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Certified Management Systems

IXYS
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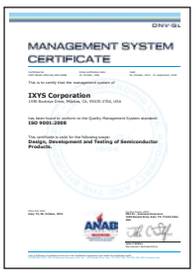
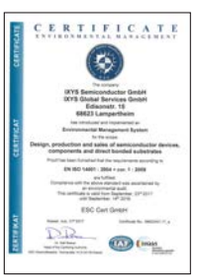
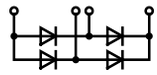
		Certificates
IXYS Milpitas / USA	ISO 9001:2008	
IXYS Beverly / USA	ISO 9001:2008	
IXYS Lampertheim / Germany	ISO/TS 16949:2009 (includes ISO 9001:2008) EN ISO 14001:2009 OHSAS 18001:2007 DIN EN ISO 50001:2011	   
IXYS Chippenham / UK	ISO 9001:2008 EN ISO 14001:2009	 

Rectifier Bridges with Fast Diodes

1-phase, B2U

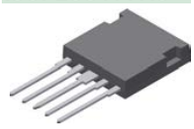


✧ under development	Type	V_{RRM} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
	VBE 17-06NO7	600	27	85	50	1.18	22.0	150	2.50	0.30	X101
	VBE 17-12NO7	1200	19	85	40	1.32	30.0	150	2.50	0.30	
	VBE 20-20NO1	2000	20	65	75	3.30	93.0	150	1.70	0.30	X103
	VBE 26-06NO7	600	44	85	110	1.13	13.0	150	1.60	0.30	X101
	VBE 26-12NO7	1200	32	85	90	1.32	30.0	150	1.60	0.30	
	VBE 55-06NO7	600	68	100	250	0.98	8.0	150	0.90	0.30	
	VBE 55-12NO7	1200	59	85	200	1.31	15.0	150	0.90	0.30	
	VBE 60-06A	600	60	100	250	0.98	8.2	150	1.15	0.10	X027a
	VBE 60-12A	1200	60	70	200	1.31	14.0	150	1.15	0.10	
	DHG 40B1200LB	1200	34	80	150	1.35	42.0	175	1.50	0.50	X030a
	DHG 50B1200LB	1200	45	80	200	1.45	26.0	175	1.10	0.40	
	DPG 60B600LB	600	60	100	250	0.85	17.0	175	1.10	0.40	
	FBE 22-06N1	600	22	115	50	1.04	24.0	175	3.00	0.20	X024a
	VBE 100-06NO7	600	100	85	600	1.09	4.3	150	0.80	0.20	X102
	VBE 100-12NO7	1200	100	70	500	1.07	8.2	150	0.80	0.20	
	DCG 20B650LB *	650	21	80	250	0.74	118.0	175	2.10	0.70	X030a
✧	**DCG 20B1200LB ***	1200	18	80	60	0.68	133.0	175	3.30	0.85	
	FBS 10-12SC *	1200	9	80	100	-	-	175	7.00	3.50	X024a

***** SiC-Diodes

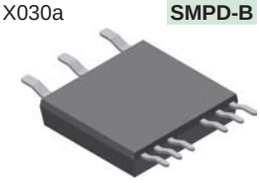
Package style
Outline drawings on pages O-36...O-59

X024a **ISOPLUS i4-PAC™**



X027a **SOT-227B miniBLOC**

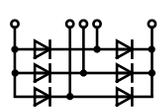
X030a **SMPD-B**



X101 **ECO-PAC 1**

See data sheet for pin arrangement

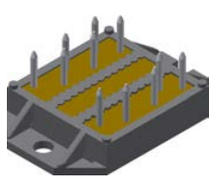
3-phase, B6U



FUS 45-0045B	45	45	130	150	0.30	14.8	150	3.00	0.20	X024a
DHG 60U1200LB	1200	60	80	200	1.35	2.90	150	1.20	0.40	X030a
VUE 50-12NO1	1200	50	85	200	1.65	18.2	150	1.20	0.30	X103
VUE 30-20NO1	2000	30	65	75	3.30	93.0	150	1.70	0.30	
VUE 22-06NO7	600	34	85	50	1.18	22.0	150	2.50	0.30	X101
VUE 22-12NO7	1200	24	85	40	1.39	55.0	150	2.50	0.30	
VUE 35-06NO7	600	56	85	110	1.13	13.0	150	1.60	0.30	
VUE 35-12NO7	1200	40	85	90	1.32	30.0	150	1.60	0.30	
VUE 75-06NO7	600	86	100	250	0.98	8.0	150	0.90	0.30	
VUE 75-12NO7	1200	74	85	200	1.31	15.0	150	0.90	0.30	
FUE 30-12N1	1200	30	120	90	0.97	48.0	175	2.30	0.20	X024a
VUE 130-06NO7	600	130	85	600	1.09	4.3	150	0.80	0.20	X102
VUE 130-12NO7	1200	130	70	500	1.07	8.2	150	0.80	0.20	

