

Bruckewell Technology Co., Ltd. Product Catalogue

Bruckewell

Bruckewell Technology Co., Ltd. | sales@bruckewell.com | www.bruckewell-semi.com

Schottky / STD/ Fast Diode, TVS/Zener/ ESD Products
MOSFETs/ Transistor
SiC Schottky Diode/ MOSFETs

Company Profile

Bruckewell technology Co., Ltd. registered in Delaware, USA and total capital is 3million USD.

Began its business on semiconductor material electronic components in San Jose, California.

In 2008, semiconductor division founded in Taiwan for discrete semiconductor wafer design and our own branded products provide.

In 2009, Bruckewell Technology Corp., Ltd. registered in Taiwan.

Now, our semiconductor operation center is formally located in Taiwan and major products include Schottky diode/ rectifier, TVS/ ESD protection diode, small signal diode/ transistor and MOSFET...etc.

Bruckewell never ceased the research and development for new products. We are confident in providing the highest.

Mission and Vision

To satisfy customers while achieving sound growth with technological products of innovative design, superior quality. We commit ourselves to excellence, create the exceptional value for our customers and partners.

LOGO Significance

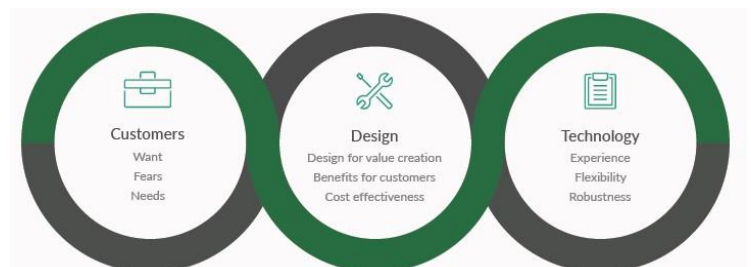
Bruckewell comes from the German "Brücke", meaning "bridge" and English "well" To become synonymous with technical innovation and timely marketing partner.

The green leaf symbol reflects taking an active part in health & safety and protecting the environment as our responsibility.

Quality Policy

Our goal is to exceed the quality expectations of our customers.

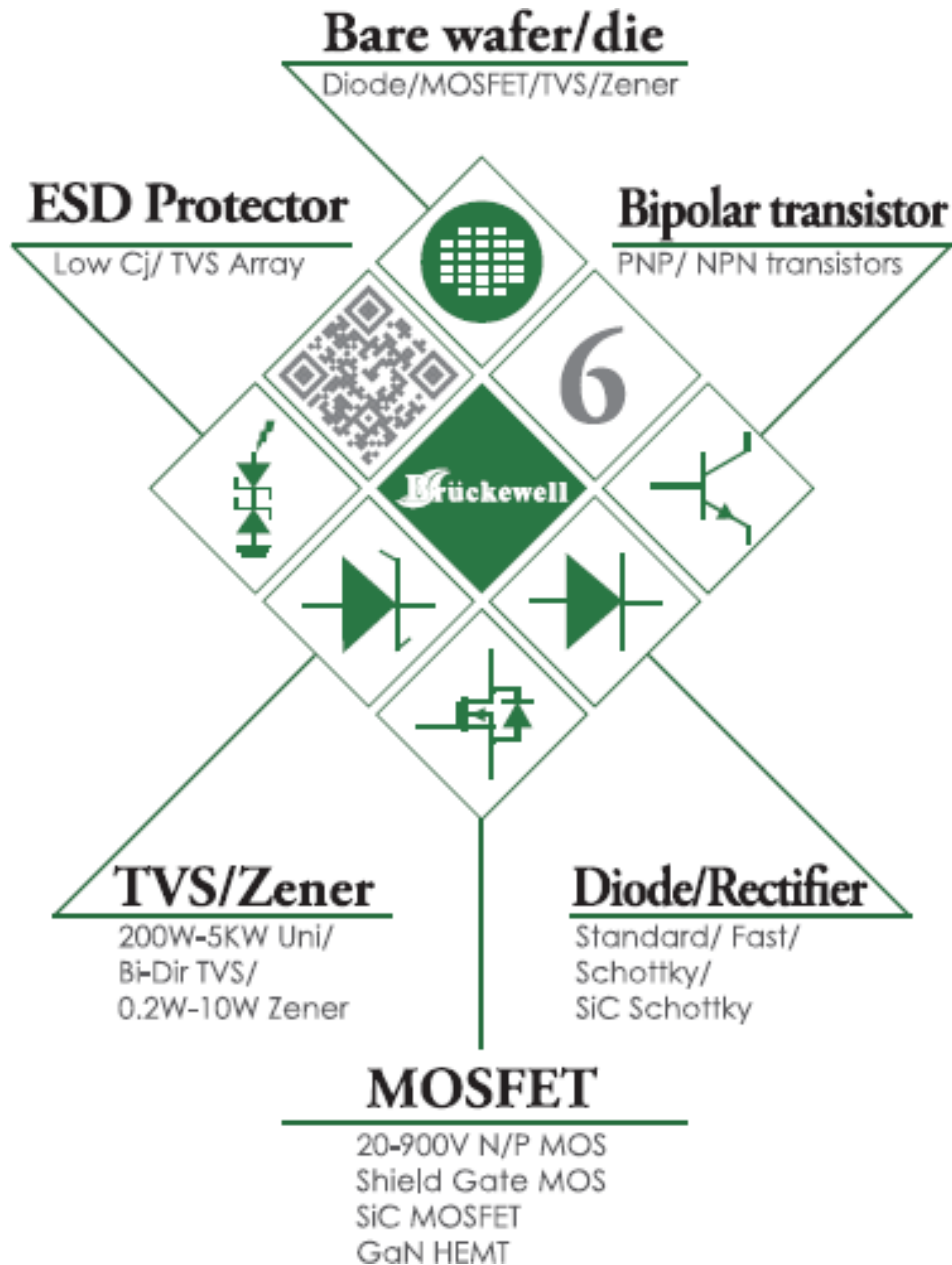
It is achieved through innovation, technical excellence and continuous improvement.



