



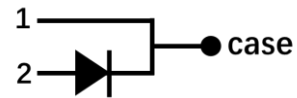
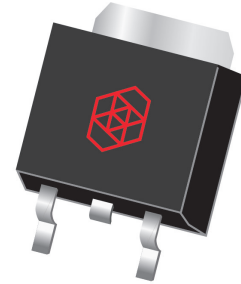
# XD6504D

650V 4A SiC Schottky Barrier Diode

## Features

$V_{CE}$	$I_F$ 135°C	$I_F$ 155°C
650V	6A	4A

- No reverse recovery
- High speed switching
- Low switching losses
- Positive temperature coefficient



## Applications

- Switching Power Supplies
- Adapters, Quick Chargers
- Power Factor Corrections
- Motor Drives

## Description

- These devices are 650 SiC Schottky Barrier Diodes (SBD) with zero reverse recovery that allows systems to operate at higher switching frequencies. Lower heat dissipation requirements and higher system efficiency can be achieved in this compact TO-252 package.

Type	Package	Qty
XD6504D	TO-252	300

# XD6504D

## 1200V SiC SBD

### Device Characteristics

Static Parameters				Test data			
	Sym.	Parameters	Conditions	Min	Typical	Max	Unit
1	V <sub>DC</sub>	DC Blocking Voltage	I <sub>R</sub> =100 μA	650			V
2	V <sub>F</sub>	Forward Voltage	I <sub>F</sub> =4A, T <sub>j</sub> =25°C		1.5	1.7	V
			I <sub>F</sub> =4A, T <sub>j</sub> =175°C		1.9	2.5	
3	I <sub>R</sub>	Reverse Current	V <sub>R</sub> =650V, T <sub>j</sub> =25°C		2	15	μA
			V <sub>R</sub> =650V, T <sub>j</sub> =175°C		15	100	
4	C	Total Capacitance	V <sub>R</sub> =0V, f=1MHz		200		pF
			V <sub>R</sub> =200V, f=1MHz		24		
			V <sub>R</sub> =400V, f=1MHz		21		
5	Q <sub>C</sub>	Total capacitive charge	V <sub>R</sub> =400V		12		nC
6	E <sub>C</sub>	Capacitance Stored Energy	V <sub>R</sub> =400V		2		μJ
Thermal Parameters				Test data			
	Sym.	Parameters	Conditions	Min	Typical	Max	Unit
1	R <sub>th(j-c)</sub>	Thermal resistance			2.5		°C/w

# XD6504D

## 1200V SiC SBD

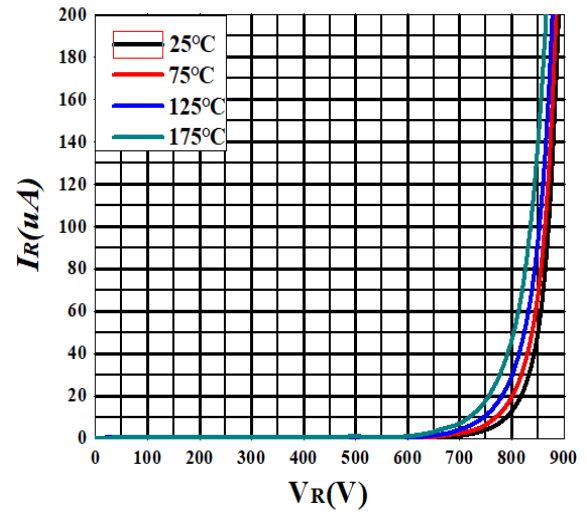
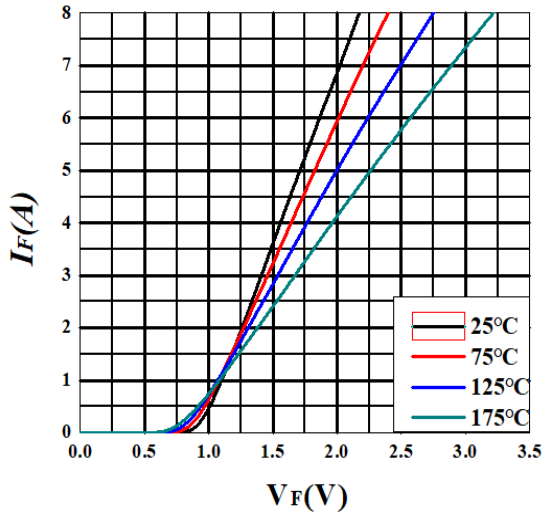
### Absolute **Max.** Ratings