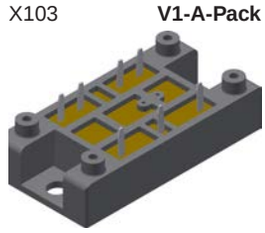
See data sheet for pin arrangement

X102 **ECO-PAC 2**



See data sheet for pin arrangement

X103 **V1-A-Pack**



See data sheet for pin arrangement

Rectifier Bridges incorporating Fast Diodes

Power switching semiconductors are used in inverter systems with DC-Link. Due to high switching frequencies, harmonics and line distortion may be generated. It is important that the new designs reduce these influences and fulfill the EMI filtering requirements according to EMI/EMC VDE 0871 and other.

The noise level can be reduced by up to **10dB** when the input rectifier is equipped with semi-fast diodes and is therefore optimised for turn off; resulting in a lower peak recovery current compared to non-optimised and normal rectifier diodes.

The noise level can be further reduced approximetely by another **5dB** when using rectifier bridges equipped with Fast Recovery Epitaxial Diodes (FRED) like module types VBE (single phase bridge) or VUE (three phase bridge). However these are more expensive but may be necessary in some applications to fulfill the VDE or other standards.

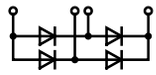
This behaviour has a direct influence on the design of the EMI filter networks with its capacitors and inductors of which the size and costs can be reduced.

More detailed information is available in the IXYS application note D98005E „Input Rectifiers with Semi-fast Diodes for DC Link“ on www.ixys.com.

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ Rectifier Bridges

1~ Rectifier Bridges with Avalanche Diodes, B2U

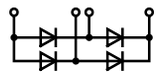


Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	P_{RSM} kW	Fig. No.	Package style Outline drawings on pages O-36...O-59
VBO 13-12AO2	1200	400	18	85	220	0.85	17.0	150	5.60	6.00	2.5	X115	X024a **ISOPLUS i4-PAC™**
VBO 13-16AO2	1600	500											
VBO 20-12AO2	1200	400	31	85	300	0.85	14.0	150	3.00	3.40	3.4		
VBO 20-16AO2	1600	500											
VBO 25-12AO2	1200	400	38	85	370	0.85	8.0	150	2.80	3.20	3.4		
VBO 25-16AO2	1600	500											
1~ Rectifier Bridges with Standard Diodes, B2U													X025a **GBFP**
VBO 13-08NO2	800	250	18	85	220	0.85	17.0	150	5.60	6.00	-	X115	
VBO 13-12NO2	1200	400											
VBO 13-16NO2	1600	500											
FBO 16-12N	1200	400	20	130	150	0.81	32.0	175	3.00	3.20	-	X024a	X027a **SOT-227B miniBLOC**
VBO 20-08NO2	800	250	31	85	300	0.85	14.0	150	3.00	3.40	-	X115	
VBO 20-12NO2	1200	400											
VBO 20-16NO2	1600	500											
VBO 21-08NO7	800	250	20	115	120	0.84	28.8	150	2.50	2.90	-	X101	
VBO 21-12NO7	1200	400											
VBO 22-08NO8	800	250	14	85	380	0.77	14.2	150	8.00	9.00	-	X116b	
VBO 22-12NO8	1200	400											
VBO 22-16NO8	1600	500											
VBO 22-18NO8	1800	575											X101 **ECO-PAC 1**
GBO 25-12NO1	1200	400	25	105	370	0.74	16.3	175	4.30	4.80	-	X025a	
GBO 25-16NO1	1600	500											
VBO 25-08NO2	800	250	38	85	370	0.85	8.0	150	2.80	3.20	-	X115	
VBO 25-12NO2	1200	400											
VBO 25-16NO2	1600	500											See data sheet for pin arrangement
VBO 30-08NO7	800	250	25	85	400	0.80	12.9	150	4.70	4.80	-	X119b	
VBO 30-12NO7	1200	400											X115 FO-A
VBO 30-16NO7	1600	500											
VBO 30-18NO7	1800	575											
VBO 36-08NO8	800	250	18	85	550	0.76	9.1	150	7.00	8.00	-	X116b	
VBO 36-12NO8	1200	400											
VBO 36-16NO8	1600	500											X116b FO-B
VBO 36-18NO8	1800	575											
FBO 40-12N	1200	400	40	130	300	0.79	14.0	175	1.50	1.70	-	X024a	
VBO 40-08NO6	800	250	40	115	320	0.81	12.1	150	1.30	1.40	-	X027a	
VBO 40-12NO6	1200	400											
VBO 40-16NO6	1600	500											X119b **PWS-A**
VBO 50-08NO7	800	250	45	85	750	0.76	6.9	150	2.70	3.10	-	X120b	
VBO 50-12NO7	1200	400											
VBO 50-16NO7	1600	500											
VBO 50-18NO7	1800	575											
VBO 52-08NO7	800	250	60	115	550	0.78	8.1	150	1.10	1.50	-	X122b	
VBO 52-12NO7	1200	400											
VBO 52-16NO7	1600	500											X120b **PWS-B**
VBO 52-18NO7	1800	575											
VBO 54-08NO7	800	250	55	105	300	0.82	12.2	150	1.10	1.50	-	X101	
VBO 54-12NO7	1200	400											
VBO 54-16NO7	1600	500											
VBO 68-08NO7	800	250	70	105	550	0.81	7.8	150	0.90	1.30	-	X101	
VBO 68-12NO7	1200	400											X122b **PWS-D**
VBO 68-16NO7	1600	500											
VBO 72-08NO7	800	250	70	110	750	0.78	6.0	150	0.90	1.30	-	X122b	
VBO 72-12NO7	1200	400											
VBO 72-16NO7	1600	500											
VBO 72-18NO7	1800	575											