INDEX OF SYMBOLS

CJ.....Junction capacitance	QGD.....gate-drain charge
IF.....DC forward current	R2JM..... Thermal resistance (junction to mount)
IF(AV).....Average forward rectified current	S..... Softness factor
ID..... Stand-off reverse leakage current	TA.....Ambient temperature
IFSM..... Peak forward surge current	TC.....Case temperature
IO..... Main forward current	td..... Time duration
IR..... Reverse leakage current	tfr..... Forward recovery time
IPPM..... Maximum peak impulse current I	TJ..... Junction temperature
RM(REC). Maximum peak reverse recovery current	TL..... Lead temperature
IRSM.....Maximum non-repetitive reverse peak current	TM..... Mount temperature
IT.....On-state test current	trr..... Reverse recovery time
I2t..... Rating for fusing	TS, TSTG ..Storage temperature
PM(AV)..... Maximum steady state power dissipation	VBR.....Reverse breakdown voltage
PPM..... Peak pulse power dissipation	VF..... Instantaneous forward voltage
Ptot, PD....Total power dissipation	VFP..... Peak forward voltage
Qrr.....Recovered charge	VDC, VR.....DC reverse voltage
R2JA..... Thermal resistance (junction to ambient)	VRMS.....RMS input voltage
R2JC.....Thermal resistance (junction to case)	VRRM.....Peak repetitive reverse voltage
R2JL..... Thermal resistance (junction to lead)	VRWM..... Working peak reverse voltage
VC.....Clamping voltage	IPPM.....Maximum peak impulse current
VWM..... Working stand-off voltage	IRSM ..Maximum non-repetitive reverse peak current
VZ..... Zener voltage	IT..... On-state test current
ZZ..... Dynamic Zener impedance ZZK.....Zener impedance at IZK	I2t..... Rating for fusing
ZZT..... Zener impedance at IZT	IZ..... Zener current
VDS...drain-source voltage	IZT..... Zener test current
VGS...gate-source voltage	IZM..... Maximum Zener current
ID...drain current	rzj.....Dynamic series resistance
IDM...peak drain current	Ciss..... input capacitance
V(BR)DSS...drain-source breakdown voltage	Coss..... output capacitance
VGSth... .. gate-source threshold voltage	Crss.....reverse transfer capacitance
IDSS..... drain leakage current	td(on)..... turn-on delay time
IGSS..... gate leakage current	tr..... rise time
RDSon... .. drain-source on-state resistance	td(off)..... turn-off delay time
QG(tot).....total gate charge	tf..... fall time
QGS... .. gate-source charge	VSD..... source-drain voltage

Discrete product list

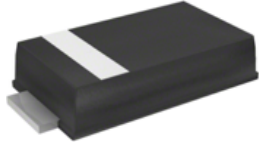


ew Product

Transient voltage suppressors (TVS)

600W Series TVS Surface-Mount Flat SMA

SMAF series TVS devices offer a high surge capability to 600 W at 10/1000 μ s and 4 kW at 8/20 μ s, and excellent clamping capability.



Applications

Consumer, computer, industrial, and telecommunication applications Typical end products include hard disks, hot swap computer and telecom cards, and slim LCD TVs and monitors.

600W Surface-mount TVS in the SMA-Flat package are 30 % smaller than traditional SMB devices, the footprint compatible with SMAJ and offer 50 % higher surge capability at 10/1000 μ s. In addition, the SMAF series' low clamping voltages are 3 % to 5 % lower than current TVS devices in the SMB package. With their compact size, SMAF TVS are designed to protect sensitive electronics against voltage transients induced by inductive load switching and lightning in space-constrained consumer, computer, industrial, and telecommunication applications.

FEATURES

SMA-Flat DO-221AC package, Low profile of 1.0 mm

High surge capability, 600 W at 10/1000 μ s, 4 kW at 8/20 μ s

Low clamping voltages, Stand-off voltages from 6.5 V to 48 V

Temperature range from - 55 °C to + 175 °C

ESD capability of 15 kV (air) and 8 kV (contact) in accordance to IEC 61000-4-2 Level 4

Meet the MSL Level 1 standard, per -STD-020, LF maximum peak of 260 °C

Ideal for automated placement

		Competitor			Existing
Brand	Bruckewell	ST-Micro	Vishay	NXP	Industry
Part#	SMAF	SMA6F	SMA6F	PTVSxP1UP	SMBJXXA
VRM	6.5V thru 48V	5V, 12V, 13V	5V thru 20V	3.3 V thru 64V	5.0V thru 170V
Package	SMA-Flat	SMA-Flat	SlimSMA	SOD-128	SMB
Tj	175°C	175°C	175°C	150°C	150°C

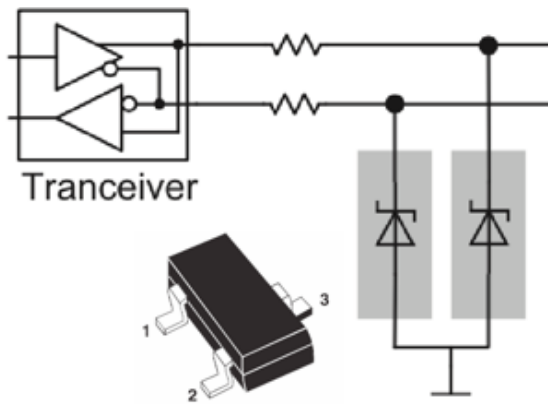
New Product

ESOTxxC

Dual 400W Transient Voltage Suppressors Array

Electrostatic discharge (ESD) is a major cause of failure in electronic systems. Transient Voltage Suppressors (TVS) are an ideal choice for ESD protection. They are capable of clamping the incoming transient to a low enough level such that damage to the protected semiconductor is prevented. Surface mount TVS arrays offer the best choice for minimal lead inductance. They serve as parallel protection elements, connected between the signal line to ground. As the transient rises above the operating voltage of the device, the TVS array becomes a low impedance path diverting the transient current to ground. The ESOTxxC array is the ideal board level protection of ESD sensitive semiconductor components.

