

### High-Temperature, 1200V, 10Amp SiC JBS Diode

#### FEATURES

- ▲ Essential no reverse or forward recovery
- ▲ Extremely fast switching not dependent on temperature
- ▲ Positive temperature coefficient for safe operation and ease of paralleling
- ▲ Reverse voltage up to 1200V
- ▲ Operational from -60°C and 232°C
- ▲ Also available as bare die

#### DESCRIPTION

KT12DS10 is a 1200V, 10A high performance and high temperature 4H-SiC junction barrier Schottky diode (JBS) able to operate with a junction temperature up to 250°C. This diode is suitable for high frequency and high power systems with minimum cooling requirements and/or high temperature environments. The KT12DS10 diode enable cost reduction.

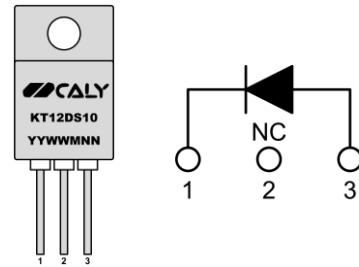
#### APPLICATIONS

- ▲ Power conversion, industrial drives, switched-mode power supplies, power factor correction, voltage blocking.
- ▲ High reliability applications, Automotive, Aeronautics & Aerospace, Down-hole.

#### KEY PERFORMANCE

Parameter	Value
<b>DC blocking Voltage</b>	<b>1200 V</b>
<b>Maximum DC forward current</b>	<b>10 A</b>

#### PACKAGING



#### QUICK ORDERING INFORMATION

Part Number	Package	Marking
KT12DS10B	Bare die	
KT12DS10T57	TO-257	KT12DS10

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

#### ABSOLUTE MAXIMUM RATINGS

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

Parameter	Symbol	Values			Unit	Note/Test Condition
		Min	Typ	Max		
DC Blocking Voltage	$V_R$		1200		V	
Repetitive Peak Reverse Voltage	$V_{RRM}$		1200		V	$T_J=25^\circ\text{C}$
Maximum DC Forward Current	$I_F$			10	A	$R_{TH-JC} = 1.1^\circ\text{C/W}$
Non-Repetitive Forward Surge Current	$I_{FSM}$			80	A	$T_C=25^\circ\text{C}$ , 8.3ms Half Sine Pulse
Non-Repetitive Avalanche Energy	$E_{AS}$		80		mJ	$T_J=25^\circ\text{C}$ , $V=100\text{V}$
Power dissipation	$P_{TOT}$		135		W	$T_C=25^\circ\text{C}$
Maximum Junction Temperature	$T_{JMax}$			250	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-60		232	$^\circ\text{C}$	

#### ELECTRICAL CHARACTERISTICS

Unless otherwise stated, specification applies for  $-60^\circ\text{C} < T_J < 232^\circ\text{C}$ .

Parameter	Symbol	Values			Unit	Note/Test Condition
		Min	Typ	Max		
Forward Voltage	$V_F$		1.7	2.1 3.3 4.1	V	$I_F=10\text{A}$ $T_J=25^\circ\text{C}$ $T_J=175^\circ\text{C}$ $T_J=245^\circ\text{C}$
Reverse Current	$I_R$		40 70 250	200 900 3000	$\mu\text{A}$	$V_R=1200\text{V}$ $T_J=25^\circ\text{C}$ $T_J=175^\circ\text{C}$ $T_J=245^\circ\text{C}$
Total Capacitance	C		500 40		pF	$f=1\text{MHz}$ $V_R=1\text{V}$ $V_R=600\text{V}$

#### THERMAL CHARACTERISTICS

Parameter	Symbol	Values			Unit	Note/Test Condition
		Min	Typ	Max		
Junction-case Thermal Resistance	$R_{TH-JC}$			4	$^\circ\text{C/W}$	TO-257

**TYPICAL PERFORMANCE**

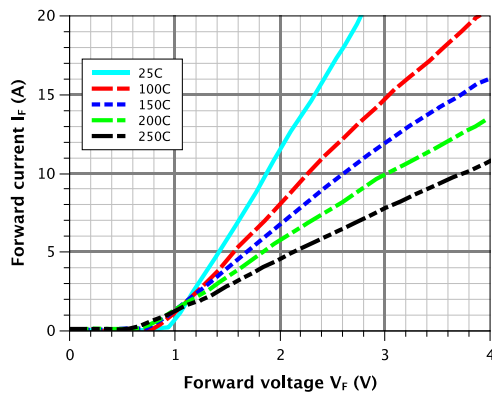


Fig 1. Typical Forward I-V characteristics over Temperature.

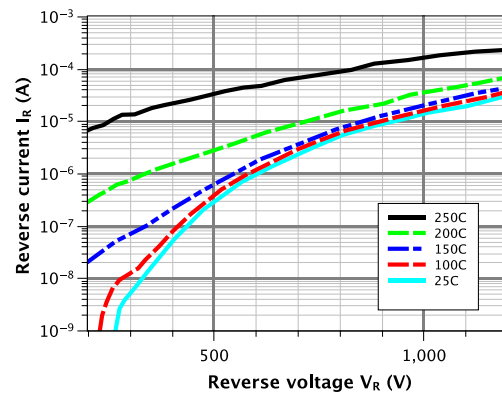
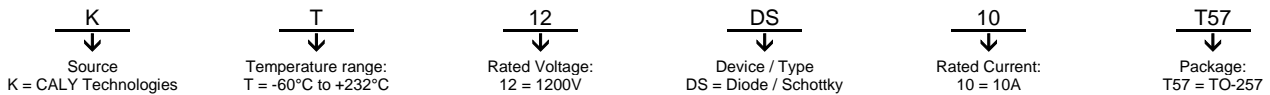


Fig 2. Typical Reverse I-V characteristics over Temperature.

**DETAILED ORDERING INFORMATION**



Part Number	Temperature Range	Package	Pin Count	Marking
KT12DS10B	-60°C to 232°C	Bare die		
KT12DS10T57	-60°C to 232°C	TO-257	3	KT12DS10

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

**PACKAGE OUTLINES**

**TO257**

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.10	0.185	0.201
A1	2.70	3.10	0.106	0.122
A2	0.90	1.10	0.035	0.043
b	2.54 BSC		0.100 BSC	
b1	4.88	5.28	0.192	0.208
c	0.80 BSC		0.032 BSC	
c1	2.10 BSC		0.083 BSC	
D	16.30	16.70	0.642	0.658
D1	13.30	13.70	0.524	0.540
D2	10.45	10.75	0.389	0.445
E	10.45	10.75	0.389	0.445
P1	3.50 BSC		0.138 BSC	
r	2.10 BSC		0.020 BSC	

**Unique Lot Assembly Code**

YY	Last two digits of assembly year (e.g. 18 = 2018)
WW	Assembly week (01 to 52)
M	Assembly location code
NN	Assembly lot code (01 to 99)

**REVISION HISTORY**

Revision	Date	Description
1A	2016-Oct-04	First issue
1B	2018-Aug-08	Updated image of Package Outlines section. Updated Fig2. Amended links in Contact Us Section.

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