

1200V,10A SILICON CARBIDE SCHOTTKY DIODE

FEATURES

- ▲ 1.2 kV Schottky Rectifier
- ▲ Maximum Operating Junction Temperature 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

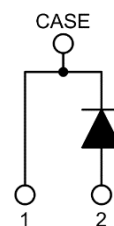
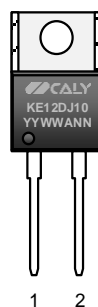
APPLICATIONS

- ▲ Rectification, Boost and Free Wheeling
- ▲ Switching Mode Power Supplies (SMPS)
- ▲ Battery chargers (EV, OBC, computers)
- ▲ Power Factor Correction (PFC)
- ▲ Uninterruptible Power Supplies (UPS)
- ▲ High Voltage Multipliers
- ▲ Induction Heating

KEY PERFORMANCE

Parameter	Value
V_{RRM}	1200V
I_F	10A
Q_C	47nC

PACKAGING



ORDERING INFORMATION

Part Number	Package	Marking
KE12DJ10T20	TO-220AC (2L)	KE12DJ10

Other packages and packaging configurations possible upon request.

ABSOLUTE MAXIMUM RATINGS

$T_C = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Values	Unit	Note/Test Condition
DC Blocking Voltage	V_R	1200	V	
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	
Surge Peak Reverse Voltage	V_{RSM}	1200	V	
Continuous Forward Current	I_F	17 10	A	$T_C=125^\circ\text{C}$ $T_C=155^\circ\text{C}$
Repetitive Peak Forward Surge Current	I_{FRM}	70 63	A	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$ half sinewave $T_C=110^\circ\text{C}$, $t_p=10\text{ms}$ half sinewave
Non-repetitive Peak Forward Surge Current	I_{FSM}	90 80	A	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$ half sinewave $T_C=110^\circ\text{C}$, $t_p=10\text{ms}$ half sinewave
Power Dissipation	P_{tot}	156 68	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$
i^2t value	$\int i^2 dt$	40.5 32	A ² s	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$ half sinewave $T_C=110^\circ\text{C}$, $t_p=10\text{ms}$ half sinewave
Operating Temperature Range	T_J	-55 to +175	°C	
Storage Temperature Range	T_{STG}	-55 to +175	°C	

Caution: 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.