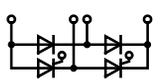
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ Rectifier Bridges

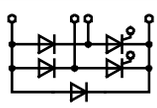
1~ Rectifier Bridges with Standard Diodes, B2U



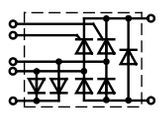
Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
VBO 78-08NO7	800	250	80	115	750	0.81	5.9	150	0.70	1.00	X102
VBO 78-12NO7	1200	400									
VBO 78-16NO7	1600	500									
VBO 88-08NO7	800	250	90	115	1000	0.80	4.6	150	0.60	0.90	
VBO 88-12NO7	1200	400									
VBO 88-16NO7	1600	500									
DLA 100B800LB	800	400	124	80	400	0.75	4.2	175	1.00	1.45	X030a
DLA 100B1200LB	1200										
➢ **DMA 120B800LB**	800	250	130	90	500	0.88	6.4	175	0.80	1.30	
VBO 105-08NO7	800	250	100	100	1500	0.78	4.8	150	0.80	1.10	X121b
VBO 105-12NO7	1200	400									
VBO 105-16NO7	1600	500									
VBO 125-08NO7	800	250	125	105	1800	0.76	3.6	150	0.60	0.90	
VBO 125-12NO7	1200	400									
VBO 125-16NO7	1600	500									
VBO 130-08NO7	800	250	130	110	1800	0.77	3.4	150	0.50	0.70	X123e
VBO 130-12NO7	1200	400									
VBO 130-16NO7	1600	500									
VBO 130-18NO7	1800	575									
VBO 160-08NO7	800	250	160	110	2800	0.74	2.4	150	0.40	0.55	
VBO 160-12NO7	1200	400									
VBO 160-16NO7	1600	500									
VBO 160-18NO7	1800	575									



