

DSC50120P Silicon Carbide Schottky Diode

Features

- Low forward voltage
- High Junction temperature
- Low leakage current
- High reliability
- RoHS product

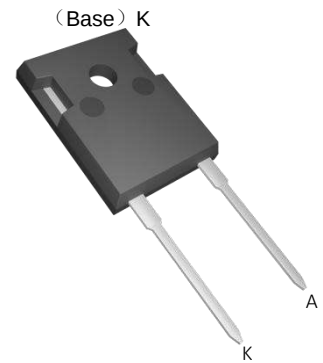
Mechanical Data

- Molding compound meets UL94V-0 flammability rating, RoHS-compliant
- Terminals: Tin plated leads, solderable per J-STD-002 and J ESD22-B102
- Polarity: As marked on body

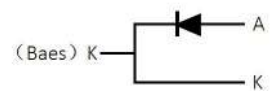
Device summary

Symbol	Value
IF(AV)	50A
VRRM	1200V
VF(typ)	1.95V/50A@175°C
IR(typ)	0.02mA@175°C
Tj(max)	175°C

Package



TO-247AC



Maximum ratings

Parameter	Symbol	Value	Unit
Peak repetitive reverse voltage	V _{RRM}	1200	V
forward current	I _{F(AV)}	T _C =25°C 125	A
		T _C =140°C 50	
Non-repetitive single pulse surge current t=8.3ms	I _{FSM}	450	A
Power Dissipation		T _C =110°C 196	W
Junction temperature	T _J	-55~+175	°C
Storage temperature	T _{STG}	-55~+175	°C

Electrical characteristics(T_C =25°C)

Parameter	Tests conditions		Value			Unit
			(min)	(typ)	(max)	
V _{RRM}	I _R =0.05mA		1200	-	-	V
I _R	T _J =25°C	V _R =1200V	-	5	0.2	mA
	T _J =175°C		-	20	0.4	
V _F	T _J =25°C	I _F =50A	-	1.45	1.75	V
	T _J =175°C		-	1.95	2.5	
Q _C	T _J =25°C	V _R =800V Q _C =∫0VRC(V)dVp	-	267	-	nC
C	T _J =25°C	V _R =1V, f=1MHZ		2696		pF
		V _R =400V, f=1MHZ		252		
		V _R =800V, f=1MHZ		192		
EC		V _R =800V		77		nJ

Thermal characteristics(T_C =25°C)

Parameter	Symbol	Value	Unit
Thermal resistance from junction to case TO-247AC	R _{th(j-c)}	0.35	°C/W