	<b>Symbols</b>	<b>Parameters</b>	<b>Test Conditions</b>	<b>Value</b>	<b>Unit</b>
1	$V_{RR-max}$	Reverse Voltage (Repetitive Peak)	$T_C = 25^\circ C$	650	V
2	$V_{RS-max}$	Reverse Voltage (Surge Peak)	$T_C = 25^\circ C$	650	V
3	$V_{dc-max}$	Reverse Voltage (DC)	$T_C = 25^\circ C$	650	A
4	$I_{F-max}$	Continuous Forward Current	$T_C = 25^\circ C$	12	A
			$T_C = 135^\circ C$	6	
			$T_C = 155^\circ C$	4	
5	$I_{FS-max}$	Non-repetitive Forward Current (Surge)	$T_C = 25^\circ C$ $t_p = 10ms$ Half Sine Pulse	35	A
6	$P_{total-max}$	Total Power Dissipation	$T_C = 25^\circ C$	60	W
7	$\int i^2 dt_{-max}$	$i^2t$ value	$T_C = 25^\circ C$ $t_p = 10ms$	5.8	A <sup>2</sup> s
8	$T_{o-max}$	Operation Temperature		-55 to 175	°C
9	$T_{S-storage}$	Storage temperature		-55 to 175	°C

# XD6504D

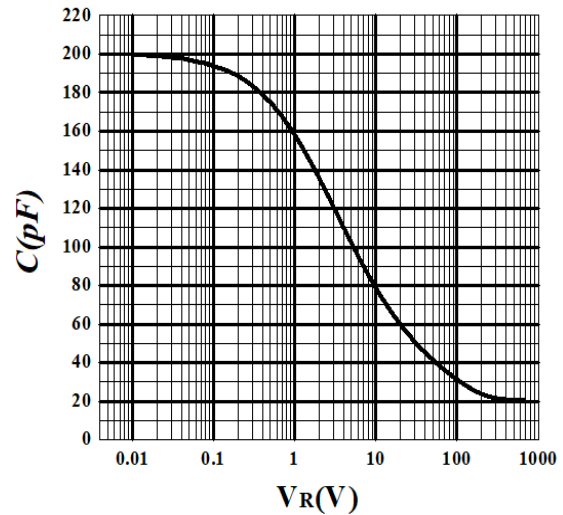
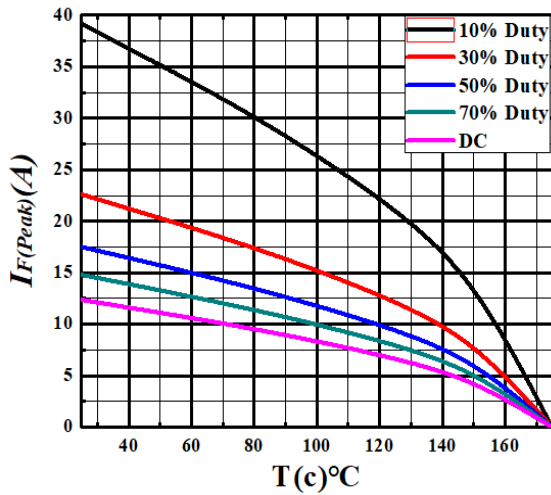
## 1200V SiC SBD

