTD2403C
							48V	36V	75V	1kV	72%							0.58	1.27	0.27	14.7	32.3		7.0	NDTD4803C
<b><math>\pm 5V</math></b>	$\pm 0.1A$	<b>1W</b>	3.3V	2.97V	3.63V	1kV	83%						0.323	0.331	0.335	8.2	8.4	8.5	MTU1D0305MC	MTU1					
							78%						0.30	0.60	0.26	7.7	15.2	6.6	NTA0305MC						
						3kV	79%										0.39	0.77	0.21	9.8	19.5	5.4	NKA0305DC	NKA	
												0.23	0.65	0.30	6.0	16.6	7.6	NKA0305SC							



## Dual Output Bipolar

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style							Package Dimensions						Further Information								
Rated Output Voltages	Rated Output Currents	Total Output Power	Nom.	Min.	Max.			Bricks							Inches			mm			Part Number <i>Note: Root part numbers may be shown. Please refer to datasheets for available options.</i>	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>							
								1/8	1/4	1/2	SM	TH	DIP	SIP	L	W	H	L	W	H									
<b>±5V</b>	<b>±0.25A</b>	<b>2.5W</b>	12V	9V	18V	1kV	78%										1.25	0.8	0.45	31.8	20.3	11.4	BST-5/250-D12-C	BST-3W					
							77%															1.25	0.8	0.45	31.8	20.3	11.4	BWR-5/250-D12-C	BWR 3W
			48V	18V	72V	1kV	76%												1.25	0.8	0.45	31.8	20.3	11.4	BST-5/250-D48-C	BST-3W			
							77%															1.25	0.8	0.45	31.8	20.3	11.4	BWR-5/250-D48-C	BWR 3W
	<b>±0.3A</b>	<b>3W</b>	12V	9V	18V	1kV	75%										0.58	1.27	0.27	14.7	32.3	7	NDTD1205C	NDTD					
							78%														0.58	1.27	0.27		14.7	32.3	7	NDTD2405C	
							76%															0.58	1.27		0.27	14.7	32.3	7	NDTD4805C
	<b>±0.4A</b>	<b>4W</b>	12V	10.8V	13.2V	8kV	88%										2	1	0.40	50.8	25.4	10.2	HB04U12D05QC	HB04UC					
																						1	1	0.45	25.4	25.4	11.4	BWR-5/500-D24-C	BWR-5W
	<b>±0.5A</b>	<b>5W</b>	48V	36V	72V	1kV	78%										1	1	0.45	25.4	25.4	11.4	BWR-5/500-D48-C						
																						1.26	0.79	0.39	32	20	10	NCS6D1205C	NCS6
	<b>±0.6A</b>	<b>6W</b>	24V	18V	36V	1.5kV	82%										1.26	0.79	0.39	32	20	10	NDS6D2405C	NDS6					
							83%														1.26	0.79	0.39	32	20	10	NCS6D4805C	NCS6	
							80%															2	1	0.38	50.8	25.4	9.5	BWR-5/700-D5A-C	BWR7-10W A-Series
	<b>±0.7A</b>	<b>7W</b>	48V	18V	75V	1.5kV	81%										2	1	0.38	50.8	25.4	9.5	BWR-5/700-D48A-C						
																						2	1	0.38	50.8	25.4	9.5	BWR-5/900-D12A-C	BWR7-10W A-Series
	<b>±0.9A</b>	<b>9W</b>	12V	9V	18V	1.5kV	82%										2	2	0.45	50.8	50.8	11.4	BWR-5/1500-D5A-C	BWR15-20W A-Series					
																						2	1	0.47	50.8	25.4	11.8	BWR-5/1500-D12A-C	BWR15-17W A-Series
																							1.1	0.35	0.96	27.9	8.9	24.4	BEI15-050-Q12
	<b>±1.5A</b>	<b>15W</b>	24V	9V	36V	2.25kV	84%										2	1	0.47	50.8	25.4	11.8	BWR-5/1500-D24A-C	BWR15-17W A-Series					
83%																				2	1	0.47	50.8	25.4	11.8	BWR-5/1500-D48A-C	BWR15-17W A-Series		
83.5%																					1.1	0.35	0.96	27.9	8.9	24.4	BEI15-050-Q48	BEI15-Series	
83%																					2	1	0.47	50.8	25.4	11.8	BWR-5/1500-D48A-C	BWR15-17W A-Series	
<b>±1.70A</b>	<b>17W</b>	12V	9V	36V	1.5kV	83%										2	2	0.45	50.8	50.8	11.4	BWR-5/1700-D12A-C	BWR15-20W A-Series						
						83%															2	2		0.45	50.8	50.8	11.4	BWR-5/1700-D48A-C	