VRRM (V) on
3.3V, 5.0V, 12.0V, 15.0V, 24V
are available



FEATURES

- 2 Unidirectional Transil functions
- Low leakage current: $I_R \max < 20\mu A$ at VRM
- 400W peak pulse power(8/20 μs)
- Transient protection for data lines as per MIL STD 883E - Method 3015-7 Class 3
- 25 kV HBM

APPLICATIONS

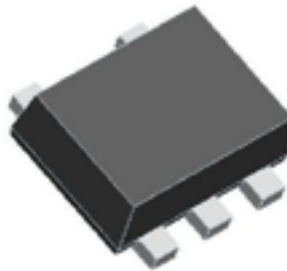
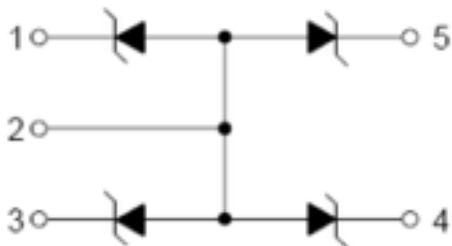
- Computers
- Printers
- Communication systems
- Point-of-Sale Terminals
- Motor Controls
- Legacy Ports, (RS-232, RS-485)
- Security and Alarm Systems

ESEMFxxxLC SERIES

Low Capacitance Quad Array for ESD Protection

General Description

This integrated transient voltage suppressor device (TVS) is designed for applications requiring transient over voltage protection, printers, business machines, communication systems, medical equipment, and other applications. Its integrated design provides very effective and reliable protection for separate lines using only one package. These devices are ideal for situations where board space is at a premium.



SOT-523

Features

Four Separate Unidirectional Configurations for Protection

Low Leakage Current < 1 μ A @ 3Volts

Power Dissipation: 380mW

Small SOT-553 SMT Package

Low Capacitance

Complies to USB 1.1 Low Speed & Speed Specifications

These are Pb-Free Devices

Electrical Characteristics							
Part Numbers	V_{BR}			I_T	V_{RWM}	I_R	C
	Min.	Typ.	Max.				Typ. 0v bias
	V	V	V	mA	V	μ A	pF
ESEMF3V3LC	5.3	5.6	5.9	1	3.0	1.0	12
ESEMF05LC	6.1	6.8	7.2	1	5.0	1.0	8
ESEMF12LC	11.4	12	12.7	5	9.0	1.0	7

80V SMD Power Schottky Diodes

In many power applications, traditionally design engineers used 100 V power Schottky diodes for secondary rectification due to the availability of a larger number of sources.

Now you have better option, especially on new Energy Star requirements require higher efficiency in markets that don't want to pay for it.

Bruckewell offer the new generation lower VF 80 V Schottky diodes can replace these 100 V Schottkies, providing lower Vf with associated efficiency gains, and lower costs.

We are ready to support these markets with a range of 10 A to 20 A, 80 V power Schottky diodes, in TO-277, DFN3P3 thin package < 1.0mm

Part#	VF@5A	VF@iF (V)	IF (A)	IR@VR	Package
SD10PU80	0.51V	0.61V	10A	50uA	DFN 3.3
SS10PU80	0.51V	0.61V	10A	50uA	TO-277B
SS20PU80	0.46V	0.67V	20A	50uA	TO-277B

FEATURES

lower voltage drop

low leakage current

Thin SMD package

Available in Halogen-free packages

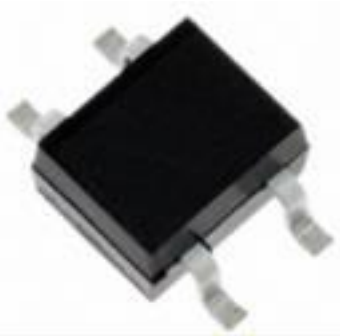


MBS/ABS Thin Bridge Series
Ultra Low VF Schottky Bridge Rectifier

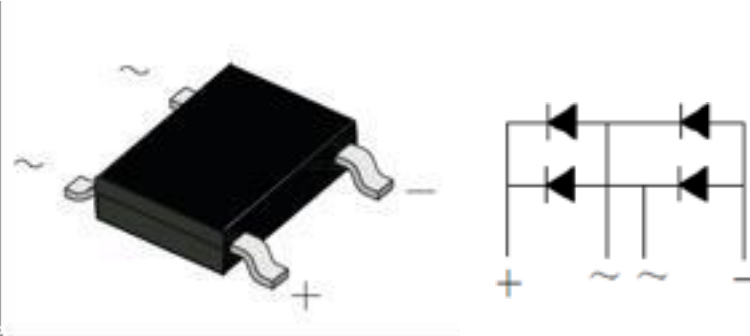
FEATURES

- Ideal for printed circuit board
- Reliable low cost construction technique results in inexpensive product
- High temperature soldering guaranteed
- Low forward voltage drop
- Low power loss, high efficiency

MBS package

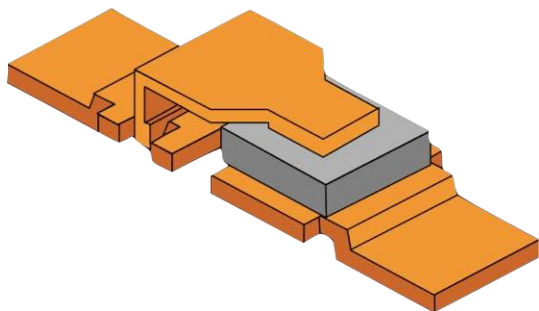


ABS package



	MDB26S	MDB26	MAB46
IF(A)	2A	2A	4A
VB (V)	60V	60V	60V
VF@IF, Tj=25°C	0.65V	0.50V	0.60V
RθJA	85 °C/W	85 °C/W	75 °C/W

SOD123FL/ST new Package



The SOD123FL and SOD123ST package is designed to:

Fit SOD123 foot print (JEDEC DO219) and package height < 1.0mm

Unique backside heat sink provides optimum power efficiency

The SOD123FL and SOD123ST Delivers:

