

### 3300V, 2A 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

KE33DJ02 is a high performance 3300V, 2A 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.

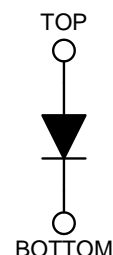
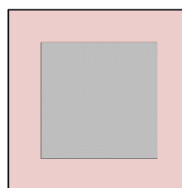
#### APPLICATIONS

- ▲ Rectification, Voltage Blocking, Boost and Free Wheeling
- ▲ Switching Mode Power Supplies (SMPS)
- ▲ 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
$V_{RRM}$	3300V
$I_F$	2A
$Q_C$	36nC

#### DIE OUTLINE



Top: anode  
Bottom : cathode

#### QUICK ORDERING INFORMATION

Part Number	Package	Marking
KE33DJ02B	Bare die	
KE33DJ02T47	TO-247-2L	KE33DJ02

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

#### ABSOLUTE MAXIMUM RATINGS

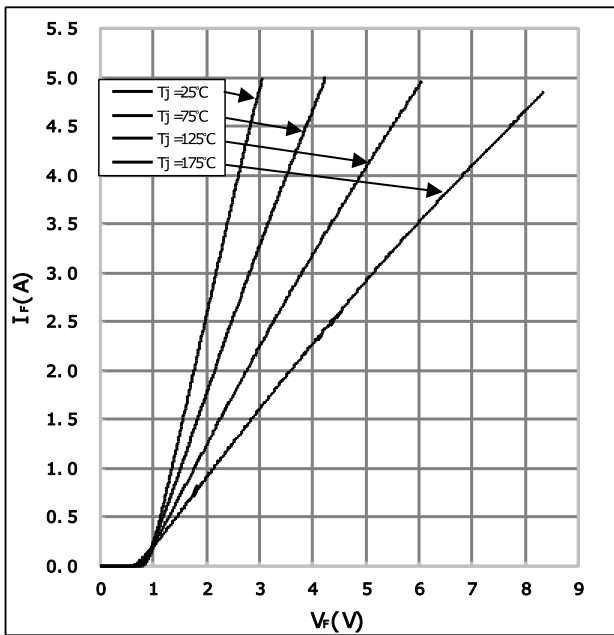
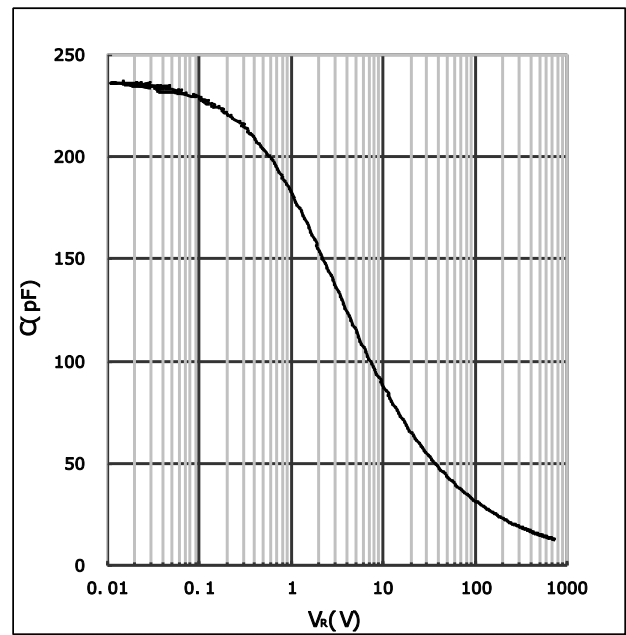
Unless otherwise stated, specification applies for  $T_C=25^\circ\text{C}$ .

Parameter	Symbol	Values	Unit	Note/Test Condition
DC Blocking Voltage	$V_R$	3300	V	
Repetitive Peak Reverse Voltage	$V_{RRM}$	3300	V	$T_J=25^\circ\text{C}$
Surge Peak Reverse Voltage	$V_{RSM}$	3300	V	
Continuous Forward Current	$I_F$	2	A	$T_C=165^\circ\text{C}$ , $R_{\theta JC}<1.3^\circ\text{C/W}$
Repetitive Peak Forward Surge Current	$I_{FRM}$	10	A	$T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ half sinewave
Non-repetitive Peak Forward Surge Current	$I_{FSM}$	60	A	$T_C=25^\circ\text{C}$ , $t_p=10\mu\text{s}$ , pulse
Operating Temperature Range	$T_J$	-55 to +175	$^\circ\text{C}$	
Storage Temperature Range	$T_{STG}$	-55 to +175	$^\circ\text{C}$	

**ELECTRICAL CHARACTERISTICS**

 Unless otherwise stated, specification applies for  $-55^{\circ}\text{C} < T_J < 175^{\circ}\text{C}$ .

Parameter	Symbol	Min	Values		Unit	Note/Test Condition	
			Typ	Max			
Forward Voltage	$V_F$		1.75 3.56	1.8 3.8	V	$T_J=25^{\circ}\text{C}$ $T_J=175^{\circ}\text{C}$	$I_F=2\text{A}$
Reverse Current	$I_R$		55 90	150 350	$\mu\text{A}$	$T_J=25^{\circ}\text{C}$ $T_J=175^{\circ}\text{C}$	$V_R=3300\text{V}$
Total Capacitive Charge	$Q_C$	-	36	-	nC	$V_R=3300\text{V}$ , $I_F=2\text{A}$ $di/dt=200\text{A}/\mu\text{s}$	$T_J=25^{\circ}\text{C}$
Total Capacitance	C		240 10.9 8.3	250 11.6 8.8	pF	$V_R=1\text{V}$ $V_R=1000\text{V}$ $V_R=2000\text{V}$	$f=1\text{MHz}$ , $T_J=25^{\circ}\text{C}$

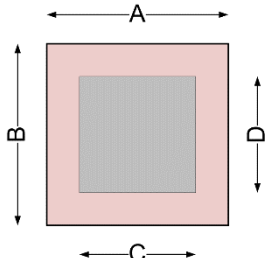
**TYPICAL PERFORMANCE**

**Fig 1. Typical Forward I-V characteristics vs  $T_J$ .**

**Fig 2. Diode Capacitance C(pF) versus reverse voltage.**
**DETAILED ORDERING INFORMATION**

K ↓ Source K = CALY Technologies	E ↓ Temperature range: E = $-55^{\circ}\text{C}$ to $+175^{\circ}\text{C}$	33 ↓ Rated Voltage: 33 = 3300V	DJ ↓ Device / Type DJ = Diode / JBS (MPS)	02 ↓ Rated Current: 02 = 2A	B ↓ Package: B = Bare Die
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Part Number	Temperature Range	Package	Pin Count	Marking
KE33DJ02B	$-55^{\circ}\text{C}$ to $+175^{\circ}\text{C}$	Bare die		
KE33DJ02T47	$-55^{\circ}\text{C}$ to $+175^{\circ}\text{C}$	TO-247-2L	2	KE33DJ02

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

**BARE DIE INFORMATION**

	Ref.	Dimensions	
		Millimeters	Inches
	A	2.08	0.082
	B	2.08	0.082
	C	0.95	0.037
	D	0.95	0.037
	Top	Al (4 μm)	
Bottom	Ag (1.2 μm)		

**REVISION HISTORY**

Revision	Date	Description
1A	2018-Aug-09	First release
1B	2018-Aug-23	Removed thermal resistance information of packaged version.
1C	2018-Aug-27	Amended typo in part reference. Included thermal information in Max Continuous Forward Current.

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