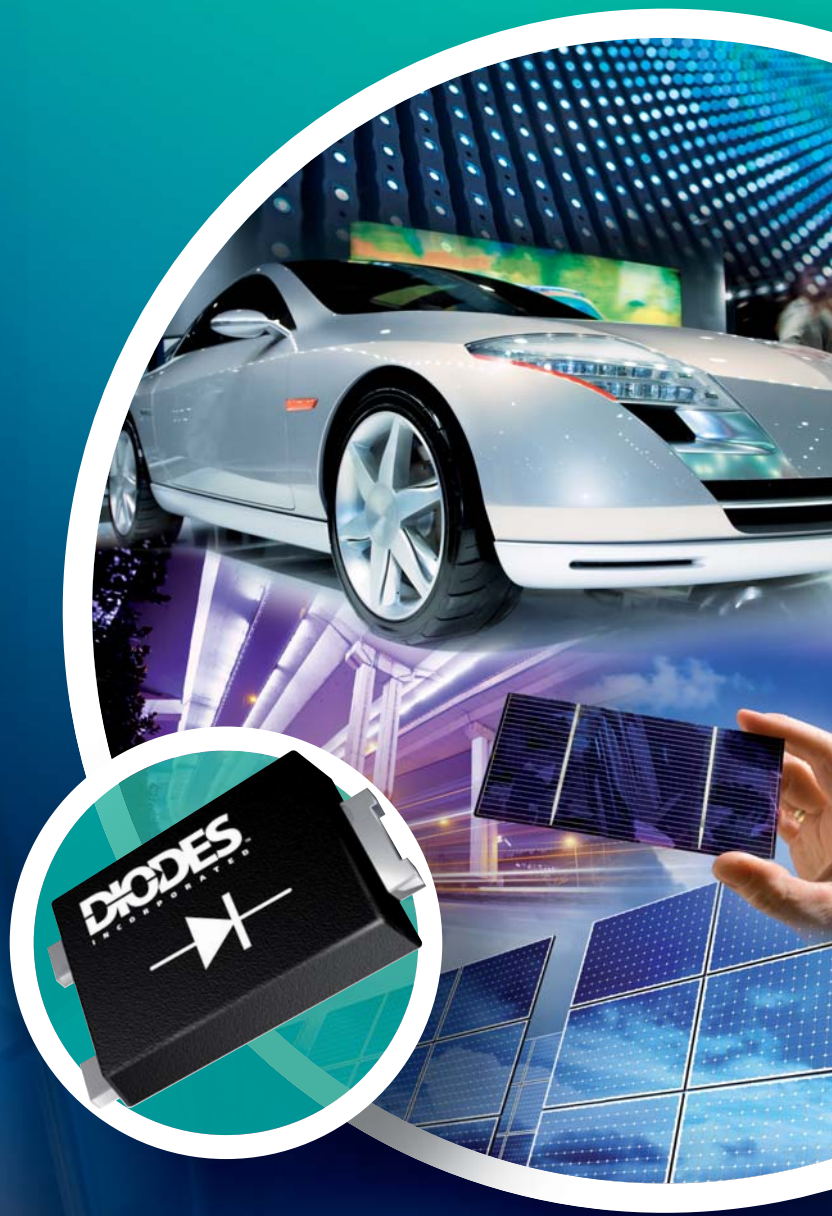
DIODES INCORPORATED

SBR® SUPER BARRIER RECTIFIER

THE NEXT GENERATION OF RECTIFIERS...



www.diodes.com

DIODES INCORPORATED'S PRODUCTS ARE DESIGNED FOR HIGH PERFORMANCE, ACROSS A WIDE RANGE OF EXISTING AND EMERGING APPLICATIONS

COMPANY OVERVIEW

Diodes Incorporated is a leading global provider of Discrete and Analog semiconductors.

Its global footprint includes sales offices in 5 countries and manufacturing locations in China, Europe and the USA.

A focus on product innovation, cost reduction, acquisitions and customer service has made Diodes Incorporated an industry leader.

Combining leading silicon and packaging technologies, Diodes provides a broad portfolio of discrete semiconductors comprising Bipolar Transistors, MOSFETs, Schottky diodes, SBR, switching diodes and functional specific arrays to enable our customers' next generation designs.

The Diodes' Analog IC portfolio consists of 6 main areas: Power Management ICs, Standard Linear, Lighting, Sensors, Direct Broadcast by Satellite and Applications Specific Standard Products.

SBR® : THE NEXT GENERATION OF RECTIFIERS

A focus on advancement of technology, innovative products and collaboration with customers from design to production has resulted in Diodes Incorporated's SBR portfolio's continual market adoption and increasing market share.

SBR – The Next Generation of Rectifiers

Super Barrier Rectifier (SBR) is a proprietary and patented Diodes Inc technology that utilizes a MOS manufacturing process (traditional Schottky uses a bipolar process) to create a superior two terminal device that has a lower forward voltage (V_F) than comparable Schottky diodes while possessing the thermal stability and high reliability characteristics of PN epitaxial diodes.

Super Barrier Rectifier (SBR) diode is designed for high power, low loss and fast switching applications. The presence of a MOS channel within its structure forms a low potential barrier for the majority carriers, thus SBR's forward bias operation at low voltage is similar to Schottky diode.

However, the leakage current is lower than Schottky diode in reverse bias due to the overlap of the P-N depletion layers and the absence of potential barrier reduction due to the image charge.