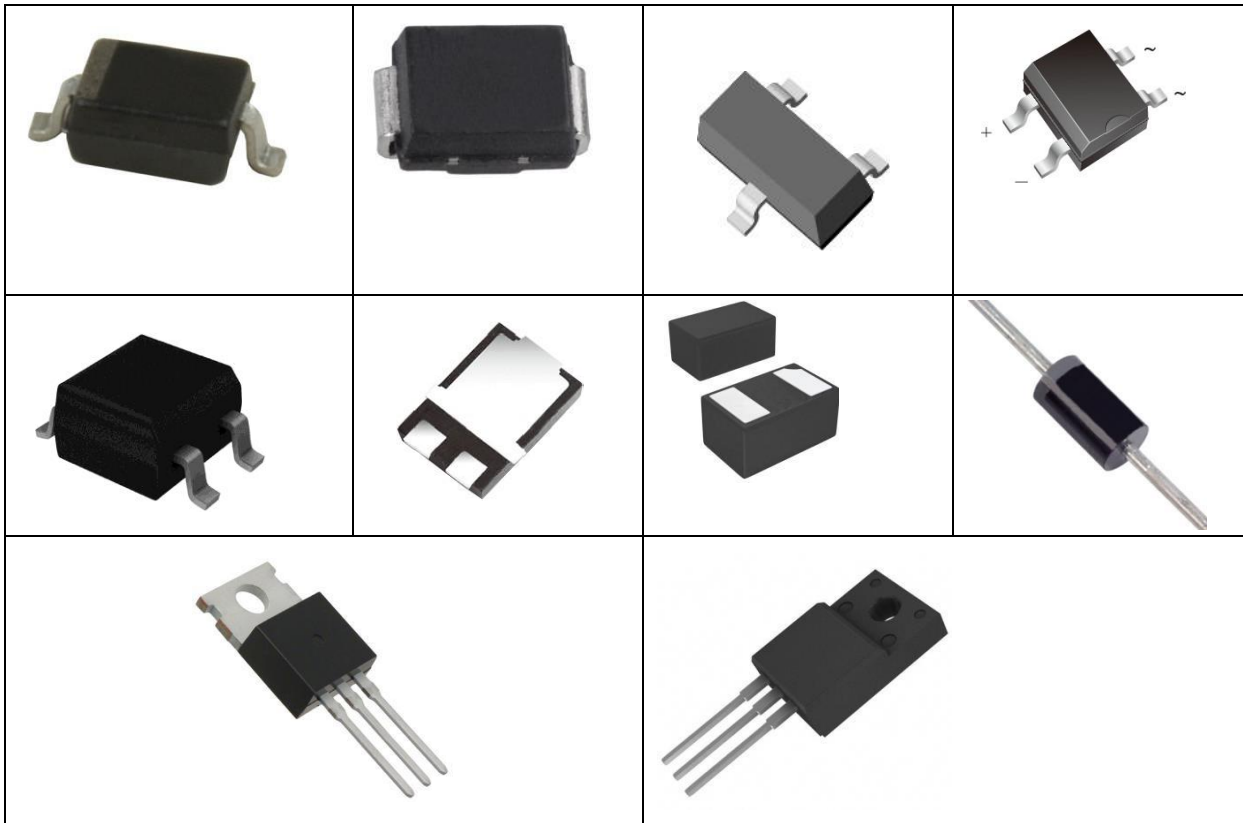
- Same footprint as industry standard SOD123 with 45% lower package height
- 32% more power/board area than SOD123
- 14% more power/board area than PowermiteR
- 86% more power/board area than SMAFrom

Product	Spec	Trr	P/N
Schottky	1~3 A/40~200V	<15ns	SD1XXX
Ultra Low VF Schottky	1-3A/40V-60V	<15ns	SD3U40ST SD
General Rectifier	1A 1000V	—	GS1010FL Series
Fast Rectifier	1A 50V-1000V	500ns	RS1010F Series
Ultra Fast Rectifier	1A 50V-1000V	50-75ns	US1010FL Sereis
Super Fast Rectifier	1A 50V-1000V	35ns	ES1010FL Series

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

Product Selection Guide



Specifications are subject to change without notice.

The data indicated herein describe types of components and shall not be considered as assured characteristics.

The products listed in this catalog are not recommended for use in life support systems where a failure or malfunction of the component may directly threaten life or cause injury.

The user of products in such applications shall assume all risks of such use and will agree to hold Bruckewell Technology Corp and all the companies whose products are represented in this catalog, harmless against all damages.

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Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

SMD Diode						
Amp	Family/Package	SOD-123	SOD-123FL	SOD-123S	SMA	SMAF
0.7	Standard	RS07B-M				
1	Standard		SOD4001-7	GS1010FL	1SR154-400 1SR154-600 M1-7	GS1AF
	Schottky		BS14FL SD22FL SD24FL SD26FL SD210FL SD220FL		SS110-120 SS12-19 SSL12-14	
	Fast		SUF140L SUF160L		US1A-M	
	Ultrafast			ES1000FL-1006FL	ES1A-J	
1.2	Fast			RS1010F RS1010FS		
1.5	Fast			GROA-M		
2	Schottky		BS24FL		GAS1AF SS210A-220A SS22A-29A	SS22AF-29AF SS2100AF
	Ultrafast				MURS220A-240A SUF205A	
3	Schottky				SS310A SS315A SS32A-39A SS34DA SS34MA SS36MA	SS34AF
5	Schottky				SS52A-54A SS56MA	SS54AF

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

SMD Diode		SMA-S	SMB	SMC	DFN 2X1.3	TO-277A	TO-277A,B
1	Fast				SUF160-D2		
	Ultrafast		US2A-M				
1.2	Fast						
1.5	Fast						
2	Standard		S2A-M				
	Schottky	SS24S					
	Ultrafast		ES2A-J MURS220-260 US2A-M				
3	Standard			S3A-M			
	Schottky		SS32B-SS3100B SSL32B SSL33B SSL34B	SS32-SS3100 SSL32C SSL33C SSL34C			
	Ultrafast		MURS320B-360B	MURS320-360			
5	Fast			SUF501_5C			
	Schottky		SS510B SS515B SS52B SS53B SS54B SS55B SS56B SS59B	SS510C SS515C SS52C SS53C SS54C SS55C SS56C SS59C			
	Ultrafast					UFP560	
8	Schottky		SS86B	SS82C SS86C			
10	Schottky						SS10PU80 SS10PU100 SS10PU100S
20	Schottky						SS20PU80

