1200V, 7.5A SILICON CARBIDE SiC SCHOTTKY DIODE

FEATURES

▲ High Surge Current Capability SiC Schottky
▲ Maximum Operating Junction Temperature over 175°C
▲ Zero Reverse and Forward Recovery
▲ Fast and Temperature-independent Switching
▲ Positive Temperature Coefficient on V_F

ADVANTAGES AND BENEFITS

▲ Extremely Low Standby and Switching Power Losses
▲ Higher Efficiency than when using Si Diodes
▲ High Frequency Operation
▲ Very Low Heat Sink Requirements
▲ Paralleling of Devices Without Thermal Runaway

DESCRIPTION

KE12DJ08 is a high performance 1200V, 7.5A Silicon Carbide (SiC) Schottky with enhanced surge current capabilities, able to operate at high frequencies and temperatures in excess 175°C. SiC Schottky diodes offer zero reverse and forward recovery, making them ideal for high frequency and high efficiency applications, with minimum heat sinking requirements.

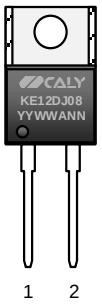
APPLICATIONS

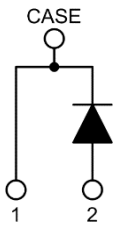
▲ Rectification, Voltage Blocking, Boost and Free Wheeling
▲ Switching Mode Power Supplies (SMPS)
▲ Battery chargers (EV, OBC, computers)
▲ Power Factor Correction (PFC)
▲ Uninterruptible Power Supplies (UPS)
▲ Wind Turbine and Solar Inverters
▲ Motor Drives
▲ High Voltage Multipliers
▲ Induction Heating
▲ Snubbers

KEY PERFORMANCE

Parameter	Value
V_{RRM}	1200V
I_F	7.5A
Q_C	55nC

DIE OUTLINE





QUICK ORDERING INFORMATION

Part Number	Package	Marking
KE12DJ08B	Bare die	
KE12DJ08W	Wafer	
KE12DJ08T20	TO-220AC (2L)	KE12DJ08
KE12DJ08T52	TO-252-2L (DPAK)	KE12DJ08

Other packages and packaging configurations available and also possible upon request.

ABSOLUTE MAXIMUM RATINGS

Unless otherwise stated, specification applies for T_C=25°C.

Parameter	Symbol	Values	Unit	Note/Test Condition
DC Blocking Voltage	V_R	1200	V	
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	T_J=25°C
Surge Peak Reverse Voltage	V_{RSM}	1200	V	
Continuous Forward Current	I_F	14.5 7.5	A	T_C=135°C T_C=161°C
Repetitive Peak Forward Surge Current	I_{FRM}	65	A	T_C=25°C, t_p=10ms half sinewave
Non-repetitive Peak Forward Surge Current	I_{FSM}	190	A	T_C=25°C, t_p=10ms, pulse
Power Dissipation	P_{Tot}	150 25		T_C=25°C T_C=150°C
Operating Temperature Range	T_J	-55 to +175	°C	
Storage Temperature Range	T_{STG}	-55 to +175	°C	

© 2019 CALY Technologies. All rights reserved

ELECTRICAL CHARACTERISTICS

Unless otherwise stated, specification applies for -55°C<T_J<175°C.

Parameter	Symbol	Values			Unit	Note/Test Condition	
		Min	Typ	Max			
Forward Voltage	V_F		1.45 1.85	1.65 2.15	V	T_J=25°C T_J=175°C	I_F=7.5A
Reverse Current	I_R		2 35	120	µA	T_J=25°C T_J=175°C	V_R=1200V
Total Capacitive Charge	Q_C	-	102	-	nC	V_R=800V	T_J=25°C
Total Capacitance	C		920 91 68		pF	V_R=1V V_R=400V V_R=800V	f=1MHz, T_J=25°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Values			Unit	Note/Test Condition
		Min	Typ	Max		
Junction-case Thermal Resistance	R_{TH-JC}		0.8	1.0	°C/W	

