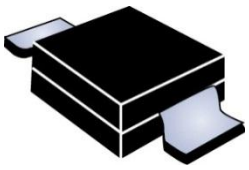
RoHS Available

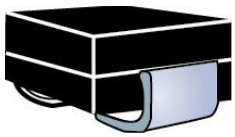
5 Amp Schottky Barrier Rectifier

DESCRIPTION

The HSM580, HSM590, and HSM5100 series provides a 5 Amp, 80V-100V Schottky surface mount rectifier in either J lead or gull wing configuration with low forward voltage and low leakage current. For critical applications requiring very fast switching, these higher voltage Schottkys with their "hot carrier" features provide extremely fast switching to replace conventional ultrafast rectifiers.



DO-215AB (SMCG) Package



DO-214AB (SMCJ) Package

NOTE: All SMC series are equivalent to prior SMM package identifications.

Important: For the latest information, visit our website http://www.microsemi.com.

FEATURES

- Schottky Barrier Rectifier
- Plastic Package
- Ruggedized Design
- 175°C Junction Temperature
- Guard Ring Protection
- High Current Capability
- V_{RRM} 80 to 100 Volts
- Surface Mount Packages
- RoHS compliant versions are available with an e3 suffix

APPLICATIONS / BENEFITS

- Silicon Schottky (hot carrier) rectifier for minimal t_{rr} and elimination of reverse-recovery oscillations to reduce need for EMI filtering
- For use in high-frequency switching power supplies, inverters, free wheeling, polarity protection, and "ORing" applications
- Low forward power loss and high efficiency

MAXIMUM RATINGS @ 25 ºC unless otherwise noted

Parameters/Test Conditions	Symbol	Value	Unit
Storage Temperature	T_{STG}	-55 to +175	ºC
Junction Temperature	T_J	-55 to +175	ºC
Thermal Resistance Junction-to-Ambient (1)	$R_{\Theta JA}$	80	ºC/W
Thermal Resistance Junction-to-Case	$R_{\Theta JL}$	22	ºC/W
Forward Surge Current (2)	I_{FSM}	200	A
Average Rectified Forward Current @ T_L = 75 ºC (Square wave)	$I_{F(AV)}$	5.0	A
Solder Temperature @ 10 s		260	°C

Notes: 1. On PCB with FR4 using 2 oz copper and recommended mounting pad size (see pad layout).
2. At 8.3 ms single half-sine waveform superimposed on rated load (JEDEC method).

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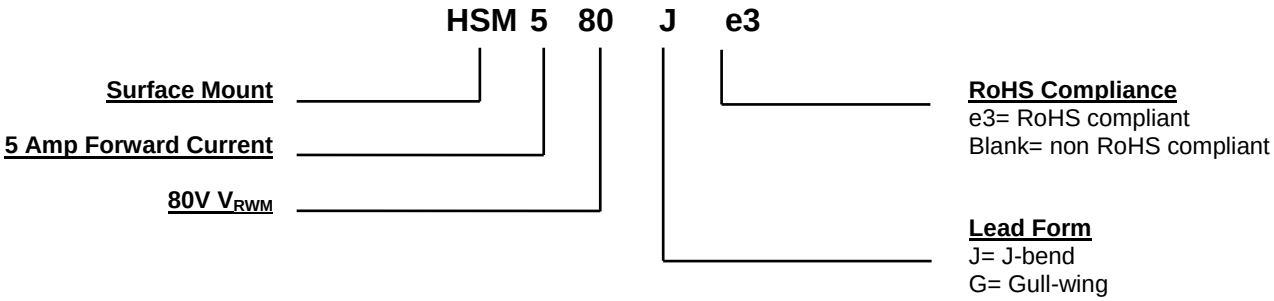
MECHANICAL and PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy body meeting UL94V-0.
- TERMINALS: RoHS compliant annealed matte-tin plating. Readily solderable per MIL-STD-750, method 2026.
- POLARITY: Indicated by cathode band
- TAPE-AND-REEL: Standard per EIA-481-B (add "TR" suffix to part number). Consult factory for quantities.
- WEIGHT: Approximately 0.22 grams
- See Package Dimensions on last page.

PART NOMENCLATURE



SYMBOLS & DEFINITIONS

Symbol	Definition
C_T	Total Capacitance: The total small signal capacitance between the diode terminals of a complete device.
I_F	Forward Current: The forward current dc value, no alternating component.
I_{FSM}	Maximum Forward Surge Current: The forward current, surge peak or rated forward surge current.
$I_{F(AV)}$	Average Rectified Forward Current: The current averaged over a full cycle with a 180 degree conduction angle (square wave).
I_R	Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature.
V_F	Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current.
V_R	Reverse Voltage: The reverse voltage dc value, no alternating component.
V_{RRM}	Repetitive Peak Reverse Voltage: The peak reverse voltage including all repetitive transient voltages but excluding all non-repetitive transient voltages.
V_{RWM}	Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range excluding all transient voltages (ref JESD282-B). Also sometimes known as PIV.