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

PowerPack Diode						
Amp	Family/ Package	TO-252	ITO-220AC	IT-220AB	TO-220AB	TO-247AD
6	Schottky	MBRD6100CT				
10	Fast		SF1020F	MURF1020CT MURF1040CT MURF1060S		
	Schottky			MBRF1020CT-1080CT MBRF10100CT MBRF10150CT MBRF10200CT	MBR1020CT-200CT TMBR10100CT	
16	Fast			MURF1605CT-1660CT	MUR1605CT-1660CT	
20	Schottky			MBRF20100CT MBRF20150CT MBRF20200CT MBRF2020CT-2080CT MBRF20L45CT TMBRF20150CT	MBR2020CT,200CT MBR20L45CT, TMBR2080CT, TMBR20100CT, MBR20300CT MBR2040CT-60CT	
30	Fast					SF3060PT
	Schottky			MBRF30100CT MBRF30150CT MBRF30200CT MBRF3020CT-3080CT SBLF3060C SBLF3080C	MBR3020CT-200CT SBL3045C, TMBR30100CT-150CT MBR3020CT-80CT	
	Ultrafast					MUR3040PT

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

Axial Diode

Amp	Family / Package	R-1	DO-41	DO-15	DO-201AD	R-6
1	Standard	1N4001-7S	1N4001-7 EM513.516,518			
2	Fast			SF21-28		
3	Fast				FR301G-307G FR307G-STR	
	Schottky				SB315	
4	Fast				UF460	
5	Fast				FR501-507 SF51-59 UF560	
	Schottky				SB52-56 SB510 SB510UL	
15	Schottky					15SQ030-100

Zener Diode

Watt	Family / Package	SOD-323	SOD-123	SOT-23	SMA	SMB
0.2	Zener	BZT52CXXS RSB18V (Bi-Dir)				
0.2	Zener	BZX384XXXX				
0.225	Zener			BZX84XXX		
0.3	Zener	MM3ZXXX		AZ23XXX		
0.5			MMSZXXX MMSZXXXXB			
			BZT52CXXX BZT52BXXX			
1	Zener				SZ103D- SZ10B0	
1.5	Zener				SZ3010 -SZ30D0	
30	Zener					1SMB59XXX

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

Bridge Rectifier								
Amp	Family /Package	MBS	TBF	ABS	DFS /DBS	KBU	KBP	GBU
0.5	Standard	B1S-10S						
0.8	Standard	MB1S-10S						
1	Standard	MB005-010 MBL06S MDB1100		ABS102-110	DFXXS			
	Schottky		MTB1100					
1.5	Standard				DF15XXS			
					/ DB15XXS			
2	Standard			ABS202-210			KBP2XX	
	Schottky	MB22S-210S MDB26	MTB26					
3	Standard						KBP3XX	
4	Standard						KBL400-10 KBP4XXX	GBU4A-M GBU4AL- 4ML
	Schottky			MAB46				
6	Standard					KBU6XX		
8	Standard					KBU8XX		
10	Standard					KBU10XX		GBU10XX
15	Standard							GBU15005-10

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

Small Signal Switching Diodes							
IC (A)	Family / Package	1206	DO-35	SOD-123	SOD-323	SOD-523	SOT-23
0.1	Switching				1SS355	1SS400	
0.15	Switching	1N4148W-N	1N4148	1N4148W BAV16W	1N4148WS, BAV16H		
0.2	Switching			BAV19W-21W			
	Schottky			BAS43W			BAS21 BAV99
0.25					BAS321		

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

Transient Voltage Suppressor						
Watt (W)	Family / Package	DO-41	DO-15	DO-201AD	R-6	SOD-123
200	TVS					SMFXXX
400	TVS	P4KEXXX				
600	TVS		P6KEXXX			
1500	TVS			1.5KEXXX		
5000	TVS				5KPXXX	

Transient Voltage Suppressor						
Watt (W)	Family / Package	SOD-123F	SMA	SMAF	SMB	SMC
200	TVS					
400	TVS	SMF4LXXX	P4SMAXXX			
600	TVS		SMA6FXXA	SMA6FLXXA	P6SMBXXX SMBJXX	
1500	TVS					1SMCXXX, SMCJXXX
3000	TVS					3.0SMCJXXX

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

Transistors						
IC (A)	Family / Package	SOT-323	SOT-523	SOT-363	SOT-23	SOT-89
0.03	NPN		DTC124EE DTC144EE			
	PNP		DTA124EE DTA144EE			
0.05	NPN		DTC114EE			
	PNP		DTA114EE			
0.5	NPN				BC817-40 BC817K-XX BC817-XX MMBTA05-A06	
	PNP				BC807-40 BC807-XX S9012LT MMBTA55-A56	
0.1	NPN		DTC143EE DTC144TE		S9014 2SC1623 BC846A-848C TC114ECA-TC144ECA	
	PNP	BC856XW-858XW	DTA143EE		BC856A-858C TA114ECA-TA144ECA DTAXXXCA	
0.15	NPN	2SC2412	2SC4617XT1G			
	PNP				2SA1162	

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

Transistors						
IC (A)	Family / Package	SOT-323	SOT-523	SOT-363	SOT-23	SOT-89
0.2	NPN				MMBT3904	2SC4548 A42
	PNP				MMBT3906	
0.5	PNP					A92
0.6	NPN			MMDT2222A (Dual)	MMBT2222A	
	PNP					
1	PNP					BCX51-BCX53
1.5	NPN				SS8050	
5	NPN					2SD2908