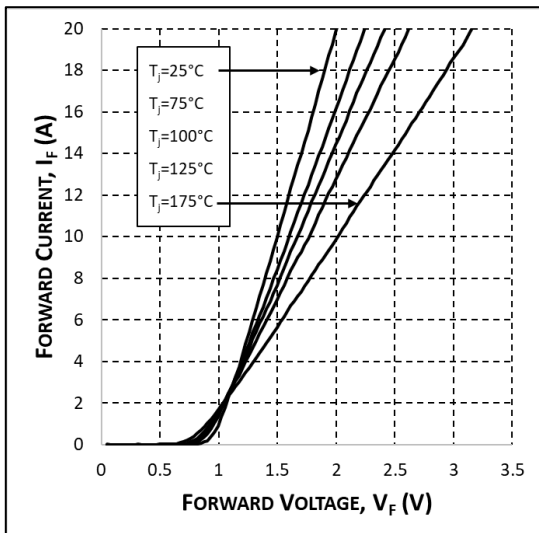
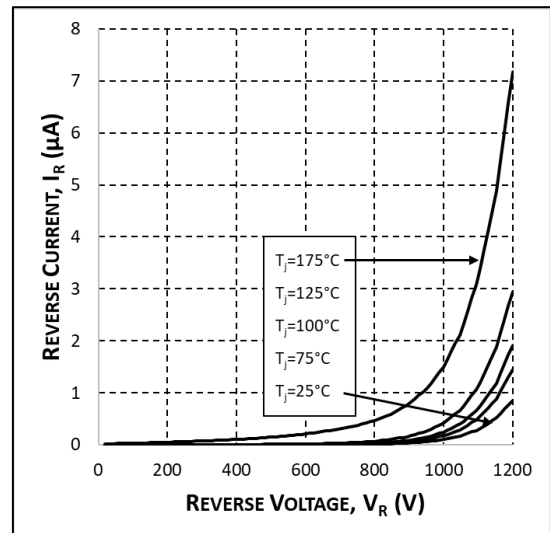
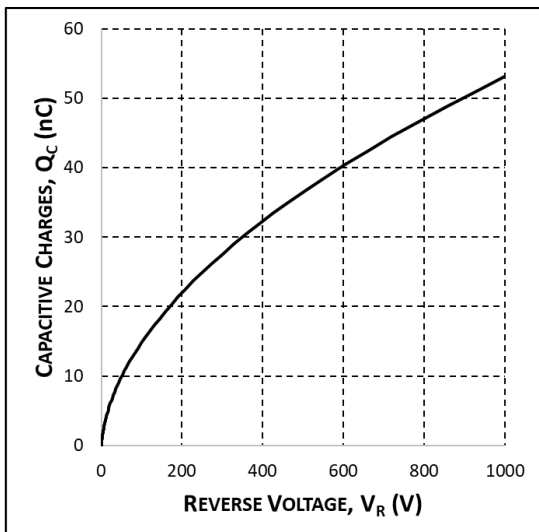
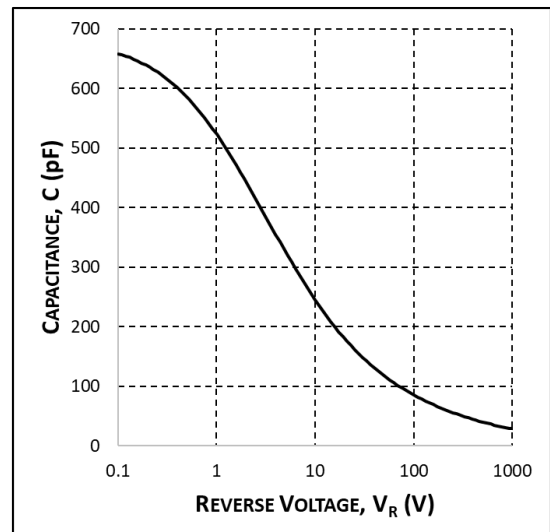
ELECTRICAL CHARACTERISTICS

 Temperature range: $-55^{\circ}\text{C} < T_J < 175^{\circ}\text{C}$, unless otherwise stated.

Parameter	Symbol	Value		Unit	Note/Test Condition
		Typ	Max		
Forward Voltage	V_F	1.5 2.1	1.8	V	$I_F=10\text{A}$, $T_J=25^{\circ}\text{C}$ $I_F=10\text{A}$, $T_J=175^{\circ}\text{C}$
Reverse Current	I_R	1 20	100 400	μA	$V_R=1200\text{V}$, $T_J=25^{\circ}\text{C}$ $V_R=1200\text{V}$, $T_J=175^{\circ}\text{C}$
Total Capacitive Charge	Q_C	47		nC	$V_R=800\text{V}$, $T_J=25^{\circ}\text{C}$, $Q_C(V_R) = \int_0^{V_R} C(V)dV$
Total Capacitance	C	660 45 32		pF	$V_R=0.1\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R=400\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R=800\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$
Capacitance Stored Energy	E_C	10		μJ	$V_R=800\text{V}$, $T_J=25^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Parameter	Symbol	Values Typ	Unit	Note/Test Condition
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.9	$^{\circ}\text{C}/\text{W}$	