VGO



VHF



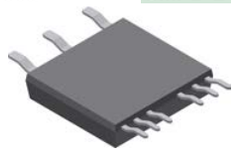
VHFD

Type	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_H °C	I_{TSM} 10 ms, 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
1~ Half Controlled Rectifier Bridges with free wheeling diode, B2HKF											
VHF 15-08io5	800	250	15	85	190	1.00	40.0	125	2.40	3.00	X117a
VHF 15-12io5	1200	400									
VHF 15-14io5	1400	440									
VHF 15-16io5	1600	500									
VHF 25-08io7	800	250	32	T_C = 85°C	200	0.85	27.0	125	1.30	1.80	X101
VHF 25-12io7	1200	400									
VHF 28-08io5	800	250	28	85	300	0.90	15.0	125	1.40	2.00	X117a
VHF 28-12io5	1200	400									
VHF 28-14io5	1400	440									
VHF 28-16io5	1600	500									
VHF 36-08io5	800	250	36	85	320	0.85	13.0	125	1.15	1.55	
VHF 36-12io5	1200	400									
VHF 36-14io5	1400	440									
VHF 36-16io5	1600	500									
VHFD 16-08io1	800	250	16	85	150	1.00	40.0	125	2.40	3.00	X103
VHFD 16-12io1	1200	400									
VHFD 16-16io1	1600	500									
VHFD 29-08io1	800	250	28	85	300	0.90	15.0	125	1.40	2.00	
VHFD 29-12io1	1200	400									
VHFD 29-16io1	1600	500									
VHFD 37-08io1	800	250	36	85	320	0.85	13.0	125	1.20	1.55	
VHFD 37-12io1	1200	400									
VHFD 37-16io1	1600	500									
1~ Half Controlled Rectifier Bridge, B2HZ											
VGO 36-16io7	1600	500	36	85	320	0.85	13.0	125	1.40	2.00	X101

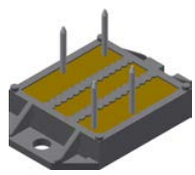
Package style

Outline drawings on pages O-36...O-59

X030a **SMPD-B**

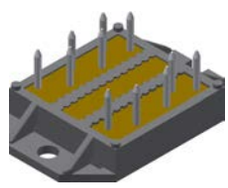


X101 **ECO-PAC 1**



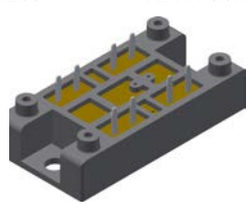
See data sheet for pin arrangement

X102 **ECO-PAC 2**



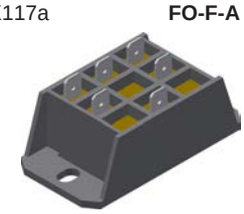
See data sheet for pin arrangement

X103 **V1-A-Pack**

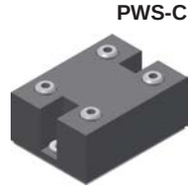


See data sheet for pin arrangement

X117a **FO-F-A**



X121b **PWS-C**

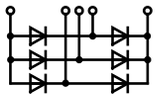


X123e **PWS-E**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

3~ Rectifier Bridges with Standard Diodes, B6U

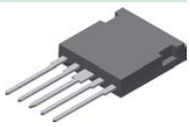


Type	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
FUO 22-12N	1200	400	30	120	150	0.81	31.0	175	3.00	3.20	X024a
FUO 22-16N	1600	500									
VUO 25-08NO8	800	250	20	85	380	0.77	14.2	150	8.00	9.00	X116a
VUO 25-12NO8	1200	400									
VUO 25-14NO8	1400	440									
VUO 25-16NO8	1600	500									
VUO 25-18NO8	1800	575									
VUO 28-08NO7	800	250	30	105	120	0.84	28.8	150	2.50	2.90	X101
VUO 28-12NO7	1200	400									
VUO 36-08NO8	800	250	27	85	550	0.76	9.1	150	7.00	8.00	X116a
VUO 36-12NO8	1200	400									
VUO 36-14NO8	1400	440									
VUO 36-16NO8	1600	500									
VUO 36-18NO8	1800	575									
VUO 34-08NO1	800	250	45	110	300	0.81	14.9	150	1.70	2.10	X103
VUO 34-12NO1	1200	400									
VUO 34-14NO1	1400	440									
VUO 34-16NO1	1600	500									
VUO 34-18NO1	1800	575									
VUO 30-08NO3	800	250	45	110	300	0.80	12.9	150	2.00	2.40	X117b
VUO 30-12NO3	1200	400									
VUO 30-14NO3	1400	440									
VUO 30-16NO3	1600	500									
VUO 30-18NO3	1800	575									
VUO 35-08NO7	800	250	35	85	400	0.80	12.9	150	4.20	4.80	X119a
VUO 35-12NO7	1200	400									
VUO 35-14NO7	1400	440									
VUO 35-16NO7	1600	500									
VUO 35-18NO7	1800	575									
GUO 40-08NO1	800	250	40	90	370	0.74	16.3	175	4.30	4.80	X025b
GUO 40-12NO1	1200	400									
GUO 40-16NO1	1600	500									
DMA 40U1800GU	1800	575									
DNA 40U2200GU	2200	690									
FUO 50-16N	1600	500	50	120	270	0.78	17.0	175	2.10	2.30	X024a
VUO 52-08NO1	800	250	60	110	350	0.83	11.5	150	1.30	1.60	X103
VUO 52-12NO1	1200	400									
VUO 52-14NO1	1400	440									
VUO 52-16NO1	1600	500									
VUO 52-18NO1	1800	500									
VUO 52-20NO1	2000	575									
VUO 52-22NO1	2200	690									
VUO 50-08NO3	800	250	60	110	500	0.78	8.5	150	1.50	1.90	X117b
VUO 50-12NO3	1200	400									
VUO 50-14NO3	1400	440									
VUO 50-16NO3	1600	500									
VUO 50-18NO3	1800	575									
VUO 55-12NO7	1200	400	60	85	750	0.76	6.9	150	2.70	3.10	X120a
VUO 55-14NO7	1400	440									
VUO 55-16NO7	1600	500									
VUO 55-18NO7	1800	575									