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

MOSFET- Low Voltage MOSFET

VBR (V)	Family/Package	DFN3X3	DFN5X6	TO-263	TO-252	TO-220
20	P Channel	MSHM20P40				
30	N Channel	MSHM30N25 MSHM30N25D MSHM30N40 MSHM30N46	MSH30N016 MSH30N039 MSH30N052 MSH30N40 MSH30N51 MSH30N80		MSD30N80	
	P Channel	MSHM30P32 MSHM30P42 MSHM30P50	MSH30P100 MSH30P45 MSH30P60 MSH30P90		MSD30P35	MSP30P60
40	N Channel	MSHM40N085 MSHM40N085AU MSHM40N35	MSH40N018 MSH40N018AU MSH40N032 MSH40N085 MSH40N100 MSH40N30D MSH40N30DAU MSH40N69 MSH40N70	MSB40N150	MSD40N60 MSD40N60AU MSD40N90 MSD40N90AU	MSP40N150
	P Channel	MSHM40P38 MSHM40P38AU	MSH40P07D		MSD40P23 MSD40P45 MSD40P45AU	

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

MOSFET- Low Voltage MOSFET						
VBR (V)	Family/Package	DFN3X3	DFN5X6	TO-263	TO-252	TO-220
60	N Channel	MSHM60N085 MSHM60N42	MSH60N036 MSH60N036IN MSH60N04 MSH60N04IN MSH60N116 MSH60N116AU MSH60N116IN MSH60N42 MSH60N42IN MSH60N085 MSH60N085AU		MSD60N16AU MSD60N20 MSD60N20AU MSD60N45 MSD60N35 MSD60N35AU	MSP60N140 MSP60N140AU MSP60N55
	P Channel	MSHM60P14 MSHM60P14AU	MSH60P16		MSD60P16 MSD60P35	MSP60P61 MSP60P75
65	N Channel		MSH65N028SB MSH65N042SB		MSD65N045SB	MSP65N047SB
80	N Channel		MSH80N065 MSH80N087 MSH80N90	MSB80N016		MSP80N120
100	N Channel	MSHM100N07	MSH100N045SA MSH100N055SB MSH100N065SC MSH100N080 MSH100N092SB MSH100N110SC MSH100N115 MSH100N12	MSB100N023 MSB100N042SB MSB100N046SC MSB100N055SA MSB100N065SC MSB100N115SC	MSD100N110SC MSD100N25 MSD100N25AU	MSP100N042SB MSP100N046SC MSP100N055SA MSP100N063SB MSP100N065SC MSP100N092SB MSP100N115 MSP100N115SC MSP100N045SA
	P Channel				MSD100P10	

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

MOSFET- Low Voltage MOSFET

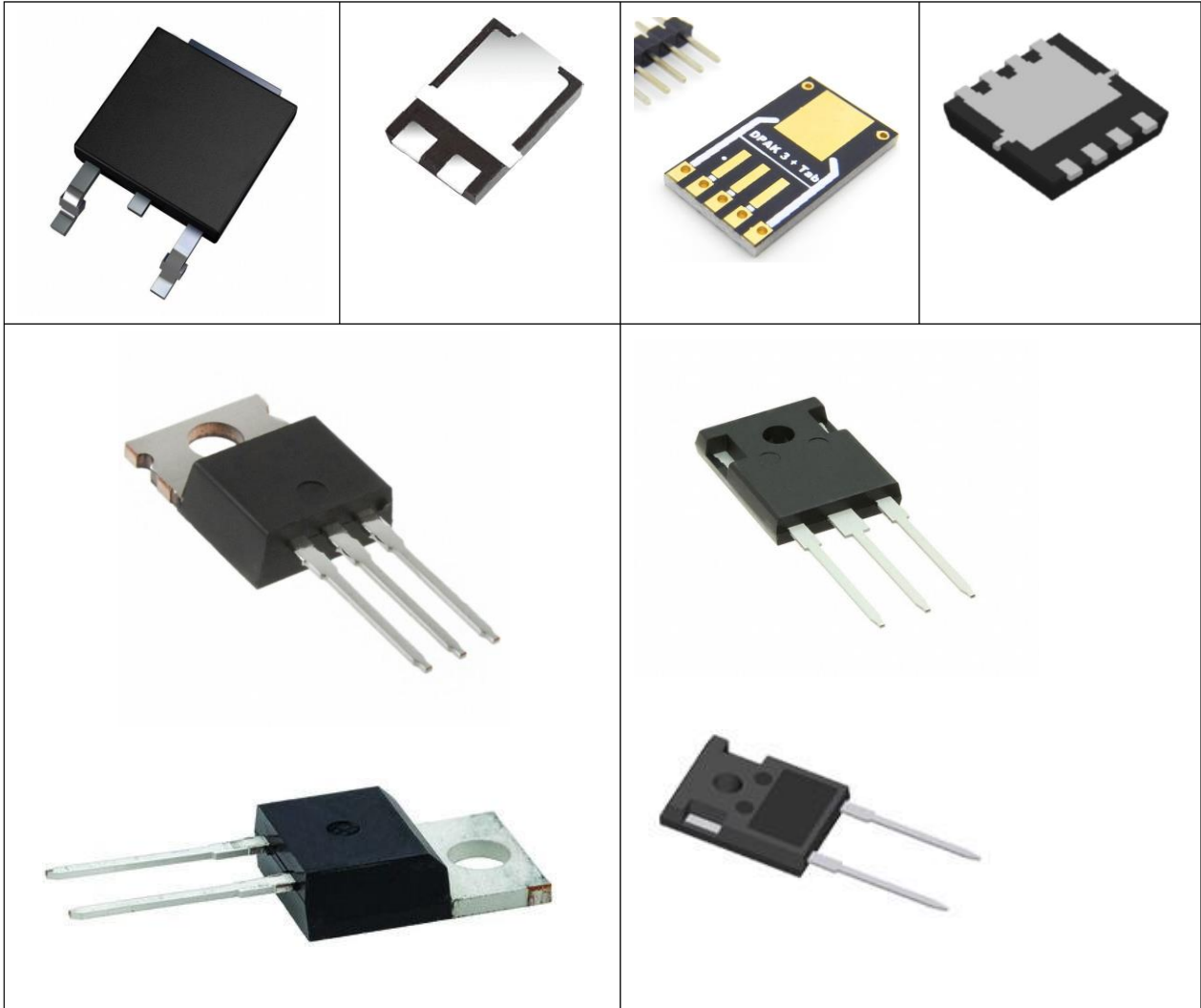
VBR (V)	Family/Package	SOP-8	SOT-23	SOT-223	SOT-26
20	N Channel	MSQ20N16	MS20N06S MS23N02		
	P Channel		MS23P01 MS23P05 MS23P09		MST26P21D
±20	N & P Channel				MST66C04D
30	N Channel	MSQ30N07D MSQ30N10D MSQ30N12 MSQ30N16	MS23N06A MS34N00 MS34N02		
	P Channel	MSQ30P05 MSQ30P06D MSQ30P07D MSQ30P07DAU MSQ30P08 MSQ30P09 MSQ30P15 MSQ30P24	MS34P01 MS23P03 MS34P07		MST26P05
±30	N & P Channel	MSQ30C01D MSQ30C03D			
40	N Channel	MSQ40N07 MSQ40N07D MSQ40N07DAU MSQ40N15	MS40N05		
	P Channel	MSQ40P07D MSQ40P08 MSQ41P15			
±40	N & P Channel	MSQ40C04D			