<b>±9V</b>	<b>±0.055A</b>	<b>1W</b>	3.3V	2.97V	3.63V	3kV	75%										0.39	0.77	0.21	9.8	19.5	5.4	NKA0309DC	NKA						
																						0.23	0.65		0.3	6	16.6	7.6	NKA0309SC	
																							0.3		0.6	0.26	7.7	15.2	6.6	NTA0309MC
			5V	4.5V	5.5V	1kV	86.7													0.39	0.77	0.27	9.8	19.5	6.8	MEA1D0509DC	MEA1			
							86.5															0.24	0.77	0.39	6.0	19.5		10.0	MEA1D0509SC	
						3kV	76%															0.39	0.77	0.21	9.8	19.5	5.4	NKA0509DC	NKA	
																							0.23	0.65	0.3	6	16.6	7.6		NKA0509SC
						1kV	75%																0.39	0.77	0.27	9.8	19.5	6.8	NMA0509DC	NMA
																							0.24	0.77	0.39	6	19.5	10	NMA0509SC	
			5.2kV	65%																0.39	0.77	0.49	9.8	19.5	12.5	NMJ0509SC	NMJ			
																				0.39	0.77	0.27	9.8	19.5	6.8	NMV0509DC		NMV		
			3kV	76%																0.24	0.77	0.39	6	19.5	10	NMV0509SC				
	1kV	75%																	0.3	0.6	0.26	7.7	15.2	6.6	NTA0509MC	NTA				
		77%																0.3	0.6	0.26	7.7	15.2	6.6	NTV0509MC	NTV					
	<b>±0.056A</b>	<b>2W</b>	12V	10.8V	13.2V	1kV	86.5											0.39	0.77	0.27	9.8	19.5	6.8	MEA1D1209DC	MEA1					
																						0.24	0.77	0.39		6.0	19.5	10.0	MEA1D1209SC	
							79%															0.39	0.77	0.21	9.8	19.5	5.4	NKA1209DC	NKA	
																							0.23	0.65	0.30	6	16.6	7.6		NKA1209SC
							74%																0.39	0.77	0.27	9.8	19.5	6.8	NMA1209DC	NMA
																	0.24	0.77	0.39	6	19.5	10.0	NMA1209SC							
<b>±0.111</b>	<b>2W</b>	5V	4.5V	5.5V	5.2kV	79%											0.39	0.77	0.49	9.8	19.5	12.5	NMJ1209SC	NMJ						
						86%														0.323	0.331	0.335	8.2		8.4	8.5	MTU1D0509MC	MTU1		
						87%															0.323	0.331	0.335		8.2	8.4	8.5		MTU1D1209MC	
12V	10.8V	13.2V	5.2kV	81%													0.5	0.77	0.39	12.7	19.7	10.0	MEJ2D0509SC	MEJ2						
				81%															0.5	0.77	0.39	12.7	19.7		10.0	MEJ2D1209SC				
				80%															0.5	0.77	0.39	12.7	19.7		10.0	MEJ2D1509SC				