The Diodes SBR portfolio is ideally suited to meet the circuit requirements of:

- Switch Mode Power Supplies (SMPS)
- Buck/Boost Diodes for DC-DC Conversion
- Battery Chargers
- Reverse Polarity Protection
- Solar Panels
- LED Lighting
- Automotive Applications

Diodes Incorporated's SBR product development strategy is focused on high performance value added products for growth market segments such as the Solar Panel, LED Lighting, High Efficiency SMPS, and automotive.

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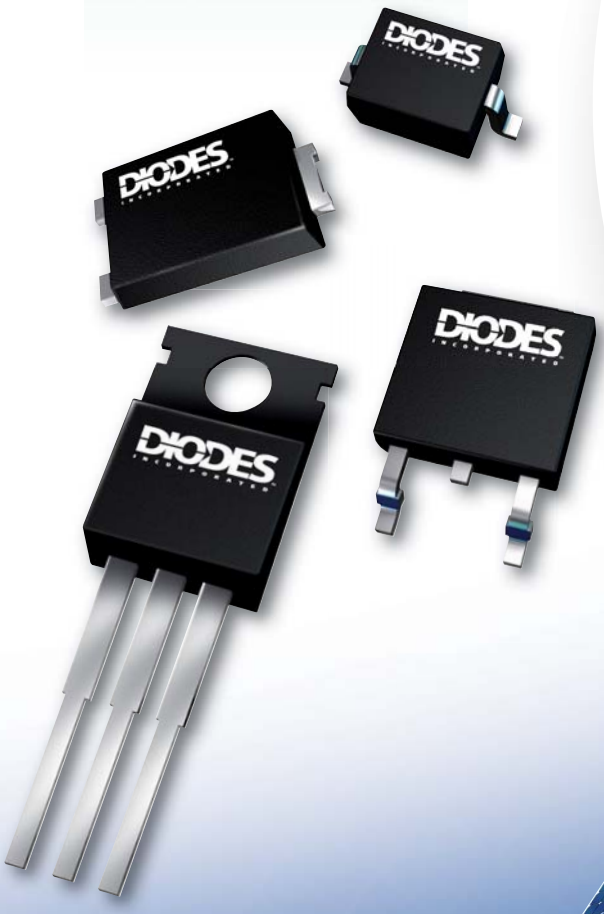
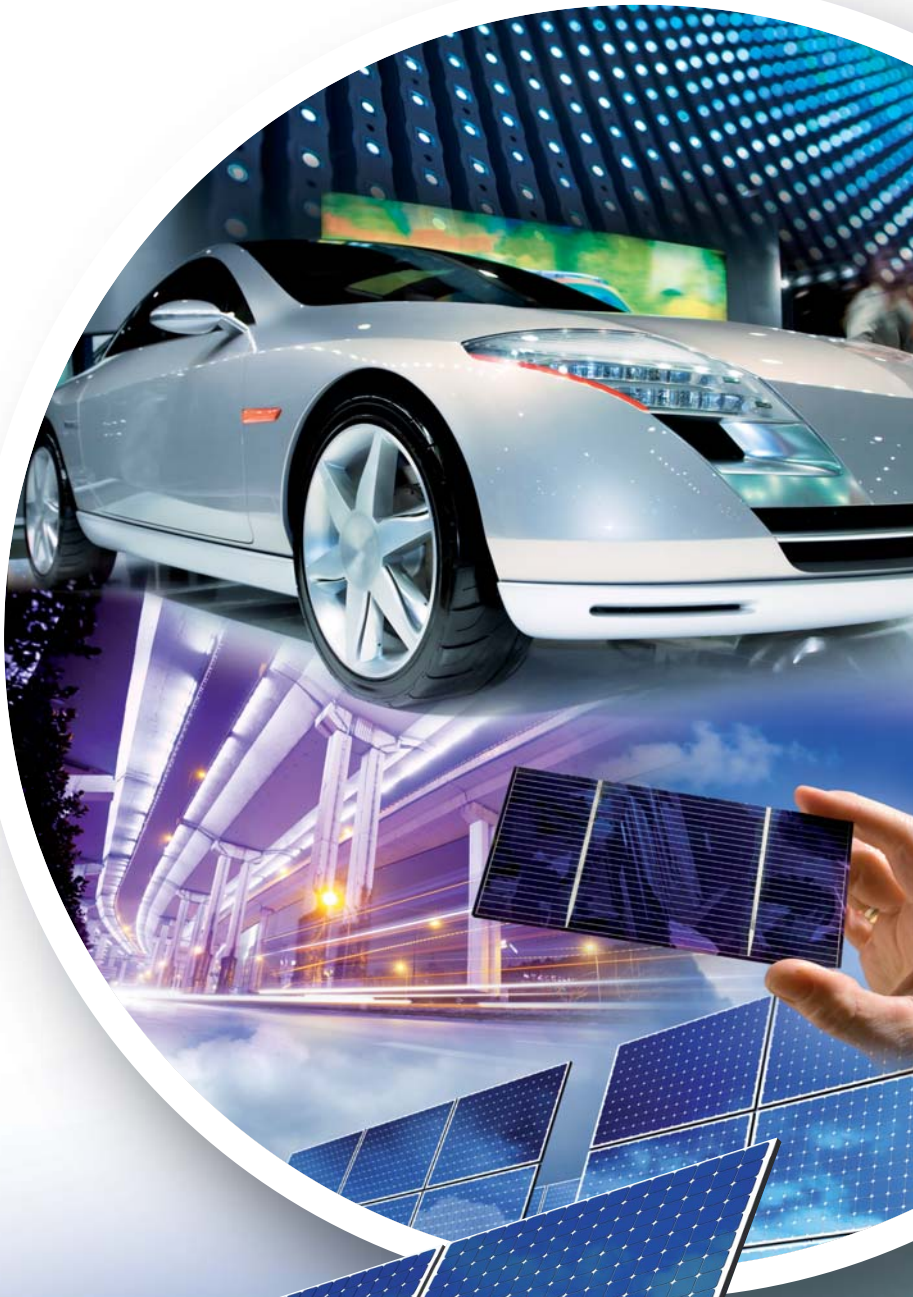