Discrete semiconductors selection guide

Bipolar transistors, diodes, ESD protection, filtering and signal conditioning and MOSFETs

MOSFET- Low Voltage MOSFET					
VBR (V)	Family/Package	SOP-8	SOT-23	SOT-223	SOT-26
60	N Channel	MSQ60N06 MSQ60N18	MS60N03	MSL60N04 MSL60N05	
	P Channel	MSQ60P04D MSQ61P15	MS23P11B		MST26P11B
65	N Channel		MS65N03 MS65N03AU		
80	N Channel				
100	N Channel	MSQ100N03 MSQ100N11		MSL100N03	MST26N30
	P Channel	MSQ100P05		MSL100P03	

Novel SiC Products Selection Guide



Specifications are subject to change without notice.

The data indicated herein describe types of components and shall not be considered as assured characteristics.

The products listed in this catalog are not recommended for use in life support systems where a failure or malfunction of the component may directly threaten life or cause injury.

The user of products in such applications shall assume all risks of such use and will agree to hold Bruckewell Technology Corp and all the companies whose products are represented in this catalog, harmless against all damages.

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SiC Series Products selection guide

Schottky Diodes and MOSFETs

In the recent decades, the Silicon carbide (SiC), turned out to be an excellent semiconductor material. Composed of carbon and silicon, and used in power applications in which it showed excellent performance, far superior to those of silicon.

Significant progress has been made in the field of the semiconductor industry, in which the technologies for the processing of silicon carbide have become increasingly more sophisticated, and have produced semiconductor devices with excellent performance.

In the facts those devices during the applications have shown a remarkable capacity to reduce losses and a high switching speed in comparison to that offered by silicon. The use of silicon carbide (SiC) as a semiconductor begins to expand into multiple applications and always proves to be more and more the candidate to replace silicon in the most important applications such as automotive and E-Bike motor control.

For these reasons, Bruckewell Semi decided to launch the production of the SiC Products, including the SiC Schottky Diode and SiC MOSFET, support the 650V to 1200V, and give the opportunity to its customers to take advantage of the benefits that the products offer in the SiC high-voltage power applications.

Present our SiC products line as below.

SMD Package

Amp	DFN3X3	DFN5X6	TO-277	DFN 8X8	TO-252(DPak)	TO-263(D2Pak)
4					CBR04P65K	
6					CBR06P65K	
8					CBR08P65K	
10	CBR10P65D3		CBR10P65S CBR10120S		CBR10P65K CBR10120K	
20			CBR20120S			
30		CBR30120D5	CBR30120S			
40						

DFN 3X3 is unique package and CBR10P65D3 is first smallest SiC SBD Diode in the industry.

TO-277 has same foot print with TO-252 (DPak), and has better thermal performance.

Through Hole Package

Amp	TO-220AC	TO-220AB	TO-247	TO-247 (Dual Die)
4	CBR04P65			
6	CBR06P65			
8	CBR08P65			
10	CBR10P65 CBR10120	CBR10120P	CBR10120W	
20	CBR20P65 CBR20120	CBR20P65PC CBR20120P	CBR20P65W CBR20120W	CBR20P65WC CBR20120WC
30			CBR30120W	
40				CBR40P65WC CBR40120WC

SiC Series Products selection guide

Schottky Diodes and MOSFETs

Part Nomenclature

Example: CBR20P65PC

CBR	SiC Barrier Rectifier
CMS	SiC MOSFET
20	IF, Forward current, as 20A
P65	Breakdown Voltage, as P65=650V, 120=1200V
PC	Package Code Blank: TO-220AC P: TO-220AB PC: TO-220AB, Dual Die K: TO-252, DPAK W: TO-247 WC: TO-247, Dual Die S: TO-277 A: SMA, B: SMB, C: SMC B: TO-263, D2PAK D: DFN, D3: DFN3X3, D5: DFN 5X6, D8, DFN 8X8

When the diodes are used simultaneously:

$$\Delta T_j(\text{diode1}) = P(\text{diode1}) \times R_{th(j-c)} \text{ (per diode)} + P(\text{diode2}) \times R_{th(c)}$$