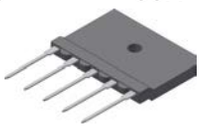
Package style

Outline drawings on pages O-36...O-59

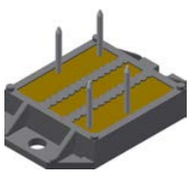
X024a **ISOPLUS i4-PAC™**



X025b **GUFP**

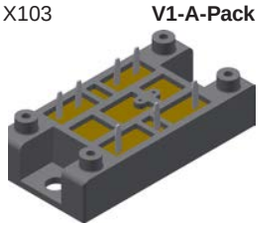


X101 **ECO-PAC 1**



See data sheet for pin arrangement

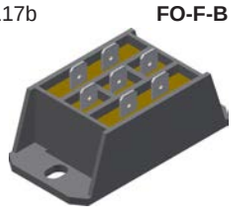
X103 **V1-A-Pack**



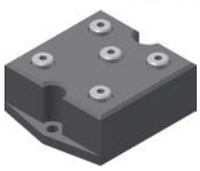
See data sheet for pin arrangement

X116a **FO-B**

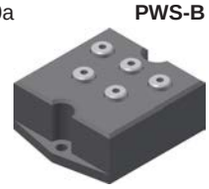
X117b **FO-F-B**



X119a **PWS-A**



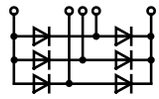
X120a **PWS-B**



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

3~ Rectifier Bridges with Standard Diodes, B6U



Type ○ Not for new design	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
VUO 60-12NO3	800	250	75	110	700	0.77	6.5	150	1.20	1.60	X117b	X030a **SMPD-B**
VUO 60-14NO3	1400	440										
VUO 60-16NO3	1600	500										
VUO 60-18NO3	1800	575										
VUO 62-08NO7	800	250	60	120	550	0.78	8.1	150	1.10	1.50	X122a	X101 **ECO-PAC 1**
VUO 62-12NO7	1200	400										
VUO 62-14NO7	1400	440										
VUO 62-16NO7	1600	500										
VUO 62-18NO7	1800	575										See data sheet for pin arrangement
VUO 64-16NO7	1600	500	60	120	550	0.78	8.1	150	1.10	1.50	X122c	X102 **ECO-PAC 2**
VUO 68-08NO7	800	250	70	105	300	0.82	12.2	150	1.10	1.50	X101	
VUO 68-12NO7	1200	400										
VUO 68-14NO7	1400	440										
VUO 68-16NO7	1600	500										See data sheet for pin arrangement
○ **VUO 70-16NO7**	1600	500	70	100	550	0.80	8.0	150	1.45	1.90	X118d	X103 **V1-A-Pack**
VUO 80-08NO1	800	250	80	110	600	0.81	7.8	150	1.10	1.40	X103	
VUO 80-12NO1	1200	400										
VUO 80-14NO1	1400	440										
VUO 80-16NO1	1600	500										X117b **FO-F-B**
VUO 80-18NO1	1800	575										
VUO 82-08NO7	800	250	90	115	750	0.78	6.0	150	0.90	1.30	X122a	
VUO 82-12NO7	1200	400										
VUO 82-14NO7	1400	440										
VUO 82-16NO7	1600	500										X118d **FO-T-A**
VUO 82-18NO7	1800	575										
VUO 84-16NO7	1600	500	90	115	750	0.78	6.0	150	0.90	1.30	X122c	
VUO 86-08NO7	600	125	90	105	550	0.81	7.8	150	0.90	1.30	X101	
VUO 86-12NO7	1200	400										X121a **PWS-C**
VUO 86-14NO7	1400	440										
VUO 86-16NO7	1600	500										
DMA 90U1800LB	1800	575	90	110	350	0.81	12.7	175	1.10	1.50	X030a	
DNA 90U2200LB	2200	690										X122a **PWS-D**
VUO 98-08NO7	800	250	105	115	750	0.81	5.9	150	0.70	1.00	X102	
VUO 98-12NO7	1200	400										
VUO 98-14NO7	1400	440										
VUO 98-16NO7	1600	500										
VUO 105-12NO7	1200	400	120	105	1500	0.78	4.8	150	0.80	1.10	X121a	X122c **PWS-D Flat**
VUO 105-14NO7	1400	440										
VUO 105-16NO7	1600	500										
VUO 105-18NO7	1800	575										
VUO 110-08NO7	800	250	125	110	1200	0.79	4.5	150	0.70	1.00	X123c	X123c **PWS-E**
VUO 110-12NO7	1200	400										
VUO 110-14NO7	1400	440										
VUO 110-16NO7	1600	500										
VUO 110-18NO7	1800	575										