TYPICAL PERFORMANCE

Fig 1. Typical Forward I-V characteristics

Fig 2. Typical Reverse I-V characteristics

Fig 3. Total Capacitive Charges vs. Reverse Voltage

Fig 4. Capacitance vs. Reverse Voltage

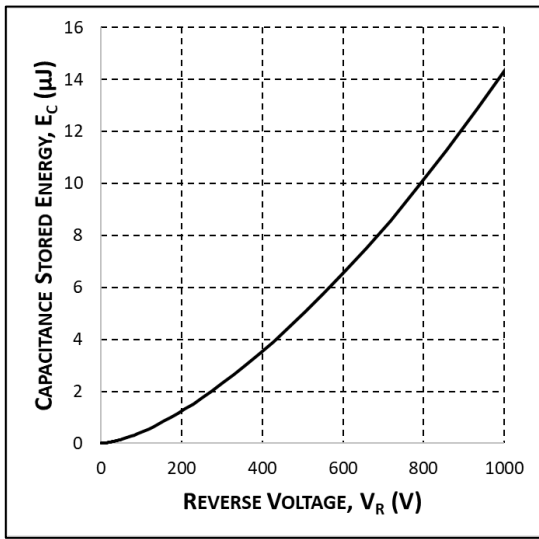


Fig 5. Typical Capacitance Stored Energy vs. Reverse Voltage

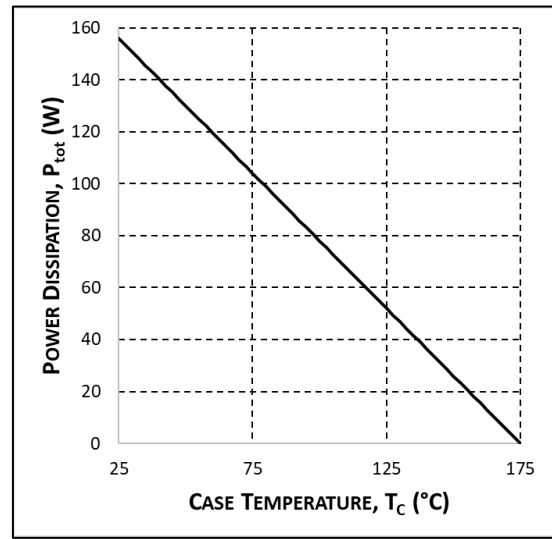
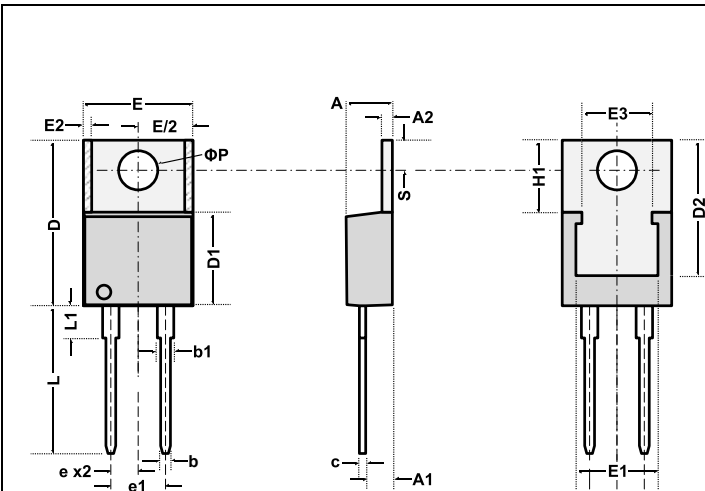


Fig 6. Power Derating

PACKAGE OUTLINE

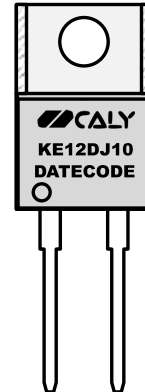
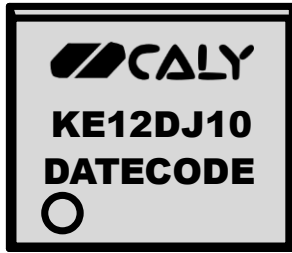
TO-220AC-2LD



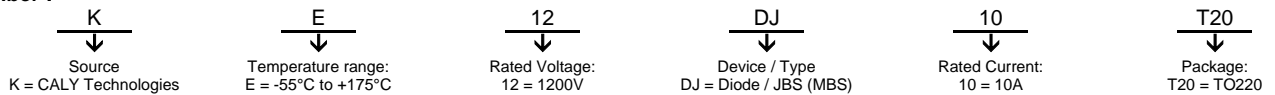
* Exposed pad connected to cathode

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
Φ P	3,71	0,37	0,146	0,015
S	2,54	0,31	0,100	0,012

Other packages, packaging configurations and finishing materials available upon request.

PRODUCT MARKING


Part Number	Marking
KE12DJ10T20	KE12DJ10

Part Number :

Unique assembly date 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	2020-07-03	First issue
1B	2020-08-21	Correct table "Electrical characteristics", page 2, 3rd line (Reverse Current), 2nd test condition temperature $T_J=25^\circ\text{C}$ to $T_J=175^\circ\text{C}$

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 CEI3

69603 Villeurbanne Cedex