onsemi

FFSP10120A

Description

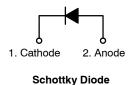
Silicon Carbide (SiC) Schottky Diodes use a completely new technology that provides superior switching performance and higher reliability compared to Silicon. No reverse recovery current, temperature independent switching characteristics, and excellent thermal performance sets Silicon Carbide as the next generation of power semiconductor. System benefits include highest efficiency, faster operating frequency, increased power density, reduced EMI, and reduced system size and cost.

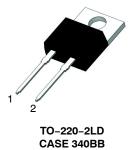
Features

- Max Junction Temperature 175°C
- Avalanche Rated 100 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery
- This Device is Pb–Free, Halogen Free/BFR Free and RoHS Compliant

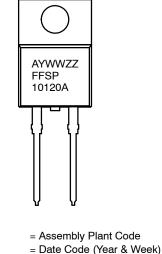
Applications

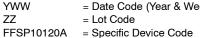
- General Purpose
- SMPS, Solar Inverter, UPS
- Power Switching Circuits





MARKING DIAGRAM





Α

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

FFSP10120A

Symbol	Parameter		Value	Unit
V _{RRM}	Peak Repetitive Reverse Voltage		1200	V
E _{AS}	Single Pulse Avalanche Energy (Note 1)		100	mJ
١ _F	Continuous Rectified Forward Current @ T _C < 148°C		10	А
I _{F,Max}	Non-Repetitive Peak Forward Surge Current	T _C = 25°C, 10 μs	850	А
		T _C = 150°C, 10 μs	800	А
I _{F,SM}	Non-Repetitive Forward Surge Current	Half-Sine Pulse, t _p = 8.3 ms	90	А
I _{F,RM}	Repetitive Forward Surge Current	Half-Sine Pulse, t _p = 8.3 ms	35	А
P _{TOT}	Power Dissipation	$T_{\rm C} = 25^{\circ}{\rm C}$	168	W
		$T_{\rm C} = 150^{\circ}{\rm C}$	28	W
T _J , T _{STG}	Operating and Storage Temperature Range		–55 to +175	°C

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^{\circ}C$ unless otherwise noted)

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. E_{AS} of 100 mJ is based on starting T_J = 25°C, L = 0.5 mH, I_{AS} = 20 A, V = 150 V.

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max	0.89	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Тур	Max	Unit
V _F	Forward Voltage	I _F = 10 A, T _C = 25°C	-	1.45	1.75	V
		I _F = 10 A, T _C = 125°C	-	1.7	2.0	
		I _F = 10 A, T _C = 175°C	-	2.0	2.4	
I _R	Reverse Current	$V_{\rm R}$ = 1200 V, $T_{\rm C}$ = 25°C	-	-	200	μΑ
		$V_{\rm R}$ = 1200 V, $T_{\rm C}$ = 125°C	-	-	300	
		$V_{\rm R}$ = 1200 V, $T_{\rm C}$ = 175°C	-	-	400	
Q _C	Total Capacitive Charge	V = 800 V	-	62	-	nC
С	Total Capacitance	V _R = 1 V, f = 100 kHz	-	612	-	pF
		V _R = 400 V, f = 100 kHz	-	58	-	1
		V _R = 800 V, f = 100 kHz	-	47	-	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

ORDERING INFORMATION

Part Number	Top Marking	Package	Packing Method	Quantity
FFSP10120A	FFSP10120A	TO-220-2L	Tube	50 Units

FFSP10120A

TYPICAL CHARACTERISTICS

 $(T_J = 25^{\circ}C \text{ UNLESS OTHERWISE NOTED})$

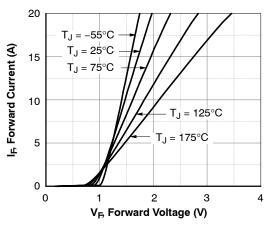
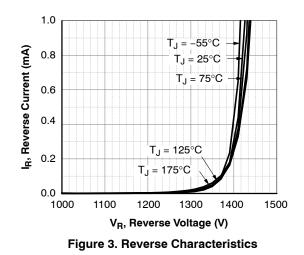
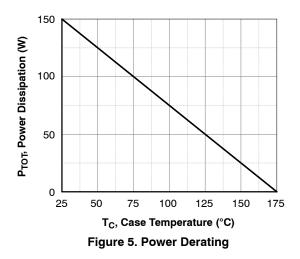


