

## Features

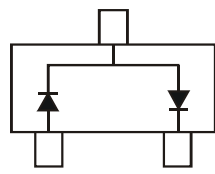
- Very Low Forward Voltage Drop
- Guard Ring Construction for Transient Protection
- High Conductance
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 4, 5 and 6)**

## Mechanical Data

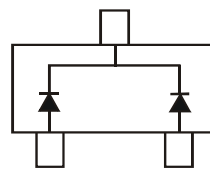
- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Polarity: See Diagram
- Leads: Solderable per MIL-STD-202, Method 208
- Terminals: SDM40E20L/S/A Finish — Matte Tin Finish annealed over Alloy 42 leadframe.  
SDM40E20LC Finish — Matte Tin Finish annealed over CDA194 leadframe.
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.008 grams (approximate)



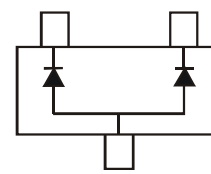
Top View



SDM40E20LS



SDM40E20LC



SDM40E20LA

## Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitance 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 1)	$I_{FM}$	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 1) (Note 2)	$P_D$	225	mW
		300	
Typical Thermal Resistance Junction to Ambient (Note 1) (Note 2)	$R_{\theta JA}$	444	$^\circ\text{C/W}$
		333	
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +125	$^\circ\text{C}$

## Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Breakdown Voltage (Note 3)	$V_{(BR)R}$	20	—	—	V	$I_R = 0.5\text{mA}$
Forward Voltage Drop	$V_F$	—	—	0.310	V	$I_F = 0.1\text{A}$
		—	—	0.430		$I_F = 0.5\text{A}$
Leakage Current (Note 3)	$I_R$	—	—	100	$\mu\text{A}$	$V_R = 10\text{V}$
		—	—	250		$V_R = 20\text{V}$
Total Capacitance	$C_T$	—	120	—	pF	$f = 1\text{MHz}, V_R = 0\text{VDC}$

- Notes:
1. Device mounted on FR-5 1.0 x 0.75 x 0.062 inch PCB pad layout.
  2. Device mounted on Alumina PCB, 0.4 inch x 0.3 inch x 0.024 inch pad layout.
  3. Short duration pulse test used to minimize self-heating effect.
  4. No purposefully added lead. Halogen and Antimony Free.
  5. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  6. Product manufactured with Green Molding Compound and does not contain Halogens or  $\text{Sb}_2\text{O}_3$  Fire Retardants.

