

Product Overview

The 5820SM–5822SM series of 3-amp Schottky Rectifiers feature low power loss, high efficiency, and high surge capacity. They offer optimized forward voltage characteristics with reverse blocking capabilities from 20–40 volts. Design for surface-mounted applications requiring optimized board space. The SMCG gull-wing design in the DO-215AB package allows for visible solder connections. The SMCJ J-bend design in the DO-214AB package allows for greater PC board mounting density. RoHS compliant versions are available.

Features

- Surface mount equivalent to JEDEC registered 1N5820–1N5822
- Guard-ring die construction for transient protection
- Low forward voltage
- High current capability
- Optimized board space
- RoHS compliant versions available

Applications/Benefits

- Switching and regulating power supplies
- Charge pump circuits
- Elimination of reverse-recovery oscillations to reduce the need for EMI filtering
- Reduces reverse recovery loss with low IRM
- Protects sensitive components
- High thermal performance
- Low electrical resistance
- Low power loss

Figure 1. DO-215AB Gull-wing Package

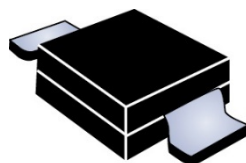


Figure 2. DO-214AB J-bend Package



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1. Maximum Ratings

Parameters/Test Conditions	Symbol	Value	Unit
Junction Temperature	T_J	–55 to +150	°C
Storage Temperature	T_{STG}	–55 to +150	°C
Thermal Resistance Junction-to-Lead	$R_{\theta JL}$	20	°C/W
Average Rectified Output Current (At rated V_{RWM} , $T_C = 127^\circ\text{C}$)	I_O	3.0	A
Maximum Forward Surge Current (8.3 ms, half sine, $T_J = 25^\circ\text{C}$)	I_{FSM}	80	A
Maximum Forward Surge Current (8.3 ms, half sine, $T_J = 150^\circ\text{C}$)	I_{FSM}	60	A

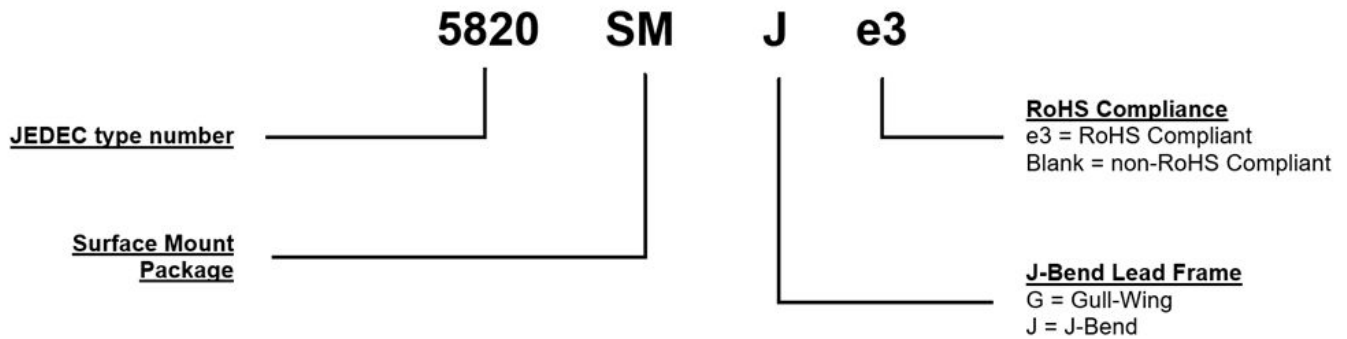
1.1. Mechanical and Packaging

- Case: Void-free transfer molded thermosetting epoxy body meeting UL94V-0.
- Terminals: Tin-lead or RoHS compliant annealed matte-tin plating. Solderable to MIL-STD-750, method 2026.
- Marking: Part number, date code, and RoHS compliance marked on package.
- Polarity: Cathode indicated by band.
- Tape and reel option: Standard per EIA-481-2 (add “TR” suffix to part number). Consult factory for quantities.
- Weight: Approximately 0.23 grams.

Note: See [4. Package Dimensions](#).

