

Features

- Very Low Forward Voltage Drop
- Guard Ring Construction for Transient Protection
- High Conductance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([SDM40E20LSQ/AQ](#))**

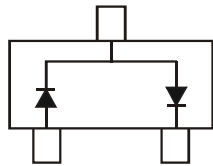
Mechanical Data

- Package: SOT23
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: See Diagram
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.008 grams (Approximate)

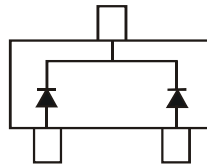
SOT23 (Standard)



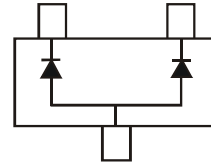
Top View



SDM40E20LS



SDM40E20LC



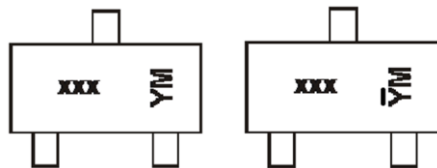
SDM40E20LA

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
SDM40E20LS-7-F	SOT23 (Standard)	3,000	Tape & Reel
SDM40E20LC-7	SOT23 (Standard)	3,000	Tape & Reel
SDM40E20LA-7	SOT23 (Standard)	3,000	Tape & Reel

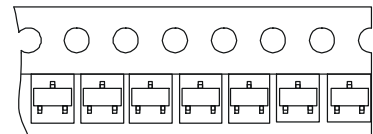
- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



xxx = Product Type Marking Code
KSW = SDM40E20LS
KWS = SDM40E20LC
KWA = SDM40E20LA

YM & YM = Date Code Marking
Y & Y = Year (ex: J = 2022)
M = Month (ex: D = Dec)



Date Code Key

Year	2002	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	O	...	J	K	L	M	N	O	P	R	S	T

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings @T_A = +25°C, unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{RRM}	20	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _R		
RMS Reverse Voltage	V _{R(RMS)}	14	V
Forward Continuous Current (Note 5)	I _{FM}	0.4	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed On Rated Load	I _{FSM}	2	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) (Note 6)	P _D	225 300	mW
Typical Thermal Resistance Junction to Ambient (Note 5) (Note 6)	R _{θJA}	444 333	
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +125	°C

Electrical Characteristics @T_A = +25°C, unless otherwise specified.

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Conditions
Reverse Breakdown Voltage (Note 7)	V _{(BR)R}	20	—	—	V	I _R = 0.5mA
Forward Voltage Drop	V _F	—	—	0.310 0.430	V	I _F = 0.1A I _F = 0.5A
Leakage Current (Note 7)	I _R	—	—	100 250	μA	V _R = 10V V _R = 20V
Total Capacitance	C _T	—	120	—	pF	f = 1MHz, V _R = 0V _{DC}

Notes: 5. Device mounted on FR-5 1.0 x 0.75 x 0.062 inch PCB pad layout.
6. Device mounted on Alumina PCB, 0.4 inch x 0.3 inch x 0.024 inch pad layout.
7. Short duration pulse test used to minimize self-heating effect.