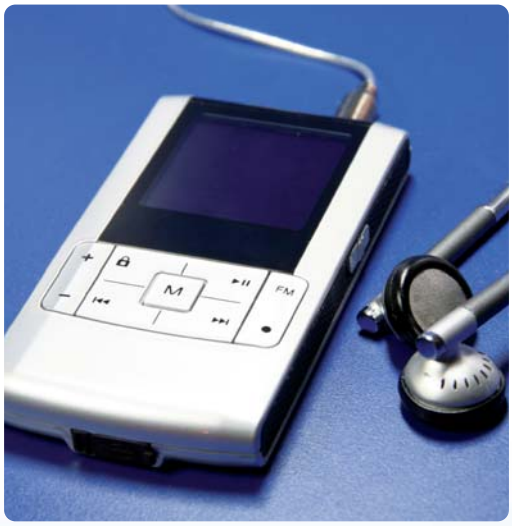


SBR® Super Barrier Rectifiers 20V - 40V

Part Number	Configuration	Max Average Rectified Current $I_{(O)}$ (A)	Peak Repetitive Reverse Voltage V_{RRM} (V)	Max Forward Voltage Drop V_F (V)	@ I_F (A)	Max Reverse Current I_R (mA)	@ V_R (V)	Peak Forward Surge Current I_{FSM} (A)	Max Junction Temp T_J max (°C)	Package Outlines
SBR0220LP	Single	0.2	20	0.48	0.2	0.05	20	5	150	DFN1006-2
SBR0220T5	Single	0.2	20	0.47	0.2	0.04	20	5	150	SOD523
SBR05U20LP	Single	0.5	20	0.50	0.5	0.05	20	5	150	DFN1006-2
SBR05U20LPS	Single	0.5	20	0.70	0.5	0.5	20	6	150	DFN1006H4-2
SBR05U20SN	Single	0.5	20	0.56	0.5	0.1	20	3	150	SC59
SBR07U20LPS	Single	0.7	20	0.50	0.7	0.5	20	7	150	DFN1006H4-2
SBR3U20SA	Single	3.0	20	0.39	3.0	0.5	20	66	150	SMA
SBR0230T5	Single	0.2	30	0.61	0.2	0.002	30	5	150	SOD523
SBR02M30LP	Single	0.2	30	0.61	0.2	0.0005	30	5	175	DFN1006-2
SBR02U30LP	Single	0.2	30	0.48	0.2	0.005	30	5	150	DFN1006-2
SBR130S3	Single	1.0	30	0.41	1.0	0.1	30	18	150	SOD323
SBR2A30P1	Single	2.0	30	0.45	2.0	0.2	30	75	150	PowerDI®123
SBR2M30P1	Single	2.0	30	0.46	2.0	0.2	30	75	175	PowerDI®123
SBR2U30P1	Single	2.0	30	0.40	2.0	0.4	30	75	150	PowerDI®123
SBR2U30SA	Single	2.0	30	0.39	2.0	0.5	30	66	150	SMA
SBR3M30P1	Single	3.0	30	0.51	3.0	0.2	30	75	175	PowerDI®123
SBR3U30P1	Single	3.0	30	0.40	3.0	0.5	30	75	150	PowerDI®123
SBR30U30CT	Dual	30	30	0.45	15	1.5	30	280	150	TO-220AB
SBR0240LP	Single	0.2	40	0.59	0.2	-	30	5	150	DFN1006-2
SBR1A40S3	Single	1.0	40	0.55	1.0	0.1	40	20	150	SOD323
SBR1A40SA	Single	1.0	40	0.50	1.0	0.5	40	25	150	SMA

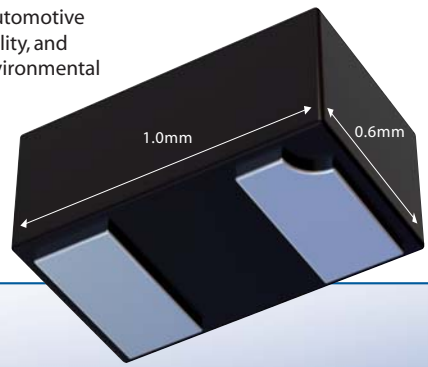
DFN SBR® Product Family

THE **DIODES** ADVANTAGE



Product benefits

- The SBR05U20LP offers industry leading low forward drop (V_F) combined with the lowest high temperature reverse leakage current (I_R) characteristics available on the market.
- Large safe operating area (SOA) for superior reliability and higher current operation.
- Qualified to AEC-Q101 automotive standards for high reliability, and compliant with RoHS environmental standards.