TYPICAL PERFORMANCE

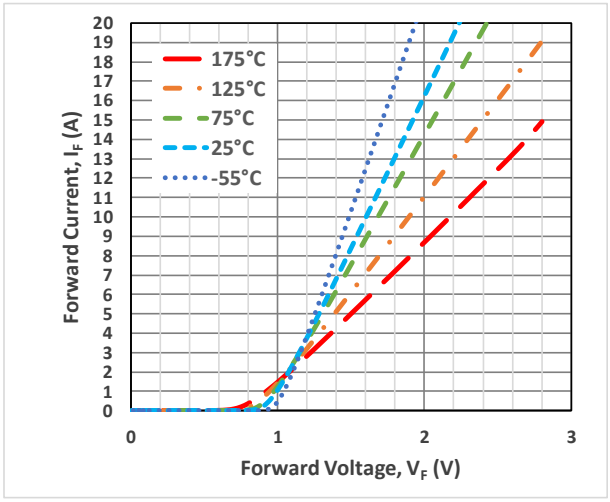


Fig 1. Typical Forward I-V characteristics versus T_J.

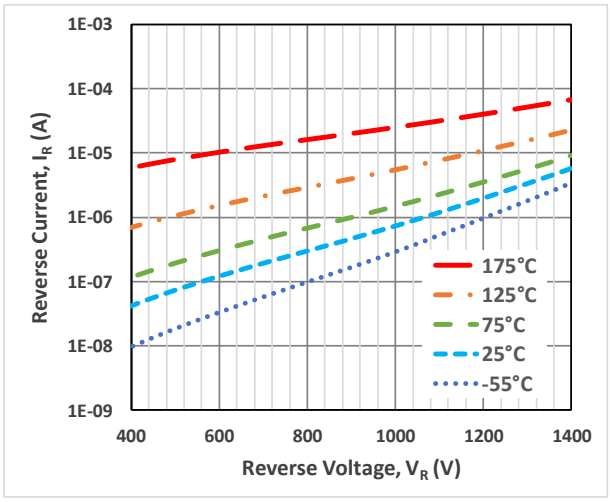


Fig 2. Typical Reverse I-V characteristics versus T_J.

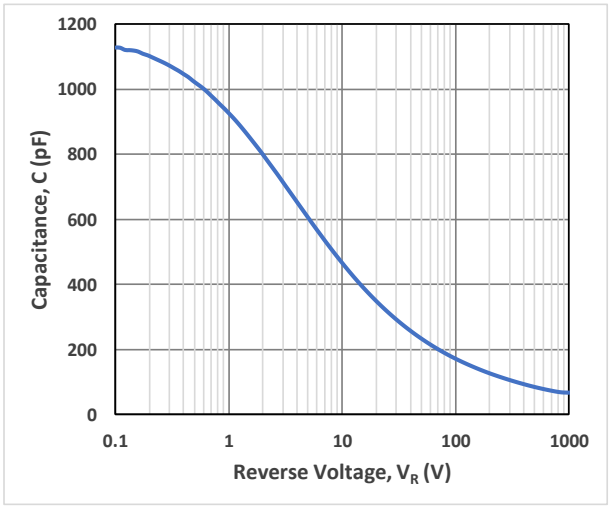


Fig 3. Diode Capacitance C(pF) versus reverse voltage.

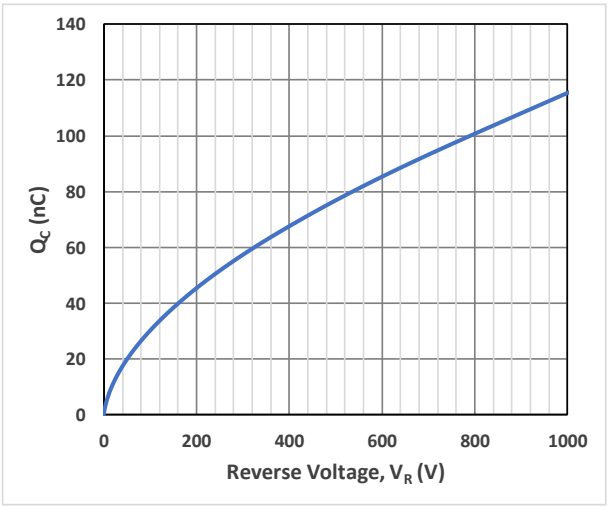


Fig 4. Typical capacitive charge (nC) versus reverse voltage.