Typical Characteristic Curve

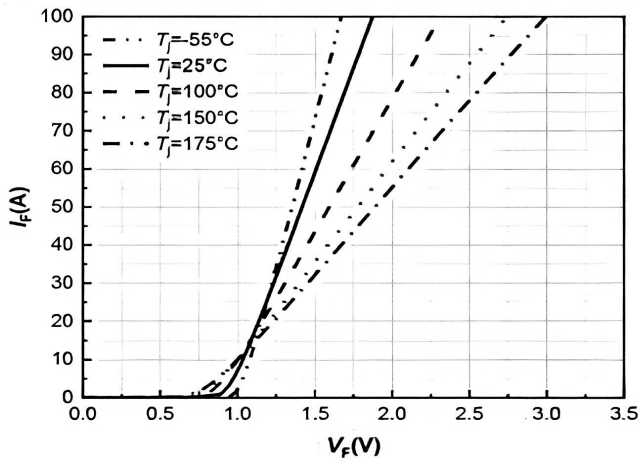


Figure 1. Typical forward characteristics

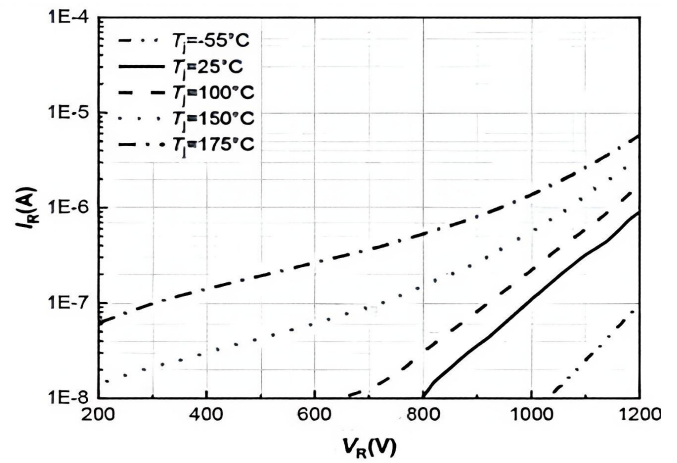


Figure 2. Typical reverse current as function of reverse voltage

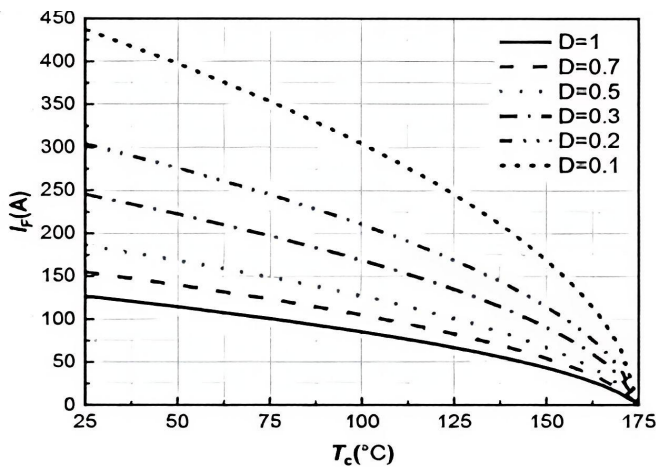


Figure 3. Diode forward current as function of temperature, D=duty cycle

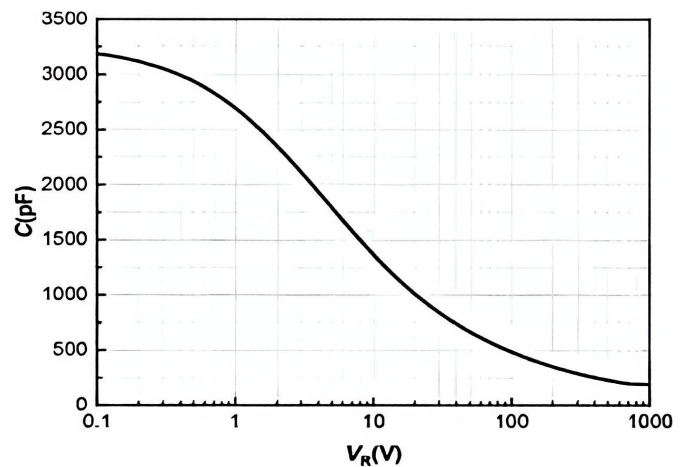


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_J=25^\circ\text{C}$; $f=1\text{ MHz}$