## Dual Output Bipolar

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style							Package Dimensions						Further Information								
Rated Output Voltages	Rated Output Currents	Total Output Power	Nom.	Min.	Max.			Bricks							Inches			mm			Part Number <i>Note: Root part numbers may be shown. Please refer to datasheets for available options.</i>	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>							
								1/8	1/4	1/2	SM	TH	DIP	SIP	L	W	H	L	W	H									
<b>±15V</b>	<b>±0.1A</b>	<b>3W</b>	5V	4.5V	9V	1kV	74%										1.25	0.80	0.45	31.8	20.3	11.4	BST-15/85-D5-C	BST-3W					
							72%															1.25	0.80	0.45	31.8	20.3	11.4	BWR-15/85-D5-C	BWR-3W
							75%																0.58	1.27	0.27	14.7	32.3	7.0	NDTD0515C
			12V	9V	18V	1kV	76%													1.25	0.80	0.45	31.8	20.3	11.4	BST-15/100-D12-C	BST-3W		
							75%															1.25	0.80	0.45	31.8	20.3	11.4	BWR-15/100-D12-C	BWR-3W
							78%																0.58	1.27	0.27	14.7	32.3	7.0	NDTD1215C
		15V	10V	18V	5kV	66%													1.13	1.13	0.41	28.6	28.6	10.7	PWR70C	PWR70C			
						18V	36V	1kV	82%													0.36	1.02	0.49	9.3	26.0	12.5	NDH2415SC	NDH
			48V	18V	72V	1kV	77%													1.25	0.80	0.45	31.8	20.3	11.4	BST-15/100-D48-C	BST-3W		
		80%																				1.25	0.80	0.45	31.8	20.3	11.4	BWR-15/100-D48-C	BWR-3W
					36V	75V	1kV	81%											0.58	1.27	0.27	14.7	32.3	7.0	NDTD4815C	NDTD			
			<b>±0.133A</b>	<b>4W</b>	12V	10.8V	13.2V	8kV	88%										2.00	1.00	0.40	50.8	25.4	10.2	HB04U12D15QC	HB04UC			
		15V			13.5V	16.5V	8kV	88%											2.00	1.00	0.40	50.8	25.4	10.2	HB04U15D15QC				
		<b>±0.167A</b>	<b>5W</b>	5V	4.5V	5.5V	0.75kV	60%										2.00	2.00	0.40	50.8	50.8	10.2	PWR1546AC	PWR1546A				
				24V	18V	36V	1kV	83%											1.00	1.00	0.45	25.4	25.4	11.4	BWR-15/165-D24-C	BWR-5W			
				48V	36V	72V	1kV	82%												1.00	1.00	0.45	25.4	25.4	11.4		BWR-15/165-D48-C		
		<b>±0.20A</b>	<b>6W</b>	12V	9V	36V	1.5kV	87%											1.26	0.79	0.39	32	20	10	NCS6D1215C	NCS6			
				24V	18V	36V	1.5kV	87.5%												1.26	0.79	0.39	32	20	10	NDS6D2415C	NDS6		
				48V	18V	75V	1.5kV	84%												1.26	0.79	0.39	32	20	10	NCS6D4815C	NCS6		
		<b>±0.28A</b>	<b>8W</b>	5V	4.7V	7.25V	1.5kV	79%											2.00	1.00	0.38	50.8	25.4	9.5	BWR-15/275-D5A-C	BWR 7-10W A-Series			
				12V	9V	18V	1.5kV	84%												2.00	1.00	0.38	50.8	25.4	9.5		BWR-15/330-D12A-C		
				48V	18V	75V	1.5kV	84%											2.00	1.00	0.38	50.8	25.4	9.5	BWR-15/330-D48A-C				
		<b>±0.50A</b>	<b>15W</b>	5V	4.7V	7.5V	1.5kV	82%											2.00	2.00	0.45	50.8	50.8	11.4	BWR-15/500-D5A-C	BWR 15-20W A-Series			
				24V	9V	36V	2.25kV	84%												1.1	0.35	0.96	27.9	8.9	24.4	BEI15-150-Q12	BEI15-Series		
				48V	18V	75V		86%													1.1	0.35	0.96	27.9	8.9	24.4		BEI15-150-Q48	
		<b>±0.58A</b>	<b>17W</b>	12V	10V	18V	1.5kV	84%											2.00	1.00	0.47	50.8	25.4	11.8	BWR-15/575-D12A-C	BWR 15-17W A-Series			
				24V	18V	36V	1.5kV	86%												2.00	1.00	0.47	50.8	25.4	11.8		BWR-15/575-D24A-C		
				48V	36V	75V	1.5kV	87%												2.00	1.00	0.47	50.8	25.4	11.8		BWR-15/575-D48A-C		
	<b>±0.67A</b>	<b>20W</b>	12V	9V	36V	1.5kV	83%											2.00	2.00	0.45	50.8	50.8	11.4	BWR-15/670-D12A-C	BWR 15-20W A-Series				
			48V	18V	75V	1.5kV	84%												2.00	2.00	0.45	50.8	50.8	11.4		BWR-15/670-D48A-C			