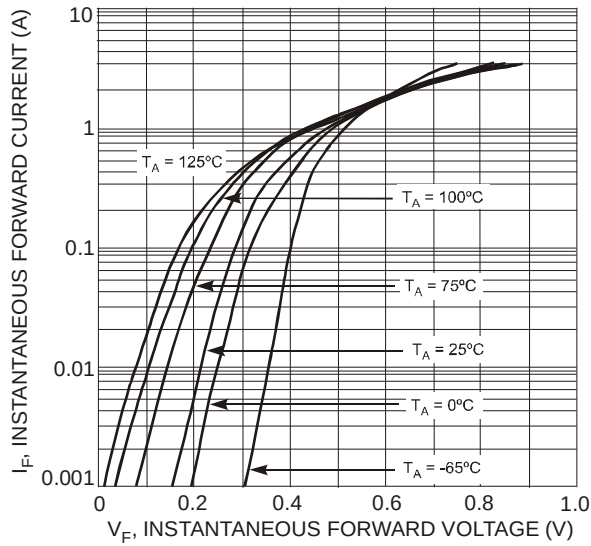


Fig. 1 Typical Forward Characteristics, Per Element

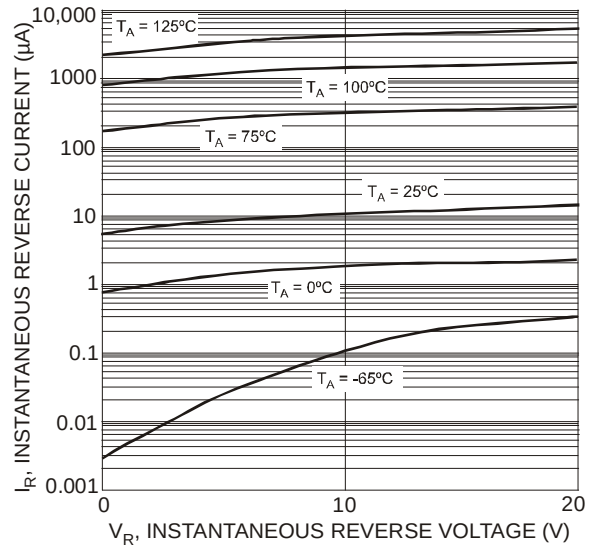


Fig. 2 Typical Reverse Characteristics, Per Element

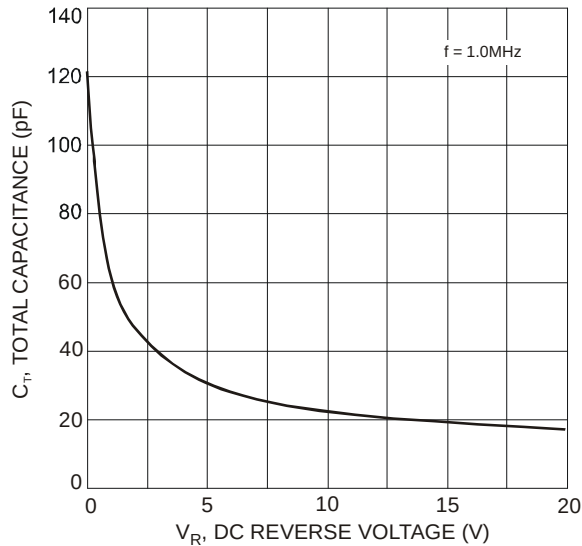


Fig. 3 Total Capacitance vs. Reverse Voltage, Per Element

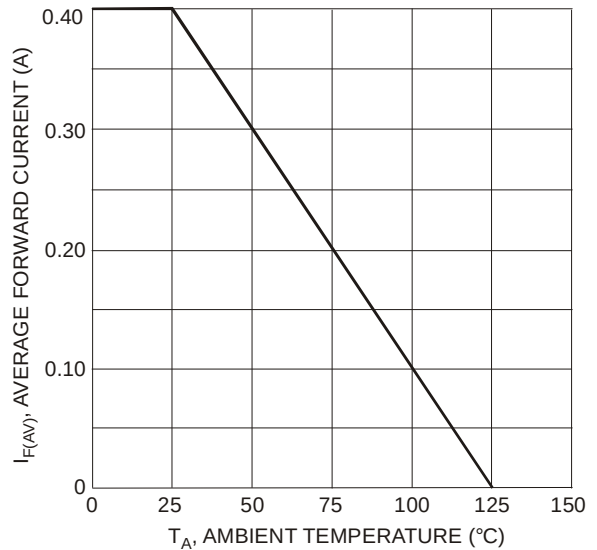
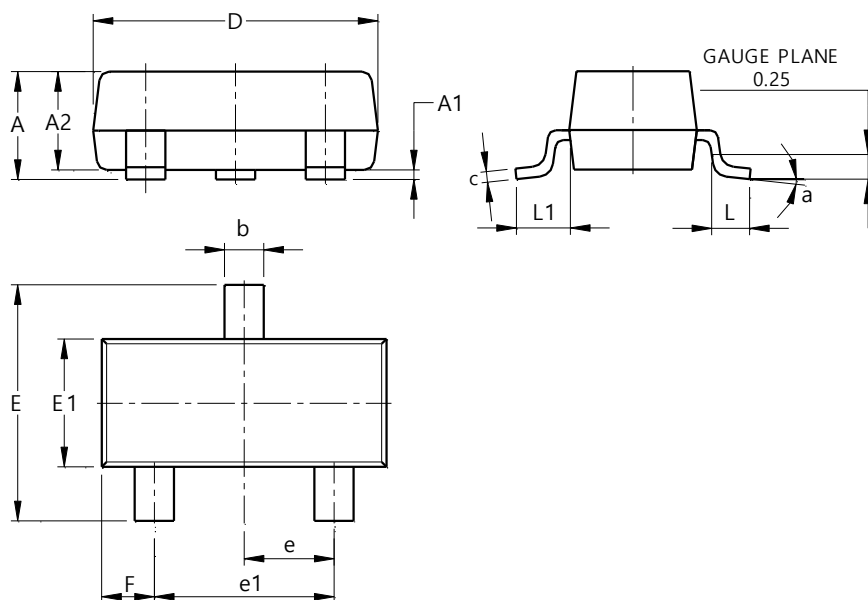


Fig. 4 Forward Current Derating Curve, Per Element

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23 (Standard)

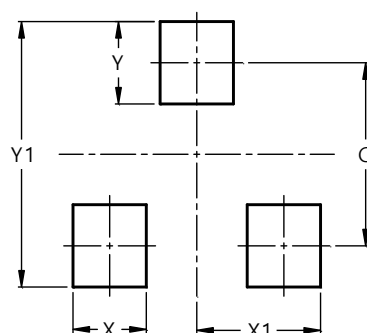


SOT23 (Standard)			
Dim	Min	Max	Typ
A	0.90	1.15	1.025
A1	0.00	0.10	0.05
A2	0.85	1.10	0.975
b	0.30	0.51	0.40
c	0.080	0.202	0.11
D	2.80	3.00	2.90
E	2.25	2.55	2.40
E1	1.20	1.40	1.30
e	0.89	1.03	0.915
e1	1.78	2.05	1.83
F	0.40	0.60	0.535
L1	0.45	0.61	0.55
L	0.25	0.55	0.40
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23 (Standard)



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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