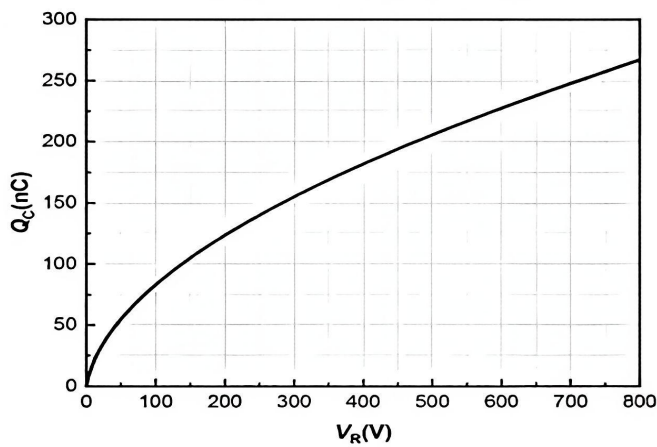


Figure 5. Typical reverse charge as function of reverse voltage

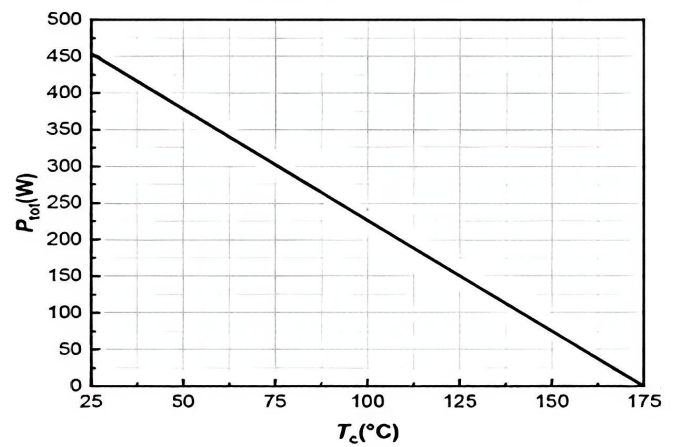


Figure 6. Power dissipation as function of case temperature

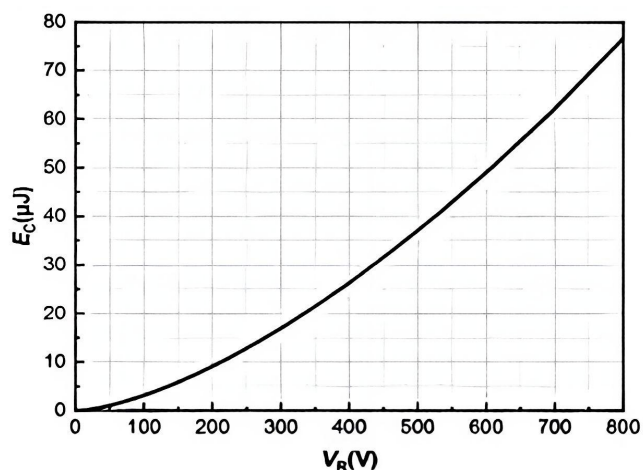


Figure 7. Capacitance stored energy

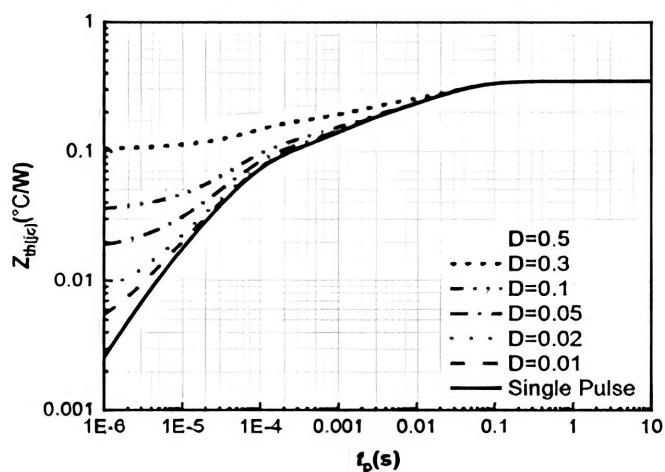
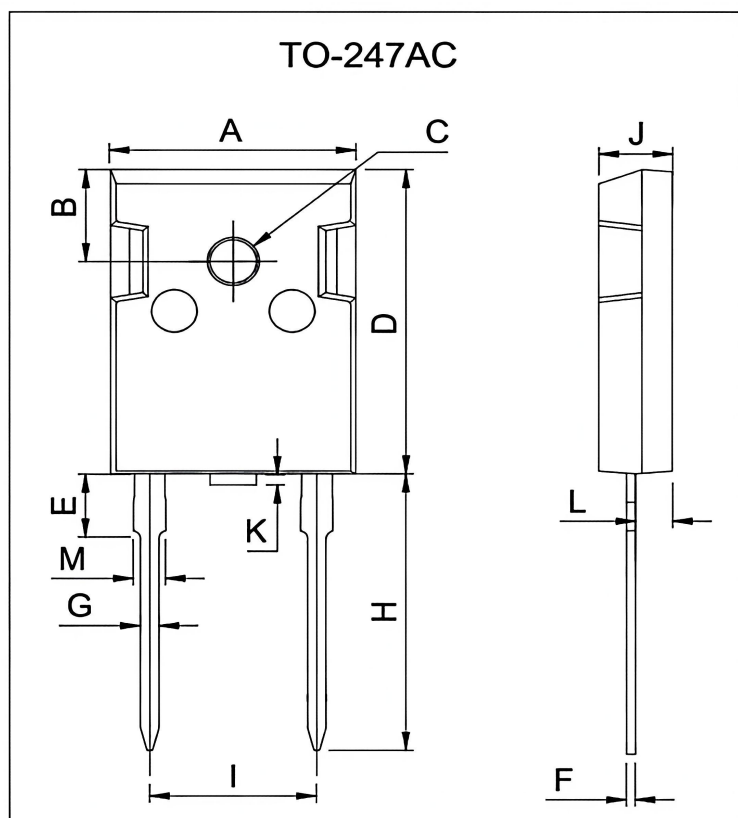


Figure 8. Max. transient thermal impedance,
 $Z_{th(jc)} = f(t_p)$, parameter: $D = t_p / T$

Outline Dimensions and Pad Layout Reference



TO-247AC _(mm)			
Dim	Min	Typ	Max
A	15.80	16.00	16.20
B	6.30	6.50	6.70
C	3.05	3.20	3.35
D	21.20	21.50	21.80
E	3.80	4.00	4.20
F	0.50	0.60	0.70
G	1.00	1.20	1.40
H	19.20	19.50	19.70
I	10.70	10.90	11.10
J	4.60	4.80	5.00
K	0.60	0.80	1.00
L	2.20	2.40	2.60