# Dual Output

## Asymmetric Isolated DC DC Converter Series



When your application requires multiple positive voltages and you can't easily derive one from the other using a non-isolated PoL, consider an asymmetric dual.

Asymmetric duals are isolated, 2-output DC/DC converters that typically provide two low voltages such as 3.3V and 1.8V. As

such, they are ideal for driving the core and I/O logic of complex PLDs or ASICs. On DSL line cards, they can power both the DSP and the line drivers. In evolving process-control systems, they can power older 5V logic and newer 3.3V micros.

Asymmetric duals provide the real estate

and cost savings of a single package with one set of input circuitry (stand-up caps, filters, etc.). On the output side, many duals feature 2-loop designs that effectively deliver two independently regulated converters in a single package . . . with a standard pinout and internationally recognized safety approvals.

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style							Package Dimensions						Further Information	
Rated Output Voltages	Rated Output Currents	Total Output Power	Nom.	Min.	Max.			Bricks		SM	TH	DIP	SIP	Inches			mm			Part Number <i>Note: Root part numbers may be shown. Please refer to datasheets for available options.</i>	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>	
								1/8	1/4					1/2	L	W	H	L	W			H
5/3.3V	2.65/3A	15W	12V	10V	18V	1.5kV	86%						2.00	1.00	0.52	50.8	25.4	13.2	DSM-5/2.65-3.3/3-D12-C	DSM-15W		
			24V	18V	36V	1.5kV	86%						2.00	1.00	0.45	50.8	25.4	11.4	DSM-5/2.65-3.3/3-D24-C			
			48V	36V	75V	1.5kV	86%						2.00	1.00	0.45	50.8	25.4	11.4	DWR-5/2.65-3.3/3-D24-C			
													2.00	1.00	0.45	50.8	25.4	11.4	DWR-5/2.65-3.3/3-D48-C			
	3/4.25A	30W	12V	10V	18V	1.5kV	85%						2.00	2.00	0.48	50.8	50.8	12.2	BWR-5/3-3.3/4.25-D12A-C	BWR-5/3.3 30W		
			24V	18V	36V	1.5kV	88%						2.00	2.00	0.48	50.8	50.8	12.2	BWR-5/3-3.3/4.25-D24A-C			
			48V	36V	75V	1.5kV	88%						2.00	2.00	0.48	50.8	50.8	12.2	BWR-5/3-3.3/4.25-D48A-C			
	6/7A	33W	12V	10V	18V	1.5kV	86%						2.00	2.00	0.45	50.8	50.8	11.4	BWR-5/6-3.3/7-D12-C	BWR-5/3.3 33W		
			24V	18V	36V	1.5kV	88%						2.00	2.00	0.45	50.8	50.8	11.4	BWR-5/6-3.3/7-D24-C			
			48V	36V	75V	1.5kV	88%						2.00	2.00	0.45	50.8	50.8	11.4	BWR-5/6-3.3/7-D48-C			
	5/5V	0.1/0.1A	1W	5V	4.5V	5.5V	1.0kV	70%					0.39	0.77	0.27	9.8	19.5	6.8	NMD050505DC	NMD		
													0.24	0.77	0.39	6.0	19.5	10.0	NMD050505SC			
5/9V	0.1/0.056A	1W	5V	4.5V	5.5V	1.0kV	80%						0.39	0.77	0.27	9.8	19.5	6.8	NMD050509DC	NMD		
														0.24	0.77	0.39	6.0	19.5	10.0		NMD050509SC	
			12V	10.8V	13.2V	1.0kV	80%							0.39	0.77	0.27	9.8	19.5	6.8		NMD120509DC	
												0.24	0.77	0.39	6.0	19.5	10.0	NMD120509SC				
5/12V	0.1/0.042A	1W	5V	4.5V	5.5V	1.0kV	80%						0.24	0.77	0.39	6.0	19.5	10.0	NMD050512SC	NMD		
			12V	10.8V	13.2V	1.0kV	80%							0.24	0.77	0.39	6.0	19.5	10.0		NMD120512SC	
5/15V	0.1/0.034A	1W	5V	4.5V	5.5V	1.0kV	80%						0.24	0.77	0.39	6.0	19.5	10.0	NMD050515SC	NMD		
														0.39	0.77	0.27	9.8	19.5	6.8		NMD120515DC	
			12V	10.8V	13.2V	1.0kV	80%							0.24	0.77	0.39	6.0	19.5	10.0		NMD120515SC	