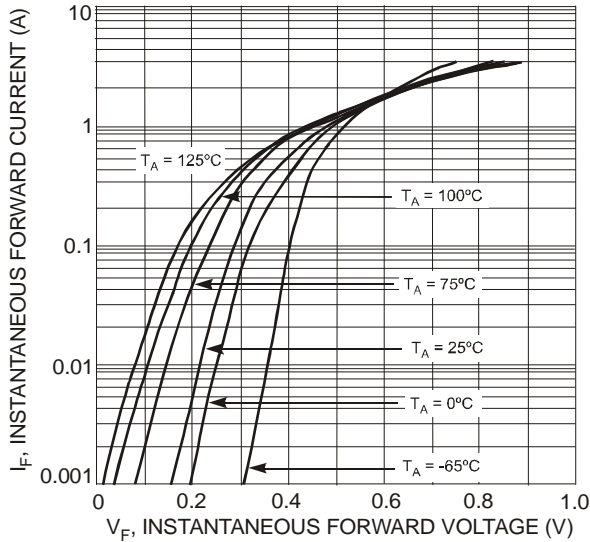


Fig. 1 Typical Forward Characteristics, Per Element

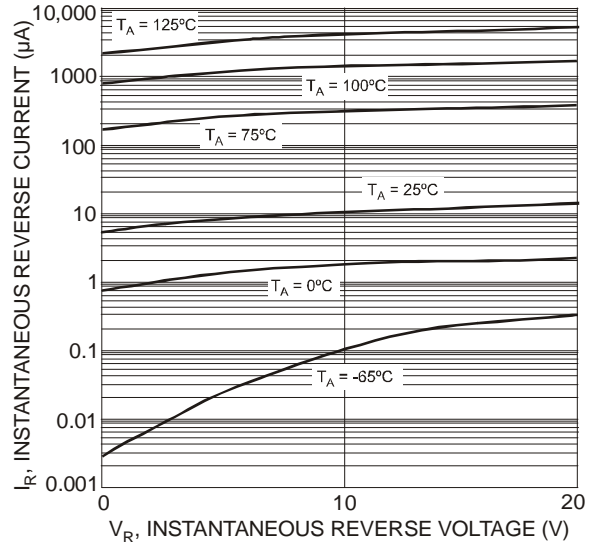


Fig. 2 Typical Reverse Characteristics, Per Element

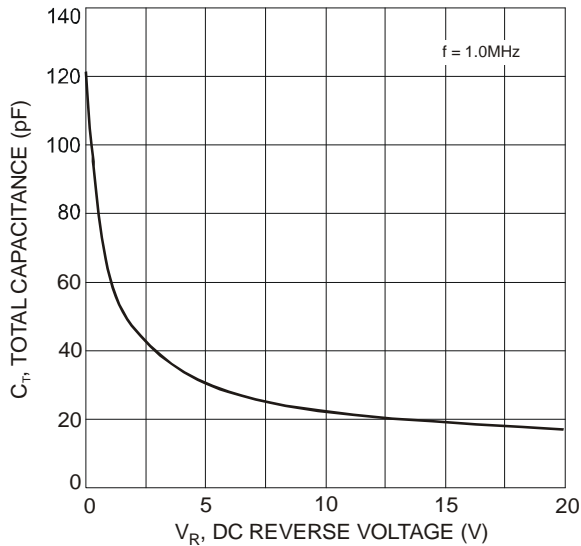


Fig. 3 Total Capacitance vs. Reverse Voltage, Per Element

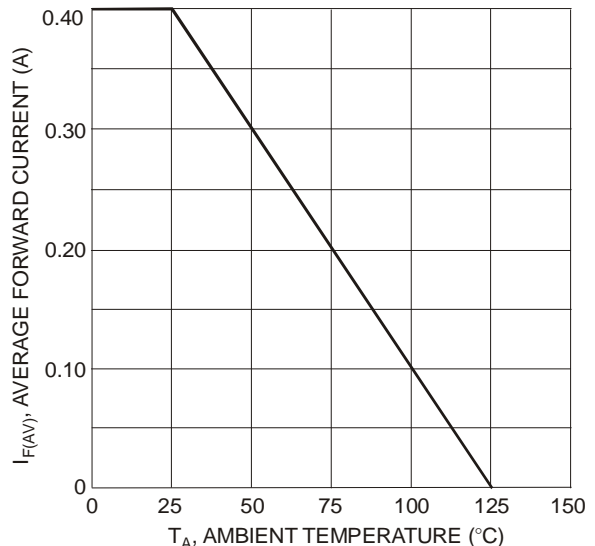


Fig. 4 Forward Current Derating Curve, Per Element

**Ordering Information** (Note 7)

Part Number	Case	Packaging
SDM40E20LS-7-F	SOT-23	3000/Tape & Reel
SDM40E20LC-7	SOT-23	3000/Tape & Reel
SDM40E20LA-7	SOT-23	3000/Tape & Reel

Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**

**KSW** **YM**

KSW = SDM40E20LS Product  
Type Marking Code  
YM = Date Code Marking  
Y = Year ex: T = 2006  
M = Month ex: 9 = September

**KWS** **YM**

KWS = SDM40E20LC Product  
Type Marking Code  
YM = Date Code Marking  
Y = Year ex: T = 2006  
M = Month ex: 9 = September

**KWA** **YM**

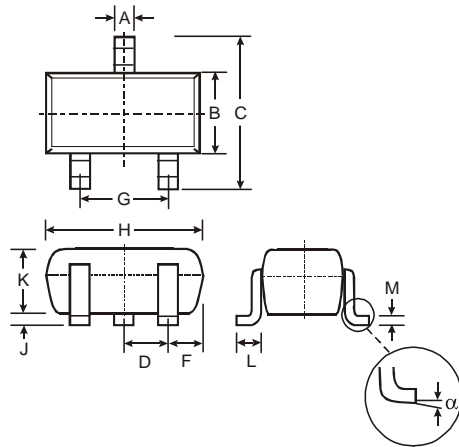
KWA = SDM40E20LA Product  
Type Marking Code  
YM = Date Code Marking  
Y = Year ex: T = 2006  
M = Month ex: 9 = September

Date Code Key

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	S	T	U	V	W	X	Y	Z	A	B	C

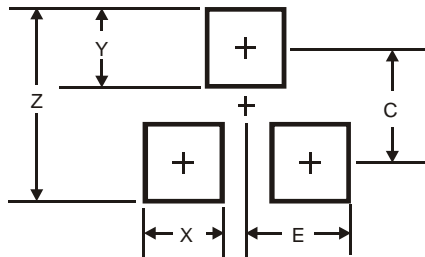
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Package Outline Dimensions**



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
F	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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