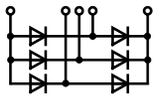
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

3~ Rectifier Bridges with Standard Diodes, B6U


DM/NA...YA...

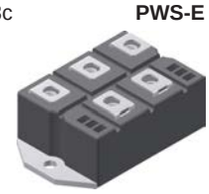

DM/NA...YC...


VUO.. DM/NA..U..
MDM/NA..U..

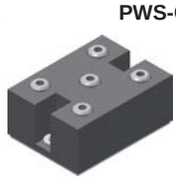
Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{F0} V	r_F mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.	Package style Outline drawings on pages O-36...O-59
VUO 120-12NO2T	1200	400	180	90	1100	0.81	4.4	150	0.60	0.80	X104	X027a **SOT-227B miniBLOC**
VUO 120-16NO2T	1600	500										
VUO 121-16NO1	1600	500	120	105	700	0.80	7.6	150	0.65	0.75	X112	
VUO 122-08NO7	800	250	125	115	1000	0.80	4.6	150	0.60	0.90	X102	
VUO 122-12NO7	1200	400										
VUO 122-14NO7	1400	440										
VUO 122-16NO7	1600	500										
VUO 125-12NO7	1200	400	150	110	1800	0.76	3.6	150	0.60	0.90	X121a	
VUO 125-14NO7	1400	440										
VUO 125-16NO7	1600	500										X102 **ECO-PAC 2**
VUO 125-18NO7	1800	575										
DNA 90YA2200NA	2200	690	90	85	370	0.86	11.4	150	1.20	1.30	X027a	
DNA 90YC2200NA												
DMA 150YA1600NA	1600	500	150	95	700	0.82	6.3	150	0.60	0.70		
DMA 150YC1600NA												See data sheet for pin arrangement
➢ **DMA 200YA1600NA**			200	100	1000	0.86	4.4	150	0.45	0.55		
➢ **DMA 200YC1600NA**												
➢ **DMA 240YA1600NA**			240	100	1300	0.86	4.0	150	0.35	0.45		X104 **V2-Pack**
➢ **DMA 240YC1600NA**												
VUO 160-08NO7	800	250	175	110	1800	0.77	3.4	150	0.50	0.70	X123c	
VUO 160-12NO7	1200	400										
VUO 160-14NO7	1400	440										
VUO 160-16NO7	1600	500										See data sheet for pin arrangement
VUO 160-18NO7	1800	575										
VUO 162-16NO7	1600	500	175	110	1800	0.77	3.4	150	0.50	0.70	X123h	X112 **E2-Pack**
VUO 190-08NO7	800	250	240	110	2800	0.74	2.4	150	0.40	0.55	X123c	
VUO 190-12NO7	1200	400										
VUO 190-14NO7	1400	440										
VUO 190-16NO7	1600	500										
VUO 190-18NO7	1800	575										
VUO 192-16NO7	1600	500	240	110	2800	0.74	2.4	150	0.40	0.55	X123h	
➢ **MDNA 240U2200ED**	2200	690	240	90	1500	0.79	5.1	150	0.35	0.45	X112	X113a **E3-Pack PFP**
➢ **MDMA 450U1600PTEH**	1600	450	500	85	2400	0.82	2.7	150	0.20	0.10	X113a	
➢ **MDMA 660U1600PTEH**	1600	500	660	85	5000	0.77	1.8	150	0.15	0.075		
➢ **MDNA 660U2200PTEH**	2200	690										
➢ **MDMA 900U1600PTEH**	1600	500	900	85	8000	0.76	1.4	150	0.10	0.05		