2. Part Nomenclature

Figure 2-1. Part Nomenclature



2.1. Symbols and Definitions

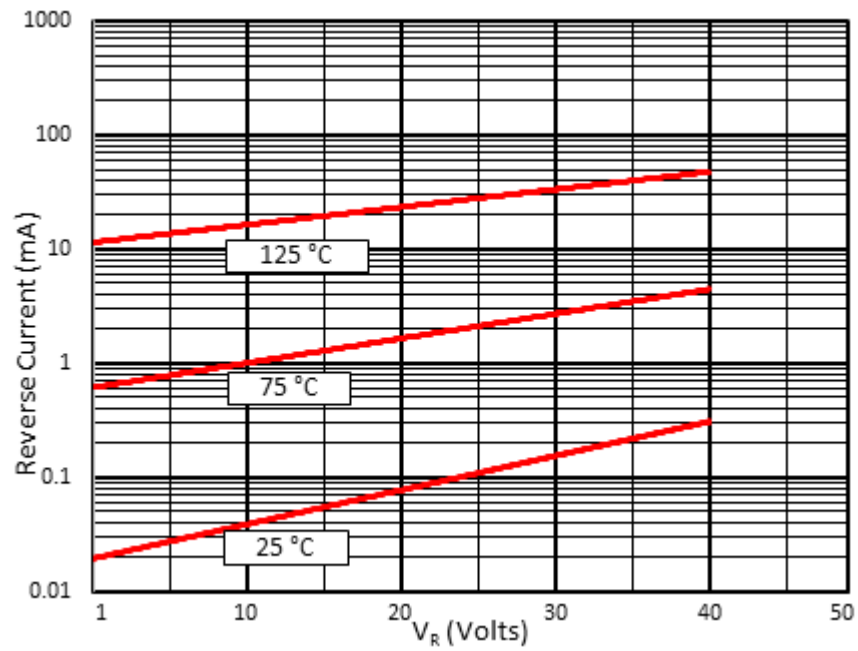
Symbol	Definition
I_F	Forward Current: The dc current flowing from the external circuit into the anode terminal.
I_O	Average Rectified Output Current: The Output Current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle.
I_R	Reverse Current: The dc current flowing from the external circuit into the cathode terminal at the specified voltage V_R .
V_F	Forward Voltage: A positive dc anode-cathode voltage the device will exhibit at a specified forward current.
V_{RWM}	Working Peak Reverse Voltage: The peak voltage excluding all transient voltages (ref JESD282-B). Also sometimes known historically as PIV.
V_R	Reverse Voltage: A positive dc cathode-anode voltage below the breakdown region.
I_{FSM}	Surge Peak Forward Current: The forward current including all nonrepetitive transient currents but excluding all repetitive transients (ref JESD282-B)
C_T	Total Capacitance: The total small signal capacitance between the diode terminals of a complete device.

2.2. Electrical Characteristics at 25 °C Unless Otherwise Stated

Part Number	Working Peak Reverse Voltage	Maximum Reverse Leakage Current	Maximum Forward Voltage			Capacitance
			V_F			C_T
	V_{RWM} (V)	I_{RM} at V_{RWM} (mA)	at $I_F = 1A$ (V)	at $I_F = 3A$ (V)	at $I_F = 9.4A$ (V)	at $V_R = 5V$ (pF)
5820SM	20	1.5	0.36	0.46	0.65	265
5821SM	30	1.5	0.37	0.48	0.67	265
5822SM	40	1.5	0.38	0.50	0.70	265

3. Graphs

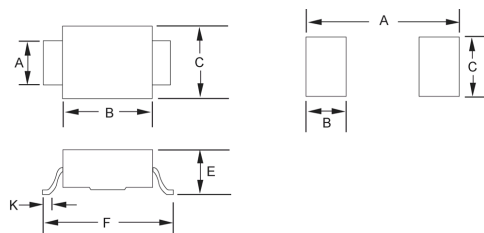
Figure 3-1. Typical Reverse Current vs Reverse Voltage



4. Package Dimensions

4.1. SMCG (DO-215AB)

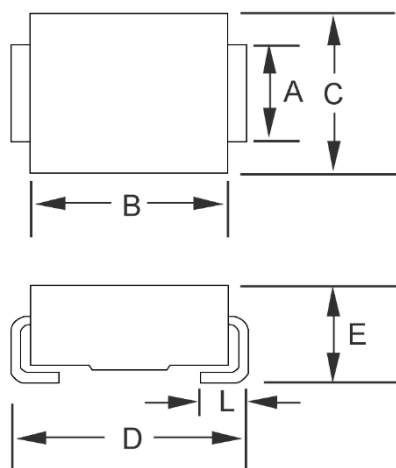
Figure 4-1. SMCG (DO-215AB)



Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
A	0.117	0.123	2.97	3.12
B	0.260	0.280	6.60	7.11
C	0.220	0.245	5.59	6.22
E	0.075	0.095	1.91	2.41
F	0.380	0.400	9.65	10.16
K	0.025	0.040	0.640	1.02

4.2. SMCJ (DO-214AB)

Figure 4-2. SMCJ (DO-214AB)



Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
A	0.117	0.123	2.97	3.12
B	0.260	0.280	6.60	7.11
C	0.220	0.245	5.59	6.22
D	0.307	0.322	7.80	8.18
E	0.075	0.095	1.91	2.41
L	0.030	0.060	0.760	1.52

5. Revision History

Revision Level	Date	Description
A	4/2025	Initial version created in the Microchip template. Legacy document number is RF01284.

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