ELECTRICAL CHARACTERISTICS @ 25 ºC unless otherwise stated

PART NUMBER	Working Peak Reverse Voltage V_{RWM} Volts	Repetitive Peak Reverse Voltage V_{RRM} Volts	Reverse Current I_R @V_{RWM} µA	Max. Surge Current I_{FSM} @ 8A @ 8.3ms Amps	Peak Forward Voltage V_F @ 5 A V_{FM} Volts	Capacitance CT @ 5 V pF
	MAX	MAX	MAX	MAX	MAX	Typical
HSM580	80	80	250	200	.80	280
HSM590	90	90	250	200	.80	280
HSM5100	100	100	250	200	.80	280

GRAPHS

Figure 1
Typical Forward Characteristics

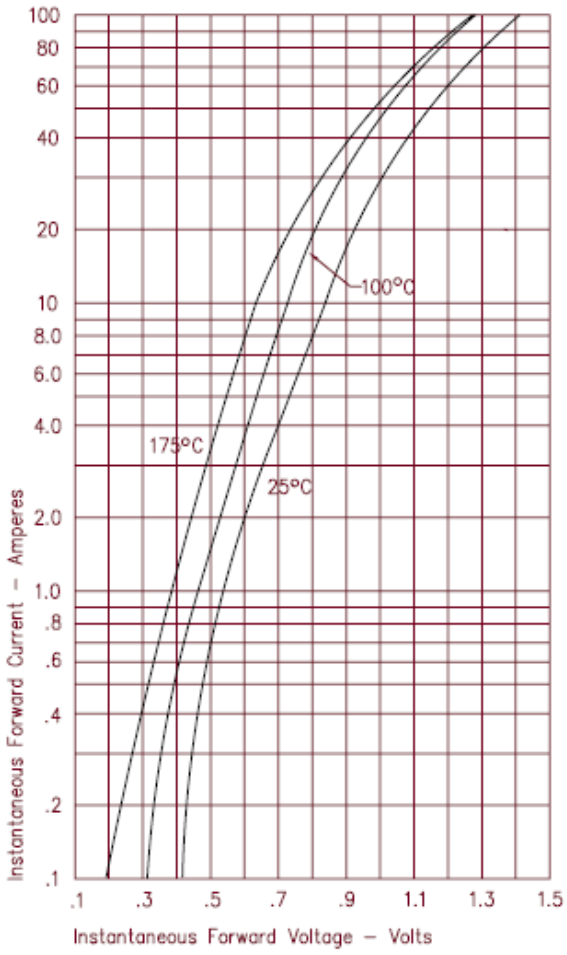


Figure 2
Typical Reverse Characteristics

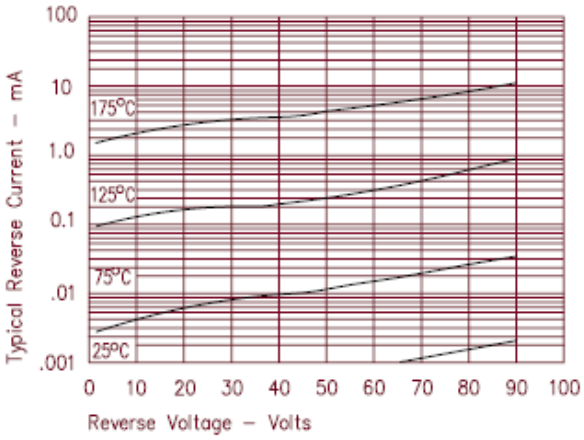


Figure 3
Typical Junction Capacitance

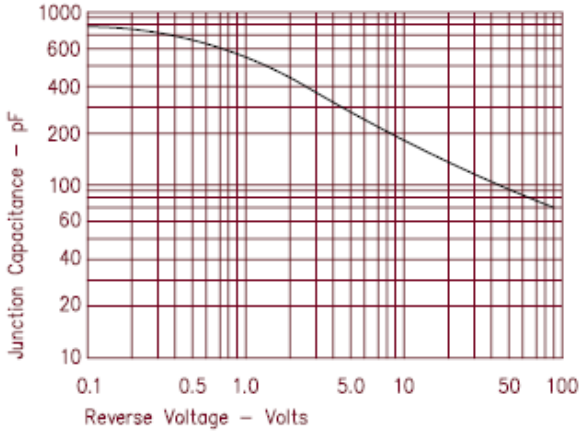


Figure 4
Forward Current Derating

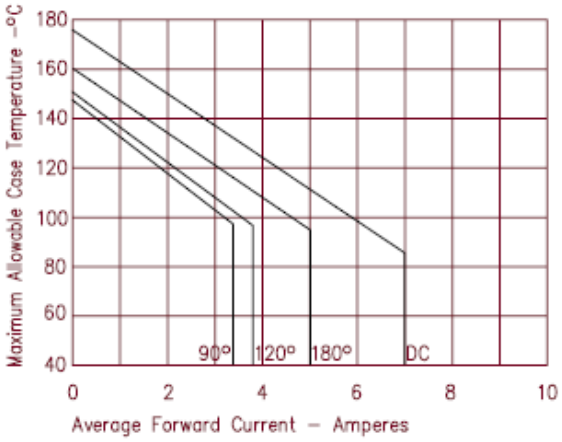
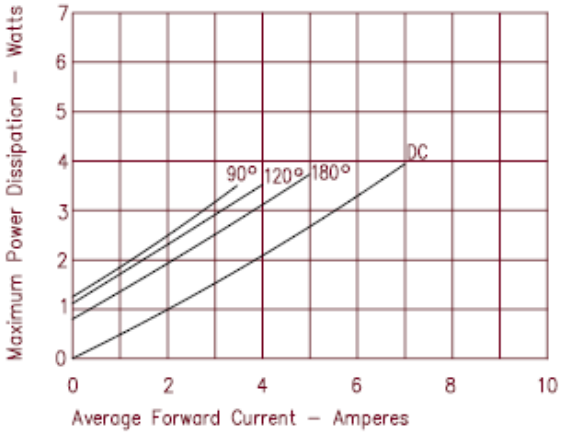