X123h **PWS-E Flat**

X123c **PWS-E**



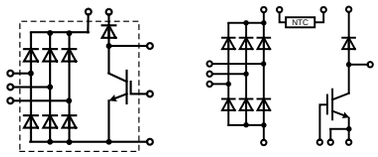
X121a **PWS-C**



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

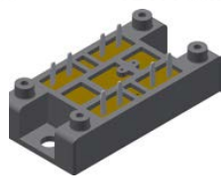
3~ Rectifier Bridges
with IGBT and Fast Diode for Brake Unit



Type	Rectifier			IGBT		Fast Diode			Fig. No.
	V_{RRM} V	I_{dAV} A	@ T_C °C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns	
VUB 72-12NOXT	1200	75	110	1200	40	1200	21	130	X103
VUB 72-16NOXT	1600								
VUI 72-16NOXT	1600	75	110	1200	40	-	-	-	
VUB 116-16NOXT	1600	120	105	1200	84	1200	32	150	X112
VUB 120-16NOX	1600	180	90	1200	140	1200	32	300	X104
VUB 120-16NOXT									
VUB 135-22NO1	2200	150	105	1700	80	1700	33	tbd	X112
VUB 145-16NOXT	1600	150	105	1200	140	1200	32	300	
VUB 160-16NOX	1600	180	90	1200	175	1200	32	150	X104
VUB 160-16NOXT									
MDMA 210UB1600PTED	1600	210	85	1200	84	1200	59	350	X112a
MDNA 210UB2200PTED	2200	210	85	1700	100	1700	54	550	
MDMA 240UB1600ED	1600	240	85	1200	140	1200	59	350	X112
MDMA 280UB1600PTED	1600	280	85	1200	140	1200	59	350	X112a
MDNA 280UB2200PTED	2200	280	85	1700	100	1700	54	550	
MDMA 360UB1600PTED	1600	360	85	1200	175	1200	90	350	
MDNA 360UB2200PTED	2200	360	85	1700	145	1700	83	550	
MDMA 450UB1600PTED	1600	450	85	1200	175	1200	90	350	

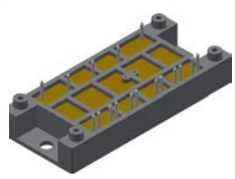
Package style
Outline drawings
on pages O-36...O-59

X103 **V1-A-Pack**



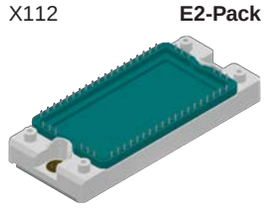
See data sheet for pin arrangement

X104 **V2-Pack**



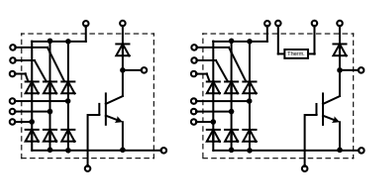
See data sheet for pin arrangement

X112 **E2-Pack**



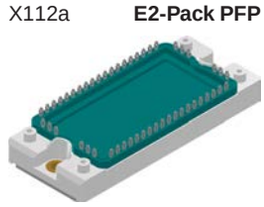
3~ Half Controlled Rectifier Bridges

with IGBT and Fast Diode for Brake Unit



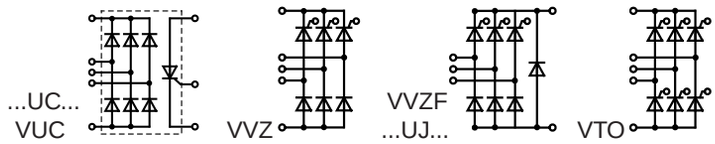
Type ➢ New	Rectifier			IGBT		Fast Diode			Fig. No.
	V_{RRM} V	I_{dAV} A	@ T_C °C	V_{CES} V	I_{C80} A	V_{RRM} V	$I_{F(AV)}$ A	t_{rr} ns	
VVZB 120-16ioX	1600	180	85	1200	140	1200	32	300	X104
MCNA 120UI2200TED	2200	117	80	1700	80	1700	50	550	X112
➢ **MCNA 120UI2200PED**	2200	120	80	1700	80	1700	50	550	X112a
VVZB 135-16ioXT	1600	150	85	1200	84	1200	32	150	X112
VVZB 170-16ioXT	1600	180	85	1200	140	1200	32	300	X112
MCMA 240UI1600ED	1600	240	80	1200	140	1200	59	350	X112
MCMA 240UI1600PED									X112a
MCMA 245UI1600ED	1600	240	80	1200	175	1200	90	350	X112