To evaluate the conduction losses use the following equation:

$$P = 1.35 \times I_F(AV) + 0.144 \times I_F^2(RMS)$$

SiC Series Products selection guide

Schottky Diodes and MOSFETs

Comparison with industry supplier-TO-220AC/AB

Amp	Bruckewell		ST-Micro		Infineon	
	TO-220AC	TO-220AB	TO-220AC	TO-220AB	TO-220AC	TO-220AB
2					IDH02G65C5 IDH02G120C5	
3					IDH03SG60C IDH03G65C5	
4	CBR04P65				IDH04SG60C IDH04G65C5	
5					IDH05SG60C IDH05G65C5 IDH05G120C5	
6	CBR06P65			STPSC6TH13TI	IDH06SG60C IDH06G65C5	
8	CBR08P65			STPSC8TH13TI STPSC8H065C	IDH08SG60C IDH08G65C5 IDH08G120C5	
9					IDH09SG60C IDH09G65C5	
10	CBR10P65 CBR10120	CBR10120P	STPSC10H065D STPSC10H12D	STPSC10TH13TI	IDH10SG60C IDH10G65C5 IDH10G120C5	
12			STPSC12065 STPSC1206	STPSC12H065C	IDH12SG60C IDH12G65C5	
15			STPSC15H12			
16				STPSC16H065C	IDH16G65C5 IDH16G120C5	
20	CBR20P65 CBR20120	CBR20P65PC CBR20120P	STPSC20065D STPSC20H12D	STPSC20H065C	IDH20G65C5 IDH20G120C5	

Note:

The suffix C5 in the Infineon Parts means the CoolSiC™ 5G, others are CoolSiC™ 3G.

SiC Series Products selection guide

Schottky Diodes and MOSFETs

Comparison with Japan suppliers-TO-220AC/AB

Amp	Bruckewell		Rohm		Toshiba	
	TO-220AC	TO-220AB	TO-220AC	ITO-220AC	TO-220AC	ITO-220AC
4	CBR04P65		SCS304AP		TRS4E65F	TRS4A65F
5			SCS205KG			
6	CBR06P65		SCS306AP SCS206AG	SCS206AM	TRS6E65F	TRS6A65F
8	CBR08P65		SCS308AP SCS208AG	SCS208AM	TRS8E65F	TRS8A65F
10	CBR10P65 CBR10120	CBR10120P	SCS310AP SCS210AG SCS210KG	SCS210AM	TRS10E65F	TRS10A65F
12			SCS212AG	SCS212AM		
15			SCS215AG SCS215KG	SCS215AM		
20	CBR20P65 CBR20120	CBR20P65PC CBR20120P	SCS220AG SCS220KG	SCS220AM		

Note:

The suffix of Rohm Parts means the breakdown voltage, A means 650V, K means 1200V.

SiC Series Products selection guide

Schottky Diodes and MOSFETs

Comparison with industry supplier-TO-247 Single/ Dual Die

Amp	Bruckewell		ST-Micro		Infineon	
	TO-247	TO-247 Dual	TO-247	TO-247 Dual	TO-247	TO-247 Dual
10	CBR10120W				IDW10G65C5	IDW10G120C5B
20	CBR20P65W CBR20120W	CBR20P65WC CBR20120WC	STPSC20065W	STPSC20H065CW	IDW20G65C5	IDW20G65C5B IDW20G120C5B
12					IDW12G65C5	
15						IDW15G120C5B
16					IDW16G65C5	
24						IDW24G65C5B
30	CBR30120W				IDW30G65C5	IDW30G120C5B
32						IDW32G65C5B
40		CBR40120WC		STPSC40065CW	IDW40G65C5	IDW40G65C5B IDW40G120C5B

Comparison with Japan suppliers-TO-247 Single/ Dual Die

Amp	Bruckewell		Rohm		Fuji electric	
	TO-247	TO-247 Dual	TO-247	TO-247 Dual	TO-247	TO-247 Dual
10	CBR10120W			SCS210KE2	FDCY10S65	
15			SCS215AE			
20	CBR20P65W CBR20120W	CBR20P65WC CBR20120WC	SCS220AE	SCS220AE2 SCS220KE2	FDCY18S120	FDCY20C65
25					FDCY25S65	
30	CBR30120W			SCS230AE2 SCS230KE2		
40		CBR40120WC		SCS240AE2 SCS240KE2		FDCY36C120
50						FDCY50C65

SiC Series Products selection guide

Schottky Diodes and MOSFETs

Product	IO(A)	VB min (V)	VF typ(V)	IR Max (uA)	Package	Number of Diodes
CBR04P65	4	650	1.5	10	TO-220AC	1
CBR04P65K	4	650	1.5	10	DPAK (TO-252)	1
CBR06P65	6	650	1.5	10	TO-220AC	1
CBR06P65K	6	650	1.5	10	DPAK (TO-252)	1
CBR08P65	8	650	1.5	10	TO-220AC	1
CBR08P65K	8	650	1.5	10	DPAK (TO-252)	1
CBR10P65	10	650	1.5	10	TO-220AC	1
CBR10P65K	10	650	1.5	10	DPAK (TO-252)	1
CBR10P65S	10	650	1.5	10	TO-277	1
CBR10P65D3	10	650	1.5	10	DFN3.3	1
CBR20P65PC	20	650	1.5	10	TO-220AB	2
CBR20P65	20	650	1.5	10	TO-220AC	1
CBR20P65W	20	650	1.5	10	TO-247	1
CBR20P65WC	20	650	1.5	10	TO-247	2
CBR40P65WC	40	650	1.5	10	TO-247	2
CBR10120	10	1200	1.5	10	TO-220AC	1
CBR10120P	10	1200	1.5	10	TO-220AB	1
CBR10120K	10	1200	1.5	10	DPAK (TO-252)	1
CBR10120S	10	1200	1.5	10	TO-277	1
CBR10120W	10	1200	1.5	10	TO-247	1
CBR20120WC	20	1200	1.5	10	TO-247	2
CBR20120W	20	1200	1.5	10	TO-247	1
CBR20120	20	1200	1.5	10	TO-220AC	1
CBR20120P	20	1200	1.5	10	TO-220AB	1
CBR20120S	20	1200	1.5	10	TO-277	1
CBR30120W	30	1200	1.5	10	TO-247	1
CBR30120S	30	1200	1.5	10	TO-277	1
CBR30120D5	30	1200	1.5	10	DFN 5X6	1
CBR40120WC	40	1200	1.5	10	TO-247	2

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Address

Asia:
6F.-9, No.65, Gaotie 7th Rd., Jhubei City,
Hsinchu County 302, Taiwan (R.O.C.)

Telephone

Phone:+886 3 6673276
Fax : +886-3-6673226

Web sites

www.bruckewell-semi.com
sales@bruckewell.com



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