SBR® Super Barrier Rectifiers 20V - 40V (continued)

Part Number	Configuration	Max Average Rectified Current $I_{(O)}$ (A)	Peak Repetitive Reverse Voltage V_{RRM} (V)	Max Forward Voltage Drop V_F (V)	@ I_F (A)	Max Reverse Current I_R (mA)	@ V_R (V)	Peak Forward Surge Current I_{FSM} (A)	Max Junction Temp T_J max (°C)	Package Outlines
SBR1U40LP	Single	1.0	40	0.49	1.0	0.05	40	5	150	DFN1411-3
SBR2A40P1	Single	2.0	40	0.50	2.0	0.1	40	75	150	PowerDI®123
SBR2A40SA	Single	2.0	40	0.55	2.0	0.5	40	25	150	SMA
SBR3A40SA	Single	3.0	40	0.50	3.0	0.4	40	50	150	SMA
SBR3U40P1	Single	3.0	40	0.47	3.0	0.4	40	75	150	PowerDI®123
SBR1040CT	Dual	10	40	0.55	5.0	0.5	40	120	150	TO-220AB
SBR1040CTB	Dual	10	40	0.60	5.0	0.5	40	85	150	TO-263
SBR1040CTFP	Dual	10	40	0.55	10	0.5	40	120	150	ITO220AB
SBR10U40CT	Dual	10	40	0.44	5.0	0.5	40	150	150	TO-220AB
SBR10U40CTFP	Dual	10	40	0.44	10	0.5	40	150	150	ITO220AB
SBR2040CT	Dual	20	40	0.53	10	0.5	40	120	150	TO-220AB
SBR2040CTFP	Dual	20	40	0.53	20	0.5	40	120	150	ITO220AB
SBR20A40CT	Dual	20	40	0.50	10	0.5	40	180	150	TO-220AB
SBR20A40CTFP	Dual	20	40	0.50	20	0.5	40	180	150	ITO220AB
SBR20U40CT	Dual	20	40	0.47	10	0.5	40	200	150	TO-220AB
SBR20U40CTFP	Dual	20	40	0.47	20	0.5	40	200	150	ITO220AB
SBR3040CT	Dual	30	40	0.55	15	0.5	40	200	150	TO-220AB
SBR3040CTFP	Dual	30	40	0.55	30	0.5	40	200	150	ITO220AB
SBR30A40CT	Dual	30	40	0.50	15	0.5	40	250	150	TO-220AB
SBR30A40CTFP	Dual	30	40	0.50	30	0.5	40	250	150	ITO220AB
SBR4040CT	Dual	40	40	0.53	20	0.5	40	280	150	TO-220AB
SBR4040CTFP	Dual	40	40	0.53	40	0.5	40	280	150	ITO220AB

PowerDI®123 SBR® Product Family

THE **DIODES** ADVANTAGE

Product benefits

- PowerDI®123 is a low profile power package that delivers a superior thermal performance from a footprint that is 60% smaller than the industry standard SMA.
- Industry leading 3A current rating (SBR3U30P1) with high maximum junction temperature of 150°C in a miniature package outline.
- Highest ESD ±16 kV HBM (Grade 3B, 16kV) rating and ±25kV ESD Protection (IEC61000-4-2 Level 4, Air Discharge).
- Much higher avalanche power rating for ruggedness and high reliability compared to traditional Schottky.
- Large safe operating area (SOA) with maximum junction temperature of 150°C provides extra margin for high temperature applications.
- Qualified to rigorous AEC-Q101 (automotive) standards for high reliability, compliant with RoHS environmental standards.

SBR® Super Barrier Rectifiers 45V - 60V

Part Number	Configuration	Max Average Rectified Current $I_{(O)}$ (A)	Peak Repetitive Reverse Voltage V_{RRM} (V)	Max Forward Voltage Drop V_F (V)	@ I_F (A)	Max Reverse Current I_R (mA)	@ V_R (V)	Peak Forward Surge Current I_{FSM} (A)	Max Junction Temp T_J max (°C)	Package Outlines
SBR1045CTL	Dual	10	45	0.55	10	0.5	45	90	150	TO252-3L
SBR1045D1	Single	10	45	0.55	10	0.45	45	180	150	TO252-3L
SBR1045SP5	Single	10	45	0.55	10	0.45	45	180	200*	PowerDI®5
SBR10U45D1	Single	10	45	0.57	10	0.5	45	125	150	TO252-3L
SBR10U45SD1	Single	10	45	0.47	10	0.3	45	200	200*	DO201AD
SBR10U45SP5	Single	10	45	0.47	10	0.3	45	275	200*	PowerDI®5
SBR12A45SD1	Single	12	45	0.48	12	0.5	45	200	200*	DO201AD
SBR2045CT	Dual	20	45	0.54	10	0.5	45	120	150	TO-220AB
SBR2045CTFP	Dual	20	45	0.54	20	0.5	45	120	150	ITO220AB
SBR20A45CT	Dual	20	45	0.50	10	0.5	45	180	150	TO-220AB
SBR20A45CTFP	Dual	20	45	0.50	20	0.5	45	180	150	ITO220AB
SBR3045CT	Dual	30	45	0.55	15	0.5	45	200	150	TO-220AB
SBR3045CTFP	Dual	30	45	0.55	30	0.5	45	200	150	ITO220AB
SBR3045SCTB	Dual	30	45	0.65	15	0.2	45	220	150	TO-263
SBR30A45CT	Dual	30	45	0.50	15	0.5	45	250	150	TO-220AB
SBR30A45CTB	Dual	30	45	0.55	15	0.5	45	175	150	TO-263
SBR30A45CTFP	Dual	30	45	0.50	30	0.5	45	250	150	ITO220AB
SBR4045CT	Dual	40	45	0.55	20	0.5	45	280	150	TO-220AB
SBR4045CTFP	Dual	40	45	0.55	40	0.5	45	280	150	ITO220AB
SBR40U45CT	Dual	40	45	0.52	20	0.6	45	280	150	TO-220AB
SBR60A45CT	Dual	60	45	0.60	30	1	45	350	150	TO-220AB
SBR60A45PT	Dual	60	45	0.58	30	1	45	280	150	TO-247
SBR30A50CT	Dual	30	50	0.55	15	0.5	50	260	150	TO-220AB
SBR0560S1	Single	0.5	60	0.50	0.5	0.1	60	15	150	SOD123