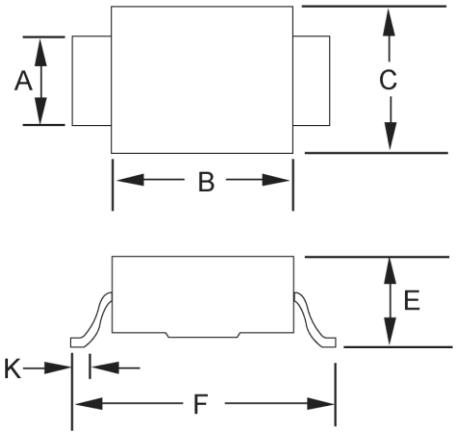


Figure 5
Maximum Power Dissipation

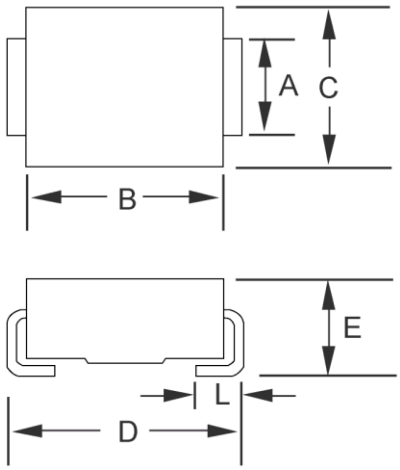


PACKAGE DIMENSIONS



SMCG (DO-215AB)

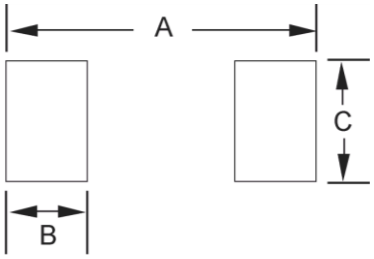
Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
A	.117	.123	2.97	3.12
B	.260	.280	6.60	7.11
C	.220	.245	5.59	6.22
E	.075	.095	1.91	2.41
F	.380	.400	9.65	10.16
K	.025	.040	0.640	1.02



SMCJ (DO-214AB)

Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
A	.117	.123	2.97	3.12
B	.260	.280	6.60	7.11
C	.220	.245	5.59	6.22
D	.307	.322	7.80	8.18
E	.075	.095	1.91	2.41
L	.030	.060	.760	1.52

PAD LAYOUT



SMCG (DO-215AB)		
Ltr	**Inch**	**Millimeters**
A	.510	12.95
B	.110	2.79
C	.150	3.81

SMCJ (DO-214AB)		
Ltr	**Inch**	**Millimeters**
A	.390	9.90
B	.110	2.79
C	.150	3.81