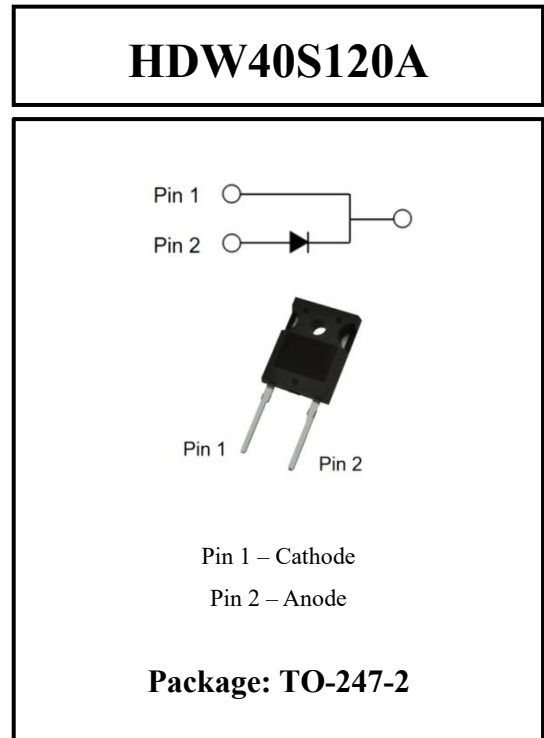


Silicon Carbide Schottky Diode (SiC SBD)

1. Product Features:

- Revolutionary semiconductor material - Silicon Carbide
- Temperature independent switching behavior
- Low forward voltage even at high operating temperature
- Excellent thermal performance
- Specified dv/dt ruggedness
- Qualified according to JEDEC for target applications
- Pb-free lead plating; RoHS compliant



2. Product Applications

- Solar Inverters
- Uninterruptable Power Supplies (UPS)
- Power Factor Correction (PFC)
- Switch Mode Power Supplies (SMPS)
- On Board Charger (OBC)
- EV Charger

3. Typical Performance Parameters

Tab.1. Typical Performance Parameters

Type	V_{DC}	I_F	Q_C	T_{vjmax}	Marking	Package
HDW40S120A	1200V	40A	226nC	175°C	HDW40S120A	TO-247-2

4. Maximum Ratings

Tab.2. Maximum Ratings

Parameters	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V
Surge Peak Reverse Voltage	V_{RSM}	1200	V
Continuous Forward Current , $T_c = 25^\circ\text{C}$ $T_c = 125^\circ\text{C}$	I_F	TBD 40	A
Repetitive Peak Forward Surge Current $T_c = 25^\circ\text{C}, t_p = 10\text{ms}$	I_{FRM}	280	
Non-Repetitive Peak Forward Surge Current $T_c = 25^\circ\text{C}, t_p = 10\text{ms}, \text{Half Sine Wave}$	I_{FSM}	350	
Non-Repetitive Peak Forward Current $T_c = 25^\circ\text{C}, t_p = 10\mu\text{s}$	$I_{F, max}$	2000	
Power Dissipation $T_c = 25^\circ\text{C}$ $T_c = 125^\circ\text{C}$	P_{tot}	273 91	W
Operating Junction	T_j	-55 to +175	°C
Storage Temperature	T_{stg}	-55 to +150	

5. Thermal Properties

Tab.3. Thermal Properties

Parameters	Symbol	Typ. value	Unit
Thermal resistance (junction - case)	$R_{th(j-c)}$	0.55	°C/W

6. Electrical Characteristics

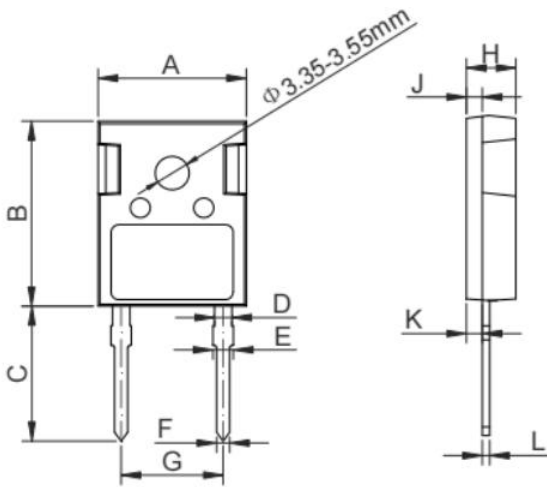
Tab.4. Static Characteristic ($T_{vj} = 25^{\circ}\text{C}$, unless otherwise specified)

Parameters	Symbol	Conditions	Min. value	Typ. value	Max. value	Unit
DC blocking voltage	V_{DC}	$T_j = 25^{\circ}\text{C}$	1200	-	-	V
Diode forward voltage	V_F	$I_F = 20\text{A}, T_j = 25^{\circ}\text{C}$	-	1.47	1.8	V
		$I_F = 20\text{A}, T_j = 175^{\circ}\text{C}$	-	2.10	3.0	
Reverse current	I_R	$V_R = 1200\text{V}, T_j = 25^{\circ}\text{C}$	-	10	100	μA
		$V_R = 1200\text{V}, T_j = 175^{\circ}\text{C}$	-	50	400	

Tab.5. Dynamic Characteristic ($T_{vj} = 25^{\circ}\text{C}$, unless otherwise specified)

Parameters	Symbol	Conditions	Min. value	Typ. value	Max. value	Unit
Total capacitive charge	Q_C	$V_R = 800\text{V}, Q_C = \int_0^{V_R} C(V)dV$	-	226	-	nC
Total Capacitance	C	$V_R = 0\text{V}, f = 1\text{MHz}$	-	3930	-	pF
		$V_R = 400\text{V}, f = 1\text{MHz}$	-	209	-	
		$V_R = 800\text{V}, f = 1\text{MHz}$	-	159	-	
Capacitance Stored Energy	E_C	$V_R = 800\text{V}$	-	120	-	μJ

7. Package Dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.50	15.80	16.10	0.610	0.622	0.634
B	20.80	21.00	22.20	0.819	0.827	0.835
C	19.70	20.00	20.30	0.776	0.787	0.799
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.90	2.10	2.30	0.075	0.083	0.091
F	1.00	1.20	1.40	0.039	0.047	0.055
G		10.88			0.428	
H	4.80	5.00	5.20	0.189	0.197	0.205
J	1.90	2.00	2.10	0.075	0.079	0.083
K	2.20	2.35	2.50	0.087	0.093	0.098
L	0.41	0.60	0.79	0.016	0.024	0.031

8. Version Information

Version No.	Status	Date changed	Version revision record
V1.0	Preview edition	2022/07	