# Triple Output Isolated DC to DC Converters



If your challenge is to power an entire mixed-signal, analog/digital system partition from a single dc source voltage, Murata Power Solutions' high-quality, triple-output DC DC converters can provide your total solution.

Operating from inputs as low as 4.7V or as high as 75V, each of these full-featured power

converters offers a 3.3V or 5V primary output (with current as high as 30 Amps) and either  $\pm 12V$  or  $\pm 15V$  auxiliary outputs (with currents as high as  $\pm 4.2$  Amps).

Our versatile offering includes: the industry's smallest triples (1 x 2 inches, 25 x 50mm) at 8-22W power levels; slightly larger, wide-input (9-36V and 18-75V) devices at

20-30 Watt levels; and traditional 1/2-bricks at 100 Watts. One unique product offers 24, 48 and 72V outputs.

Before you specify two or three DC/DC converters to accomplish your task, see if a single 3-output device from Murata Power Solutions does the job.

Output Characteristics			Input Voltage			Isolation	Efficiency	Package Style							Package Dimensions						Further Information				
Rated Output Voltages	Rated Output Currents	Total Output Power	Nom.	Min.	Max.			Bricks							Inches			mm			Part Number <i>Note: Root part numbers may be shown. Please refer to datasheets for available options.</i>	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>			
								1/8	1/4	1/2	SM	TH	DIP	SIP	L	W	H	L	W	H					
<b>5/±12V</b>	<b>1/±0.13A</b>	<b>8W</b>	5V	4.7V	7V	1.5kV	76%											2	1	0.38	50.8	25.4	9.5	TWR-5/1000-12/125-D5A-C	TWR8-11W
			12V	9V	18V	1.5kV	82%												2	1	0.38	50.8	25.4	9.5	
	<b>1/±0.21A</b>	<b>8W</b>	24V	18V	36V	1.5kV	84%											2	1	0.38	50.8	25.4	9.5	TWR-5/1000-12/210-D24A-C	
			48V	36V	72V	1.5kV	85%											2	1	0.38	50.8	25.4	9.5	TWR-5/1000-12/210-D48A-C	
	<b>1.2/±0.25A</b>	<b>12W</b>	48V	18V	72V	1.5kV	81%											2	2	0.45	50.8	50.8	11.4	TWR-5/1200-12/250-D48A-C	TWR12-15W
<b>1.5/±0.25A</b>	<b>14W</b>	48V	18V	72V	1.5kV	79%											2	2	0.45	50.8	50.8	11.4	TWR-5/1500-12/250-D48A-C	TWR 20W A-Series	
<b>3/±0.5A</b>	<b>20W</b>	24V	9V	36V	1.5kV	82%											2	2	0.45	50.8	50.8	11.4	TWR-5/3000-12/500-D12A-C		
		48V	18V	75V	1.5kV	83%											2	2	0.45	50.8	50.8	11.4	TWR-5/3000-12/500-D48A-C		
<b>5/±15V</b>	<b>0.8/±0.15A</b>	<b>9W</b>	5V	4.7V	7V	1.5kV	74%											2	1	0.38	50.8	25.4	9.5	TWR-5/800-15/150-D5A-C	TWR8-11W
			12V	9V	18V	1.5kV	82%												2	1	0.38	50.8	25.4	9.5	
	<b>1/±0.2A</b>	<b>11W</b>	48V	36V	72V	1.5kV	84%											2	1	0.38	50.8	25.4	9.5	TWR-5/1000-15/200-D48A-C	
			24V	18V	36V	1.5kV	84%											2	1	0.38	50.8	25.4	9.5	TWR-5/1000-15/200-D24A-C	
	<b>1/±0.25A</b>	<b>11W</b>	48V	18V	72V	1.5kV	80%											2	2	0.45	50.8	50.8	11.4	TWR-5/1000-15/250-D48A-C	TWR12-15W
<b>1.5/±0.25A</b>	<b>15W</b>	48V	18V	72V	1.5kV	81%											2	2	0.45	50.8	50.8	11.4	TWR-5/1500-15/250-D48A-C	TWR 20W A-Series	
<b>3/±0.5A</b>	<b>20W</b>	24V	9V	36V	1.5kV	82%											2	2	0.45	50.8	50.8	11.4	TWR-5/3000-15/500-D12A-C		
		48V	18V	75V	1.5kV	82%											2	2	0.45	50.8	50.8	11.4	TWR-5/3000-15/500-D48A-C		
<b>24/48/72V</b>	<b>42/21/14mA</b>	<b>3W</b>	5V	4.5V	5.5V	1.0kV	85%											0.30	0.86	0.44	7.5	21.8	11.1	NMT0572SC	NMT
			12V	10.8V	13.2V	1.0kV	85%												0.30	0.86	0.44	7.5	21.8	11.1	