*DC only

SBR10U45SP5 and SBR1045SP5 – SBRs for Solar Panels

THE **DIODES** ADVANTAGE

Product benefits

- PowerDI®5 is a low profile proprietary package that delivers a thermal performance 50% lower than competing solutions, such as TO-252, from a footprint that is 55% smaller.
- Industry first PowerDI®5 bypass diodes designed in accordance to Solar Industry Safety Standards (IEC61730-2, IEC61215-2).
- Ultra-Low V_F for reduced forward power loss to improve efficiency and higher cell power generation.
- Very low high temperature reverse leakage characteristics unlike traditional Schottky rectifiers.
- Large safe operating area (SOA) with maximum selectively rated 200°C junction temperature for higher reliability.
- High forward surge current rating (I_{FSM}) to prevent against current surges and lightning strikes.
- Low profile height of 1.1mm for possible integration into the solar panels.

SBR® Super Barrier Rectifiers 45V - 60V (continued)

Part Number	Configuration	Max Average Rectified Current $I_{(O)}$ (A)	Peak Repetitive Reverse Voltage V_{RRM} (V)	Max Forward Voltage Drop V_F (V)	@ I_F (A)	Max Reverse Current I_R (mA)	@ V_R (V)	Peak Forward Surge Current I_{FSM} (A)	Max Junction Temp T_J max (°C)	Package Outlines
SBR05M60BLP	Bridge	0.5	60	0.49	0.5	0.1	60	8	150	DFN3030-4
SBR660CTL	Dual	6	60	0.57	3	0.5	60	80	150	TO252-3L
SBR8U60P5	Single	8	60	0.53	8	0.6	60	280	150	PowerDI®5
SBR1060CT	Dual	10	60	0.68	5	0.5	60	120	150	TO-220AB
SBR1060CTFP	Dual	10	60	0.68	10	0.5	60	120	150	ITO220AB
SBR10U60CT	Dual	10	60	0.48	5	0.5	60	150	150	TO-220AB
SBR10U60CTFP	Dual	10	60	0.48	10	0.5	60	150	150	ITO220AB
SBR2060CT	Dual	20	60	0.70	10	0.5	60	150	150	TO-220AB
SBR2060CTFP	Dual	20	60	0.70	20	0.5	60	150	150	ITO220AB
SBR20A60CT	Dual	20	60	0.65	20	0.5	60	180	150	TO-220AB
SBR20A60CTB	Dual	20	60	0.65	20	0.5	60	180	150	TO-263
SBR20A60CTFP	Dual	20	60	0.65	20	0.5	60	180	150	ITO220AB
SBR20U60CT	Dual	20	60	0.57	10	0.5	60	200	150	TO-220AB
SBR20U60CTFP	Dual	20	60	0.57	20	0.5	60	200	150	ITO220AB
SBR3060CT	Dual	30	60	0.70	15	0.5	60	200	150	TO-220AB
SBR3060CTFP	Dual	30	60	0.70	30	0.5	60	200	150	ITO220AB
SBR30A60CT	Dual	30	60	0.60	15	0.5	60	250	150	TO-220AB
SBR30A60CTB	Dual	30	60	0.63	15	0.5	60	180	150	TO-263
SBR30A60CTFP	Dual	30	60	0.60	30	0.5	60	250	150	ITO220AB
SBR4060CT	Dual	40	60	0.70	20	0.5	60	280	150	TO-220AB
SBR4060CTFP	Dual	40	60	0.70	40	0.5	60	280	150	ITO220AB
SBR40U60CT	Dual	40	60	0.60	20	0.5	60	280	150	TO-220AB
SBR40U60CTE	Dual	40	60	0.60	20	0.5	60	230	150	TO-262
SBR60A60CT	Dual	60	60	0.62	30	0.2	60	280	150	TO-220AB