Figure 1. Forward Characteristics





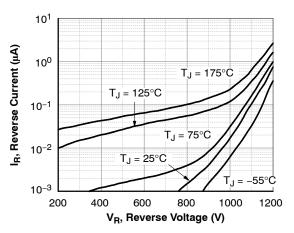


Figure 2. Reverse Characteristics

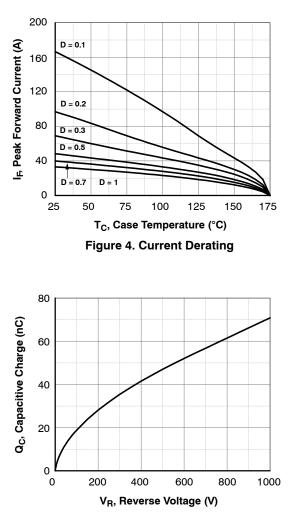


Figure 6. Capacitive Charge vs. Reverse Voltage

FFSP10120A

 $\label{eq:typical characteristics} \begin{array}{l} \textbf{Typical characteristics} (\texttt{CONTINUED}) \\ (T_J = 25^\circ\texttt{C} \text{ UNLESS OTHERWISE NOTED}) \end{array}$

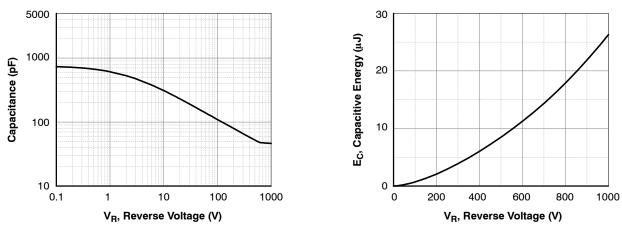
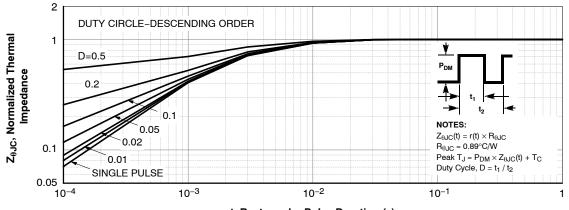


Figure 7. Capacitance vs. Reverse Voltage

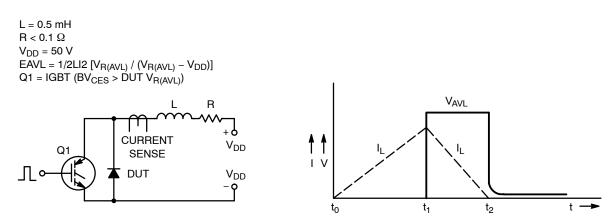




t, Rectangular Pulse Duration (s)

Figure 9. Junction-to-Case Transient Thermal Response Curve

TEST CIRCUIT AND WAVEFORMS

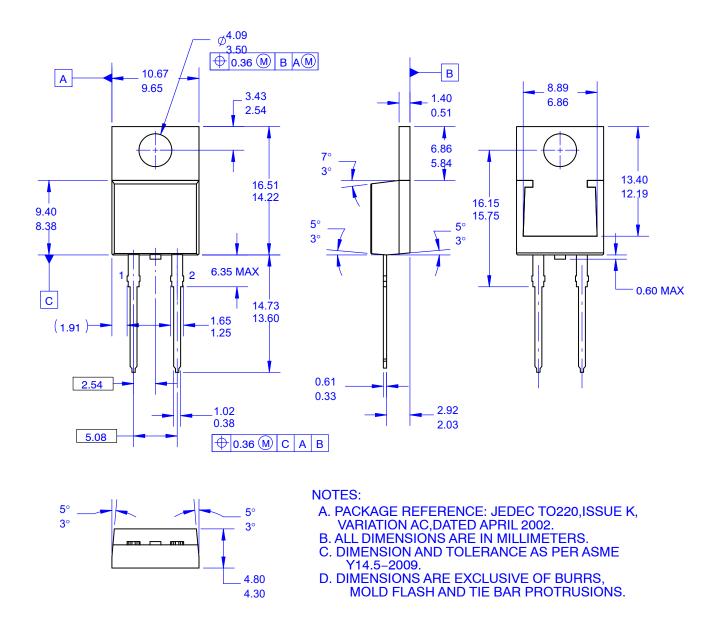






TO-220-2LD CASE 340BB ISSUE O

DATE 31 AUG 2016



DOCUMENT NUMBER:	98AON13832G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.		
DESCRIPTION:	TO-220-2LD		PAGE 1 OF 1	

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, ONSEMI, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi's product/patent coverage may be accessed at <u>www.onsemi.com/site/pdf/Patent_Marking.pdf</u>. onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or indental damages. Buyer is responsible for its products and applications using onsemi products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by onsemi. "Typical" parameters which may be provided in onsemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. onsemi does not convey any license under any of its intellectual property rights nor the rights of others. onsemi products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification. Buyer shall indemnify and hold onsemi and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs,

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation onsemi Website: www.onsemi.com

ONLINE SUPPORT: <u>www.onsemi.com/support</u> For additional information, please contact your local Sales Representative at <u>www.onsemi.com/support/sales</u>