# VRM Processor Support

Powering next generation 32-Bit and 64-Bit processors is becoming more demanding, requiring lower output voltages, higher currents, and higher di/dts.

Our VRM products are designed to meet and exceed the performance demanded

by the next generation processors and are available in a variety of packages for an optimal fit in systems <1U to 2U with innovative open-frame designs that allow for better thermal management in today's system environments.



Output Characteristics				Input Voltage			Efficiency	Package Style									Further Information				
VRM Spec	Thermal Design Current	Max. Output Current	Output Voltage Range (VDC)	Nom.	Min.	Max.		Card Edge	Thru Hole	Height				L	W	H	W	H	Part Number	Datasheet Available at <a href="http://www.murata-ps.com">www.murata-ps.com</a>	
										<1U	1U	1.5U	2U								
<b>Intel® 11.1</b>	<b>80A</b>	<b>70A</b>	0.5-1.6	12	11.04	12.6	87%	•		•			3.66	0.75	0.78	92.96	19.05	19.81	VR111B080CA-C	VR111 Series	
	<b>150A</b>	<b>130A</b>	0.5-1.6	12	11.04	12.6	87%	•			•		3.80	0.87	1.18	96.52	22.10	29.97	VR111B150CU-C		
								•				•		3.80	1.00	1.86	96.52	25.40	47.24		VR111B150CL-C
								•				•		3.80	0.87	2.50	96.52	22.10	63.50		VR111B150CS-C
<b>Intel® 11.0</b>	<b>80A</b>	<b>70A</b>	0.8375-1.6	12	11.04	12.6	88%	•		•			3.66	0.75	0.78	92.96	19.05	19.81	VR110B080CA-1C	VR110 Series	
							84%	•			•		3.80	0.475	1.18	96.52	12.07	29.97	VR110B080CU-1C		
	<b>150A</b>	<b>130A</b>	0.8375-1.6	12	11.04	12.6	84%	•			•		3.80	0.87	1.18	96.52	22.10	29.97	VR110B150CU-1C		
								•				•		3.80	1.00	1.86	96.52	25.40	47.24		VR110B150CL-1C
	<b>80A</b>	<b>70A</b>	0.81875 -1.6	12	11.04	12.6	87%	•	•		•		3.80	0.46	1.19	96.49	11.70	30.15	VR111EB080CU-1C	VR11C & VR11E Series	
								•	•			•		3.80	0.46	1.19	96.49	11.70	30.15		VR11CB080CE-1C
								•	•			•		3.80	0.46	1.19	96.49	11.70	30.15		VR11CB080CU-1C
								•	•			•		3.80	0.92	1.19	96.49	23.20	30.15		VR11CB150CU-1C
<b>150A</b>	<b>130A</b>	0.81875 -1.6	12	11.04	12.6	85%	•	•			•		3.80	.085	2.41	96.49	21.50	61.15	VR11CB150CS-1C		
							•	•			•		3.80	0.87	1.18	96.52	22.10	29.97	VR102B150CU-3C	VR102 Series	
<b>Intel® 10.1/10.2</b>	<b>150A</b>	<b>130A</b>	0.8375-1.6	12	11.04	12.6	85%	•			•		3.80	0.87	1.18	96.52	22.10	29.97	VR102B150CU-3C		
								•				•		3.80	0.87	2.50	96.52	22.10	63.50	VR102B150CS-2C	