PowerDI®5 SBR® Product Family

THE **DIODES** ADVANTAGE

Product benefits

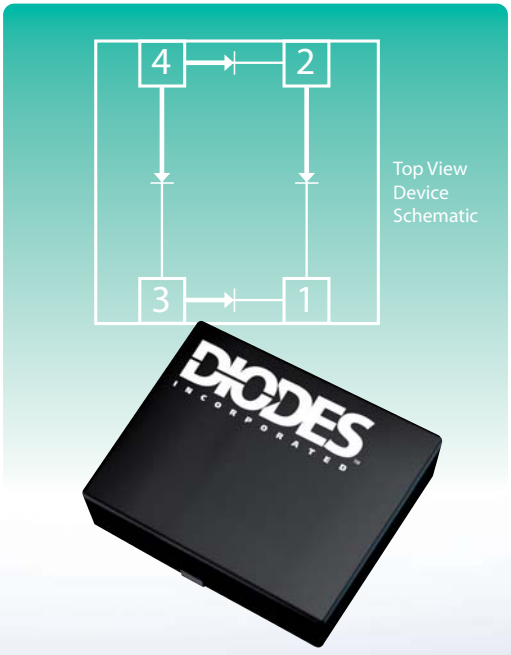
- With a thermal resistance of typically 1.5°C/W the PowerDI®5 package delivers twice the power density from a footprint that is 55% smaller than TO252.
- With an off board package profile of 1.1mm - half that of the industry standard TO252 – the PowerDI®5 package facilitates the design of lower profile end applications.
- Ultra low forward voltage (V_F). Reduces power loss and enables the design of more efficient end applications.
- The SBR10U200P5 can operate with T_J of 175°C providing a higher operating margin and making it ideal for high reliability applications.
- With an avalanche rating 50% greater than equivalent schottky diodes the SBR10U200P5 and SBR8U60P5 enable the removal of snubber circuits, thus simplifying and reducing the cost of end designs.
- A high forward surge current rating (I_{FSM}) protects against large current surges and lighting strikes.

SBR® Super Barrier Rectifiers 100V - 150V

Part Number	Configuration	Max Average Rectified Current $I_{(O)}$ (A)	Peak Repetitive Reverse Voltage V_{RRM} (V)	Max Forward Voltage Drop V_F (V)	@ I_F (A)	Max Reverse Current I_R (mA)	@ V_R (V)	Peak Forward Surge Current I_{FSM} (A)	Max Junction Temp T_J max (°C)	Package Outlines
SBR02U100LP	Single	0.25	100	0.80	0.25	0.001	75	5	150	DFN1006-2
SBR05M100BLP	Bridge	0.5	100	0.73	0.5	0.025	100	8	150	DFN3030-4
SBR3U100LP	Single	3	100	0.79	3	0.2	100	32	150	DFN3030-8
SBR6100CTL	Dual	6	100	0.74	3	0.2	100	78	150	TO252-3L
SBR10100CT	Dual	10	100	0.80	5	0.2	100	120	150	TO-220AB
SBR10100CTB	Dual	10	100	0.84	5	0.2	100	80	150	TO-263
SBR10100CTFP	Dual	10	100	0.80	5	0.2	100	120	150	ITO220AB
SBR10U100CT	Dual	10	100	0.67	5	0.2	100	150	150	TO-220AB
SBR10U100CTFP	Dual	10	100	0.67	10	0.2	100	150	150	ITO220AB
SBR20100CT	Dual	20	100	0.82	10	0.1	100	150	150	TO-220AB
SBR20100CTE	Dual	20	100	0.82	10	0.1	100	180	150	TO-262
SBR20100CTFP	Dual	20	100	0.82	20	0.1	100	150	150	ITO220AB
SBR20100CTP	Dual	20	100	0.82	10	0.1	100	150	150	ITO-220S
SBR20A100CT	Dual	20	100	0.75	10	0.1	100	250	150	TO-220AB
SBR20A100CTE	Single	20	100	0.75	10	0.1	100	250	150	TO-262
SBR20A100CTFP	Dual	20	100	0.75	20	0.1	100	250	150	ITO220AB
SBR20U100CT	Dual	20	100	0.70	10	0.5	100	200	150	TO-220AB
SBR20U100CTE	Single	20	100	0.70	10	0.5	100	200	150	TO-262
SBR20U100CTFP	Dual	20	100	0.70	20	0.5	100	200	150	ITO220AB
SBR30100CT	Dual	30	100	0.85	15	0.1	100	200	150	TO-220AB

SBR® Bridge Product Family

THE **DIODES** ADVANTAGE



Product benefits

- Integrate 4 highly efficient SBR® diodes into one single 3.0mm x 3.0mm leadless package, eliminating the need to use 4 separate individual packages in a bridge configuration.
- Large safe operating area (SOA) with maximum junction temperature of 150°C provides extra margin for higher reliability.
- Packaged in a DFN3030-4 package with a tiny footprint of 9mm² total physical area, which is 52% smaller in total dimension area and 67% less board space than other standard traditional packages like the HD-DIP case.
- Very low profile height of 0.6mm, making it ideal for continual reduction of thinner and more portable applications.