© 2019 CALY Technologies. All rights reserved

DETAILED ORDERING INFORMATION

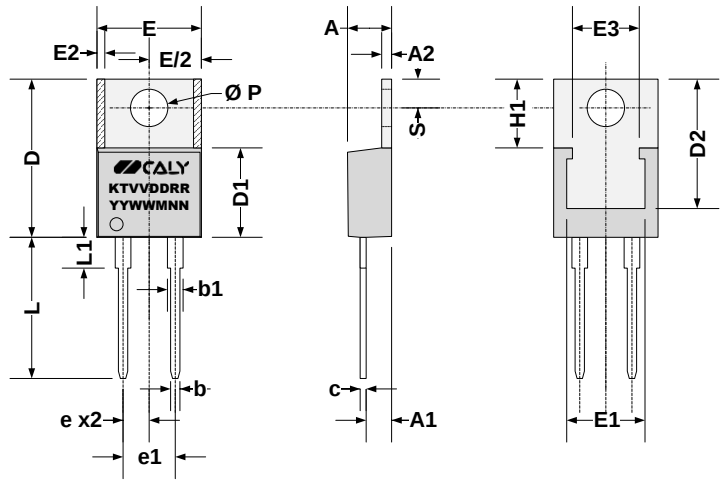
K	E	12	DJ	08	T20
Source K = CALY Technologies	Temperature range: E = -55°C to +175°C	Rated Voltage: 12 = 1200V	Device / Type DJ = Diode / JBS (MPS)	Rated Current: 08 = 7.5A	Package: T20 = TO-220-2L

Part Number	Temperature Range	Package	Pin Count	Marking
KE12DJ08B	-55°C to +175°C	Bare die		
KE12DJ08W	-55°C to +175°C	Wafer		
KE12DJ08T20	-55°C to +175°C	TO-220AC (2L)	2	KE12DJ08
KE12DJ08T52	-55°C to +175°C	TO-252-2L (DPAK)	2	KE12DJ08

Other packages, packaging configurations and finishing materials possible upon request. MOQ may apply.

PACKAGE OUTLINES

TO-220AC-2LD



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4,32	4,57	0,170	0,180
A1	2,59	2,74	0,102	0,108
A2	1,14	1,40	0,045	0,055
b	0,87	1,00	0,034	0,039
b1	1,23	1,36	0,048	0,054
c	0,36	0,40	0,014	0,016
D	14,71	15,31	0,579	0,603
D1	8,51	8,76	0,335	0,345
D2	12,34	12,45	0,486	0,490
E	10,13	10,24	0,399	0,403
E1	7,57	7,68	0,298	0,302
E2		0,76	0,000	0,030
E3	6,45	6,56	0,254	0,258
e	2.54 BSC		0.100 BSC	
e1	5,03	5,13	0,198	0,202
H1	6,20	6,55	0,244	0,258
L	13,72	14,73	0,540	0,580
L1	3,10	3,85	0,122	0,152
ΦP	3,71	0,37	0,146	0,015
S	2,54	0,31	0,100	0,012

Unique Lot Assembly Code	
YY	Last two digits of assembly year (e.g. 16 = 2016).
WW	Assembly week (01 to 52).
M	Assembly location code.
NN	Assembly lot code (01 to 99).

REVISION HISTORY

Revision	Date	Description
1A	2019-Sep-26	First release
1B	2019-Nov-20	Amended typos in current rating.

© 2019 CALY Technologies. All rights reserved

IMPORTANT NOTICE & DISCLAIMER

Information in this document supersedes and replaces all information previously supplied. Information in this document is provided solely in connection with CALY Technologies products.
The information contained herein is believed to be reliable. CALY Technologies makes no warranties regarding the information contained herein. CALY Technologies assumes no responsibility or liability whatsoever for any of the information contained herein. CALY Technologies assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. CALY Technologies reserves the right to make changes, corrections, modifications or improvements to this document and the information herein without notice. Customers should obtain and verify the latest relevant information before placing orders for CALY Technologies products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.
Unless expressly approved in writing by an authorized representative of CALY Technologies, CALY Technologies products are not designed, authorized or warranted for use in military, aircraft, space, life-saving, or life-sustaining applications, nor in products or systems where failure or malfunction may result in personal injury, death, or property or environmental damage.
General Sales Terms & Conditions apply.

CONTACT US

For more information on CALY Technologies' products, technical support or ordering:

Website: caly-technologies.com
Email: sales@caly-technologies.com
info@caly-technologies.com

CALY Technologies SAS
CS52132
62 Bd Niels Bohr, Bat CEI2
69603 Villeurbanne Cedex
France

© 2019 CALY Technologies. All rights reserved