### Electrical Performance



### Forward Characteristics

### Reverse Characteristics

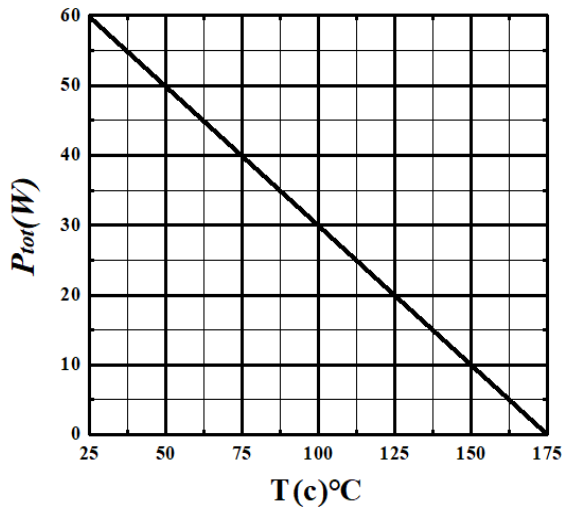


### Current Derating

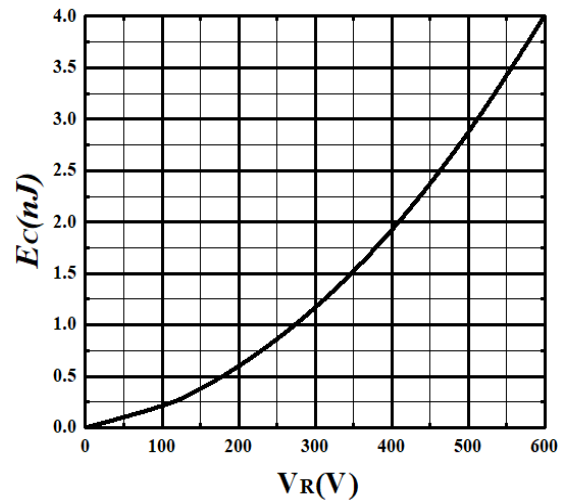
### Capacitance vs. $V_R$

# XD6504D

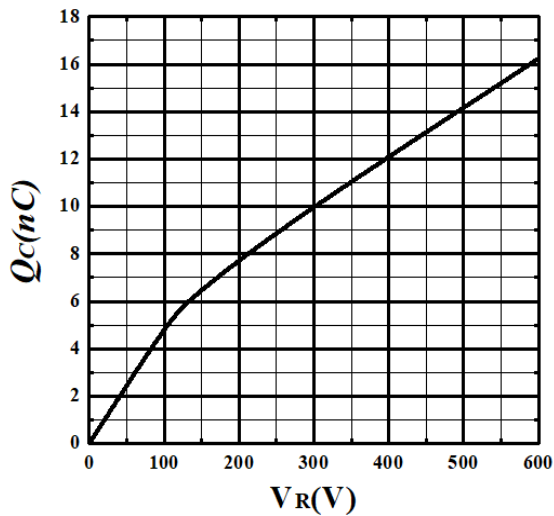
## 1200V SiC SBD



Power Derating



Capacitance Stored Energy

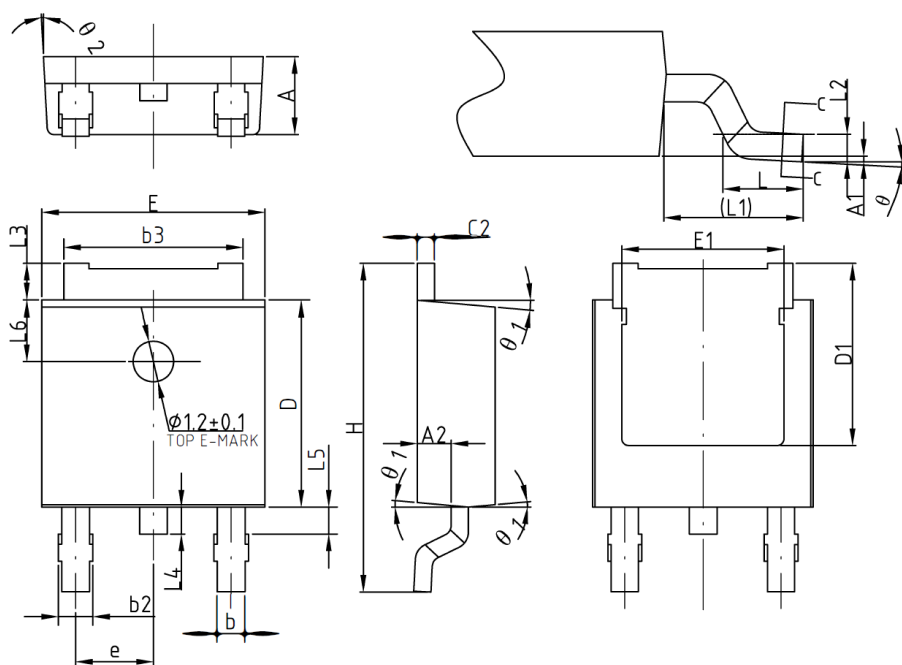


Total Capacitance Charge vs.  $V_R$

# XD6504D

## 1200V SiC SBD

### Package Information



COMMON DIMENSIONS  
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0	-	0.10
A2	0.90	1.00	1.10
b	0.77	-	0.89
b1	0.76	0.81	0.86
b2	0.77	-	1.10
b3	5.23	5.33	5.43
c	0.47	-	0.60
c1	0.46	0.51	0.56
c2	0.47	-	0.60
D	6.00	6.10	6.20
D1	5.25	-	-
E	6.50	6.60	6.70
E1	4.70	-	-
e	2.28BSC		
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1	2.90REF		
L2	0.51BSC		
L3	0.90	-	1.25
L4	0.60	0.80	1.00
L5	0.90	-	1.50
L6	1.80REF		
$\theta$	0°	-	8°
$\theta_1$	3°	5°	7°
$\theta_2$	1°	3°	5°

# XD6504D

## 1200V SiC SBD

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Revision History

## Revision History

Document revision	Date	Description of changes
2.0	2023.10.11	Target datasheet

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