# A design-in guide featuring our more popular series

If you need product now, or within shorter lead times, the Selector Guides on the next two pages contain popular models most likely to be found in inventory at our authorized Distributors. With over 3,500 standard part numbers to choose from, there is a chance that our product data book and online search tools may lead you to a model with an availability that is not quite in line with your scheduling requirements. In that case, refer to the following selector tables for a model that could meet your immediate requirements.

## AC/DC Front End

We also offer Custom AC/DC options. Contact us for details.

Series	Description	Power Ratings	Input	Output 1	Output 2	Efficiency	Features
D1U4CS	1U height 4" width	2200W	90-264 VAC	12VDC	3.3VDC 5VDC	93.0%	PFC, Active Current-Share, Hot-Plug, I <sup>2</sup> C Bus, EMI Class A
D1U4CS-D	1U height 4" width	2100W	40-72 VDC	54VDC	5VDC	93.0%	PFC, Droop Current-Share, Hot-Plug, I <sup>2</sup> C Bus, EMI Class A
D1U4	1U height 4" width	1600W 1200W	90-264 VAC	12VDC	3.3VDC 5VDC	90.6%	PFC, Active Current-Share, Hot-Plug, I <sup>2</sup> C Bus, EMI Class A
D1U	1U height 4.75" width	2000W 1600W 1200W	90-264 VAC	12VDC 48VDC	3.3VDC 5VDC 12VDC	90.6%	PFC, Active Current-Share, Hot-Plug, I <sup>2</sup> C Bus, EMI Class A
D1U-H	1U height 5.5" width	2800W	170-264 VAC	-52VDC	12VDC	91.6%	PFC, Active Current-Share, Hot-Plug, I <sup>2</sup> C Bus, EMI Class A
MVAB120	1U height 2" x 4" footprint	120W @ 250LFM 75W Convection Cooling	90-264 VAC	12VDC 24VDC 48VDC		88% 90% 91%	PFC, Compliance To WW Safety & Emc Standards



## Isolated DC/DC



Miniature Industrial Package (Low Power)

See opposite page.



Industrial Package



## PoL

	5Vin		12Vin		24Vin
	SMT	SIP	SMT	SIP	SMT
1A-1.5A			OKL 	OKR 	
3A	OKY  OKL/OKL2 	OKX 	OKL  OKY 	OKR  OKX 	OKI 
5A	OKY 	OKX 	OKY 	OKX 	
6A	OKL/OKL2 		OKL/OKL2 	OKR 	
10A	OKY/OKY2 	OKX/OKX2 	OKY/OKY2 	OKR  OKX/OKX2 	
16A	OKY/OKY2 	OKX/OKX2 	OKY/OKY2 	OKX/OKX2 	



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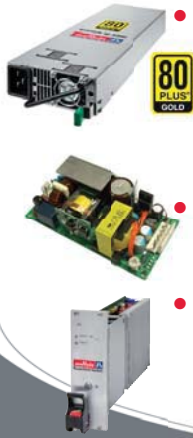
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- 1 Safety Critical Component means any component whose failure to perform could cause the failure of, or affect the operation of a Life Support Device.
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### Murata Electronics Trading México, S.A. de C.V.