SBR® Super Barrier Rectifiers 100V - 150V (continued)

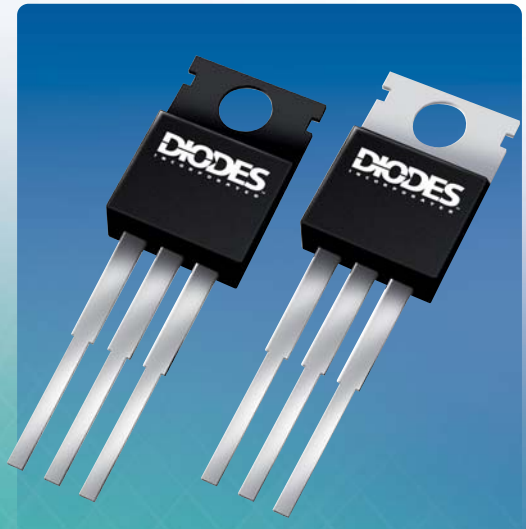
Part Number	Configuration	Max Average Rectified Current $I_{(O)}$ (A)	Peak Repetitive Reverse Voltage V_{RRM} (V)	Max Forward Voltage Drop V_F (V)	@ I_F (A)	Max Reverse Current I_R (mA)	@ V_R (V)	Peak Forward Surge Current I_{FSM} (A)	Max Junction Temp T_J max (°C)	Package Outlines
SBR30100CTFP	Dual	30	100	0.85	30	0.1	100	200	150	ITO220AB
SBR30100PT	Dual	30	100	0.90	15	0.1	100	200	150	TO-247AB
SBR30A100CT	Dual	30	100	0.80	15	0.1	100	250	150	TO-220AB
SBR30A100CTB	Dual	30	100	0.85	15	0.1	100	180	150	TO-263
SBR30A100CTE	Dual	30	100	0.80	15	0.1	100	250	150	TO-262
SBR30A100CTFP	Dual	30	100	0.80	30	0.1	100	250	150	ITO220AB
SBR30M100CT	Dual	30	100	0.85	15	0.012	100	250	200	TO-220AB
SBR30M100CTFP	Dual	30	100	0.85	30	0.012	100	250	200	ITO220AB
SBR40100CT	Dual	40	100	0.82	20	0.1	100	280	150	TO-220AB
SBR40100CTFP	Dual	40	100	0.82	40	0.1	100	280	150	ITO220AB
SBR40U100CT	Dual	40	100	0.72	20	0.5	100	235	150	TO-220AB
SBR40U100CTE	Dual	40	100	0.78	20	0.5	100	240	150	TO-262
SBR60A100CT	Dual	60	100	0.84	30	0.5	100	350	150	TO-220AB
SBR20A120CT	Dual	20	120	0.79	10	0.1	120	180	150	TO-220AB
SBR20A120CTFP	Dual	20	120	0.79	20	0.1	120	180	150	ITO220AB
SBR30A120CT	Dual	30	120	0.88	15	0.1	120	250	150	TO-220AB
SBR30A120CTFP	Dual	30	120	0.88	30	0.1	120	250	150	ITO220AB
SBR40U120CT	Dual	40	120	0.86	20	0.5	120	300	150	TO-220AB
SBR40U120CTE	Dual	40	120	0.86	20	0.5	120	300	150	TO-262
SBR4U130LP	Single	4.0	130	0.75	4.0	0.1	130	40	150	DFN3030-8
SBR1U150SA	Single	1	150	0.70	1	0.1	150	42	150	SMA
SBR3U150LP	Single	3	150	0.83	3	0.05	150	33	150	DFN3030-8
SBR10150CT	Dual	10	150	0.88	5	0.25	150	120	150	TO-220AB
SBR10150CTE	Dual	10	150	0.92	5	0.25	150	100	150	TO-262
SBR10150CTFP	Dual	10	150	0.88	10	0.25	150	120	150	ITO220AB
SBR10U150CT	Dual	10	150	0.79	5	0.2	150	150	150	TO-220AB
SBR10U150CTFP	Dual	10	150	0.79	10	0.2	150	150	150	ITO220AB
SBR20150CT	Dual	20	150	0.88	10	0.1	150	150	150	TO-220AB
SBR20150CTFP	Dual	20	150	0.88	20	0.1	150	150	150	ITO220AB
SBR20A150CT	Dual	20	150	0.82	10	0.1	150	180	150	TO-220AB
SBR20A150CTFP	Dual	20	150	0.82	20	0.1	150	180	150	ITO220AB
SBR20U150CT	Dual	20	150	0.78	10	0.5	150	200	150	TO-220AB
SBR20U150CTFP	Dual	20	150	0.78	20	0.5	150	200	150	ITO220AB
SBR30150CT	Dual	30	150	0.92	15	0.1	150	200	150	TO-220AB
SBR30150CTFP	Dual	30	150	0.92	30	0.1	150	200	150	ITO220AB
SBR30A150CT	Dual	30	150	0.88	15	0.1	150	250	175	TO-220AB
SBR30A150CTFP	Dual	30	150	0.88	30	0.1	150	250	175	ITO220AB
SBR40150CT	Dual	40	150	0.90	20	0.1	150	280	175	TO-220AB
SBR40150CTFP	Dual	40	150	0.90	40	0.1	150	280	175	ITO220AB
SBR40U150CT	Dual	40	150	0.86	20	0.5	150	240	175	TO-220AB
SBR60A150CT	Dual	60	150	0.93	30	0.5	150	250	175	TO-220AB

