

### 1200V, 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

KE12DJ02 is a family of high performance 1200V, 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.

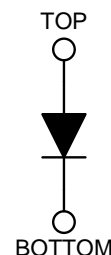
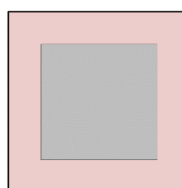
#### APPLICATIONS

- ▲ 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
$V_{RRM}$	1200V
$I_F (T_C=25^\circ\text{C})$	6A
$I_F (T_C=165^\circ\text{C})$	2A
$Q_C$	20nC

#### DIE OUTLINE



Top: anode  
Bottom : cathode

#### QUICK ORDERING INFORMATION

Part Number	Package	Marking
KE12DJ02B	Bare Die	
KE12DJ02T52	TO-252-2L (DPAK)	KE12DJ02

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	$V_R$	1200	V	
Repetitive Peak Reverse Voltage	$V_{RRM}$	1200	V	$T_J=25^\circ\text{C}$
Surge Peak Reverse Voltage	$V_{RSM}$	1200	V	
Continuous Forward Current	$I_F$	2	A	$T_C=165^\circ\text{C}$ , $R_{\theta JC}<2.65^\circ\text{C/W}$
Repetitive Peak Forward Surge Current	$I_{FRM}$	15	A	$T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ half sinewave
Non-repetitive Peak Forward Surge Current	$I_{FSM}$	100	A	$T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ half sinewave
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	Values			Unit	Note/Test Condition
		Min	Typ	Max		
Forward Voltage	$V_F$		1.36	1.7	V	$I_F=2\text{A}, T_j=25^{\circ}\text{C}$
			1.86	2.5		$I_F=2\text{A}, T_j=175^{\circ}\text{C}$
Reverse Current	$I_R$		4	100	$\mu\text{A}$	$V_R=1200\text{V}, T_j=25^{\circ}\text{C}$
			9	200		$V_R=1200\text{V}, T_j=175^{\circ}\text{C}$
Total Capacitive Charge	$Q_C$		20		nC	$V_R=800\text{V}, T_j=150^{\circ}\text{C}$
Total Capacitance			255	300	pF	$V_R=0\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$
			19	25		$V_R=400\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$
			18	20		$V_R=800\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$

**DETAILED ORDERING INFORMATION**

<b>K</b> ↓ Source K = CALY Technologies	<b>E</b> ↓ Temperature range: E = $-55^{\circ}\text{C}$ to $+175^{\circ}\text{C}$	<b>12</b> ↓ Rated Voltage: 12 = 1200V	<b>DJ</b> ↓ Device / Type DJ = Diode / JBS (MPS)	<b>06</b> ↓ Rated Current: 02 = 2A	<b>B</b> ↓ Package: B = Bare Die
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Part Number	Temperature Range	Package	Pin Count	Marking
KE12DJ02B	$-55^{\circ}\text{C}$ to $+175^{\circ}\text{C}$	Bare die	2	
KE12DJ02T52	$-55^{\circ}\text{C}$ to $+175^{\circ}\text{C}$	TO-252-2L	2	KE12DJ02

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

**PACKAGE OUTLINES**

	Ref.	Dimensions		
				Millimeters
	A		1.20	0.047
	B		1.20	0.047
	C		0.60	0.024
	D		0.60	0.024
	Top		Al (4 $\mu\text{m}$ )	
Bottom		Ag (1.2 $\mu\text{m}$ )		

**REVISION HISTORY**

Revision	Date	Description
1A	2018-Aug-08	First release

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