Zapopan, Jalisco, Mexico  
Phone: 52-33-3125-3425

### Murata World Comercial Ltda.

São Paulo, Brasil  
Phone: 55--11-3371-6811

## Murata Europe

### Murata Electronics Europe B.V.

Hoofddorp, The Netherlands  
Phone: +31-23-5698410 E-mail: [info@murata.nl](mailto:info@murata.nl)

### Murata Elektronik GmbH

Nürnberg, Germany  
Phone: +49-911-66870 E-mail: [info@murata.de](mailto:info@murata.de)

### Murata Elektronik GmbH Baden Branch

Mägenwil, Switzerland  
Phone: +41-44-949-3040 E-mail: [info@murata.ch](mailto:info@murata.ch)

### Murata Elektronik GmbH Budapest Office

Budapest, Hungary  
Phone: +36-1-2053159 E-mail: [info@murata.de](mailto:info@murata.de)

### Murata Electronique SAS

Robinson Cedex, Paris, France  
Phone: +33-1-4094-8300 E-mail: [info@murata.fr](mailto:info@murata.fr)

### Murata Elettronica S.p.A.

Caponago, Monza Brianza, Italy  
Phone: +39-02-959681 E-mail: [info@murata.it](mailto:info@murata.it)

### Murata Electronics Ltd.

Fleet, United Kingdom  
Phone: +44-1252-811666 E-mail: [enquiry@murata.co.uk](mailto:enquiry@murata.co.uk)

### Murata Electronics B.V.

Hoofddorp, The Netherlands  
Phone: +31-23-5698410 E-mail: [info@murata.nl](mailto:info@murata.nl)

### Murata Electronics Barcelona Office

Cerdanyola Barcelona, Spain  
Phone: +34-93-582-02-59 E-mail: [info@murata.nl](mailto:info@murata.nl)

### Murata Finland Oy

Vantaa, Finland  
Phone: +358 9 879181 Email: [info@murata.nl](mailto:info@murata.nl)

## Murata Asia

### Murata Manufacturing Company, Ltd.

Tokyo, Japan  
Phone: 81-3-5469-6111

### Murata Electronics Singapore (Pte.) Ltd.

Phone: 65-6758-4233 E-mail: [mes\\_sales@murata.com.sg](mailto:mes_sales@murata.com.sg)

### Murata Electronics (Malaysia) Sdn. Bhd. Kuala Lumpur

Kuala Lumpur, Malaysia  
Phone: 60-3-2287-7568 E-mail: [mes\\_sales@murata.com.sg](mailto:mes_sales@murata.com.sg)

### Murata Electronics (Malaysia) Sdn. Bhd. Penang

Penang, Malaysia  
Phone: 60-4-229-4258 E-mail: [mes\\_sales@murata.com.sg](mailto:mes_sales@murata.com.sg)

### Murata Electronics Philippines Inc.

Muntinlupa City, Philippines  
Phone: 63-2-836-1569 E-mail: [mes\\_sales@murata.com.sg](mailto:mes_sales@murata.com.sg)

### Thai Murata Electronics Trading, Ltd.

Bangkok, Kingdom of Thailand  
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### Murata Electronics (India) Private Limited

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### Murata Electronics (Vietnam) Co., Ltd.

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### Taiwan Murata Electronics Co., Ltd.

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### Korea Murata Electronics Co., Ltd.

Seoul, Republic of Korea  
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### Murata Electronics Trading (Tianjin) Co., Ltd.

Tianjin, P.R.C.  
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### Murata Electronics Trading (Shenzhen) Co., Ltd.

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Phone: 86-755-8202-2080 E-mail: [enquiry@sz.murata.com.cn](mailto:enquiry@sz.murata.com.cn)

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