SBR® Super Barrier Rectifiers 200V - 300V

Part Number	Configuration	Max Average Rectified Current $I_{(O)}$ (A)	Peak Repetitive Reverse Voltage V_{RRM} (V)	Max Forward Voltage Drop V_F (V)	@ I_F (A)	Max Reverse Current I_R (mA)	@ V_R (V)	Peak Forward Surge Current I_{FSM} (A)	Max Junction Temp T_J max (°C)	Package Outlines
SBR10200CT	Dual	10	200	0.90	5	0.1	200	110	175	TO-220AB
SBR10200CTB	Dual	10	200	0.92	5	0.05	200	80	175	TO-263
SBR10200CTFP	Dual	10	200	0.90	10	0.1	200	110	175	ITO220AB
SBR10U200CT	Dual	10	200	0.82	5	0.2	200	150	175	TO-220AB
SBR10U200CTB	Dual	10	200	0.82	10	0.2	200	150	175	TO-263
SBR10U200CTFP	Dual	10	200	0.82	10	0.2	200	150	175	ITO220AB
SBR10U200P5	Single	10	200	0.88	10	0.1	200	50	175	PowerDI®5
SBR20A200CT	Dual	20	200	0.86	10	0.1	200	180	175	TO-220AB
SBR20A200CTB	Dual	20	200	0.84	20	0.1	200	180	175	TO-263
SBR20A200CTFP	Dual	20	200	0.86	20	0.1	200	180	175	ITO220AB
SBR30200CT	Dual	30	200	0.98	15	0.1	200	200	175	TO-220AB
SBR30200CTFP	Dual	30	200	0.98	30	0.1	200	200	175	ITO220AB
SBR40U200CT	Dual	40	200	0.89	20	0.2	200	240	175	TO-220AB
SBR40U200CTB	Dual	40	200	0.93	20	0.2	200	240	175	TO-263
SBR60A200CT	Dual	60	200	0.96	30	0.1	200	250	175	TO-220AB
SBR10U300CT	Dual	10	300	0.86	5	0.2	300	150	175	TO-220AB
SBR10U300CTFP	Dual	10	300	0.86	10	0.2	300	150	175	ITO220AB
SBR20A300CT	Dual	20	300	0.92	10	0.1	300	180	175	TO-220AB
SBR20A300CTFP	Dual	20	300	0.92	20	0.1	300	180	175	ITO220AB
SBR30300CT	Dual	30	300	1.03	15	0.1	300	200	175	TO-220AB
SBR30300CTFP	Dual	30	300	1.03	30	0.1	300	200	175	ITO220AB
SBR40U300CT	Dual	40	300	0.89	20	0.1	300	235	175	TO-220AB
SBR40U300CTB	Dual	40	300	0.92	20	0.1	300	200	175	TO-263
SBR60A300CT	Dual	60	300	0.94	30	0.1	300	235	175	TO-220AB
SBR60A300PT	Dual	60	300	0.94	60	0.1	300	300	175	TO-247

300V SBR® Product Family

THE **DIODES** ADVANTAGE



Product benefits

- 300V SBR® Ultra-Low V_F and Low V_F version packaged in standard TO-220AB and ITO-220AB packages with wide current offering from 10A to 60A.
- A significant 20-25% improvement in forward voltage drop (V_F) compared to traditional Ultra-Fast rectifiers with similar switching speed.
- SBR60A300CT – the only 60A, 300V V_{RRM} rated rectifier rated to 175°C.
- Maximum junction temperature of 175°C to meet the requirements of high ambient temperature operating environments.
- Fast switching speed 50 nS (maximum value) and faster for RG1 test conditions (I_F = 0.5A, I_{RR} = 0.25A, I_R = 1A).
- The higher V_{RRM} of 300V SBR's enable designers to simplify circuit design and reduce cost by replacing 200V V_{RRM} rectifiers and removing snubber circuits that would otherwise be required to suppress transient voltage spikes.

Common questions about Super Barrier Rectifiers (SBR®)

1. How does an SBR work?

A Super Barrier Rectifier (SBR) is effectively a MOSFET with its gate and source shorted together.

With the application of forward bias, the external voltage lowers the barrier height on the semiconductor side and large current can flow through the FET channel.

In reverse bias, the opposite takes place: the barrier height increases and free charge in the semiconductor channel gets "pinched off" from the overlapping depletion layers, reducing the reverse leakage current.

2. What are the key features and benefits of a Super Barrier Rectifier (SBR)?

- Reverse voltage (V_{RRM}) up to 400V.
- Lower forward voltages (V_F) than competing solutions ("U" grade).
- Lower normalized reverse leakage current (I_R) than Schottky diodes.
- Fast reverse recovery (T_{RR}) times equivalent to competing solutions.
- Avalanche ratings up to 50% higher than competing solutions.

3. Where is SBR used?

SBR can be used as:

- Output rectifier
- Freewheel diode
- Buck/boost diode
- Reverse polarity protection diode

4. What does an SBR compete against?

Voltage (V)	Current Solution	SBR Benefit
<30V	Schottky Diodes	Lower V_F, fast T_{RR}, lower reverse leakage (I_R)
>30V – 150V	Schottky Diodes	Lower V_F, fast T_{RR}, lower reverse leakage (I_R) improved ruggedness
150V to 400V	Ultrafast/Hyperfast diodes	Much Lower V_F, fast T_{RR}, improved ruggedness

5. What is the difference between SBR and Ultra Fast rectifiers?

SBR has switching speed and other characteristics comparable to that of an ultrafast rectifier with the added benefit of having a forward voltage (V_F) that is 20 to 25% lower.

This reduced V_F can lead to a substantial reduction in power savings and efficiency.

6. How fast is the T_{RR} of an SBR?

A SBR has a T_{RR} comparable to that of Schottky and Ultra Fast rectifiers.

For 150V and higher SBR device (similar to Schottky), minority carriers can be injected in the drift region, resulting in a slightly slower but softer recovery.

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