X112a **E2-Pack PFP**



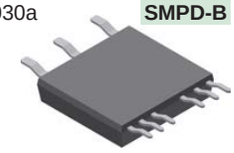
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

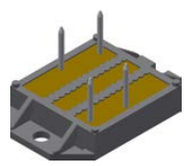


Type	V_{RRM} V	V_{vRMS} V	I_{dAVM} A	@ T_H °C	$I_{FSM/TSM}$ 10 ms, 45°C A		V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
3~ Rectifier Bridges with Standard or Fast Diodes (t_{rr} = 1.5 ms) & Integrated Softstart Thyristor												
VUC 36-12go2	1200	400	34	85	Dio.	300	1.20	16.0	125	1.40	2.00	X105a
					Thy.	400	0.85	10.0	125	0.90	1.10	
VUC 36-16go2	1600	500	34	85	Dio.	300	1.20	16.0	125	1.40	2.00	
					Thy.	400	0.85	10.0	125	0.90	1.10	
MDMA 60UC1600VC	1600	500	60	110	Dio.	350	0.83	11.5	150	1.30	1.60	X105c
					Thy.	800	0.89	5.3	140	0.70	0.90	

X030a **SMPD-B**



X101 **ECO-PAC 1**



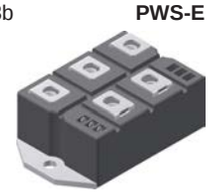
See data sheet for pin arrangement

Type ➢ New ○ Not for new design	V_{RRM} V	V_{vRMS} V	I_{dAVM} A	@ T_H °C	$I_{FSM/TSM}$ 10 ms, 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thJH} K/W	Fig. No.
3~ Half Controlled Rectifier Bridges, B6HK											
VVZ 39-08ho7	800	250	39	85	200	0.85	27.0	125	1.30	1.80	X101
VVZ 39-12ho7	1200	400									
VVZ 40-12io1	1200	400	34	100	320	0.85	15.0	125	1.00	1.60	X105a
VVZ 40-16io1	1600	500									
➢ **CLE 90UH1200TLB**	1200	400	90	90	350	0.92	13.0	150	0.90	1.30	X030a
VVZ 110-12io7	1200	400	110	85	1150	0.85	6.0	125	0.65	0.80	X123b
VVZ 175-12io7	1200	400	167	85	1500	0.85	3.5	125	0.46	0.55	
VVZ 175-16io7	1600	500									
➢ **MCMA 450UH1600TEH**	1600	500	450	90	2400	0.84	3.1	150	0.17	0.25	X113
3~ Half Controlled Rectifier Bridges with free wheeling diode, B6HKF											
MCMA 120UJ1800ED	1800	575	117	80	500	0.89	13.6	150	0.65	0.75	X112
○ **VVZF 70-16io7**	1600	500	70	85	550	0.85	11.0	125	0.90	1.10	X118c
3~ Full Controlled Rectifier Bridges, B6C											
VTO 39-08ho7	800	250	39	85	200	0.85	27.0	125	1.30	1.80	X101
VTO 39-12ho7	1200	400									

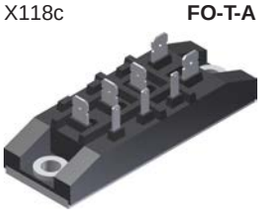
X105a **V1-B-Pack**

X105c **V1-B-Pack**

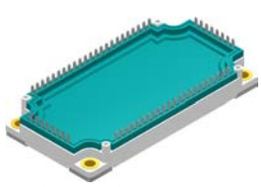
X123b **PWS-E**



X118c **FO-T-A**

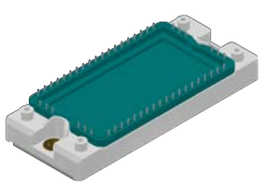


X113 **E3-Pack**



See data sheet for pin arrangement

X112 **E2-Pack**



See data sheet for pin arrangement

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.