森国科
SGKS

碳化硅肖特基二极管

Silicon Carbide Schottky Diode

KS10120-C

V_{RRM}	=	1200 V
I_F（T_C=163 ℃）	=	10 A
Q_C	=	71 nC

特点 / Features

- 肖特基整流器 / 1200-Volt Schottky Rectifier
- 零反向恢复电流 / Zero Reverse Recovery Current
- 零正向恢复电压 / Zero Forward Recovery Voltage
- 高工作频率 / High-Frequency Operation
- 不受温度影响的开关特性 / Temperature-Independent Switching Behavior
- 高速开关 / Extremely Fast Switching
- V_F正温度特性 / Positive Temperature Coefficient on V_F

优势 / Benefits

- 单极器件 / Replace Bipolar with Unipolar Rectifiers
- 零开关损耗 / Essentially No Switching Losses
- 高效率 / Higher Efficiency
- 减小散热器 / Reduction of Heat Sink Requirements
- 易于并联使用 / Ease of Paralleling

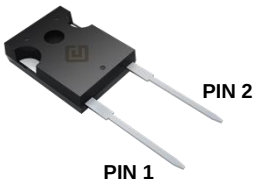
应用领域 / Applications

- 工业电源，不间断电源 / Industrial Power Supplies, Industrial UPS
- 光伏系统 / Solar system
- 充电桩 / Charging pile
- 电焊机 / Electric welding machine

封装 / Package

Halogen-Free

RoHS



TO-247-2L

Part Number	Package	Marking
KS10120-C	TO-247-2L	KS10120C

最大额定值 / Maximum Rated Values（T_C=25°C unless otherwise specified）

符号 Symbol	参数 Parameter	值 Value	单位 Unit	测试条件 Test Conditions	备注 Note
V_{RRM}	反向重复峰值电压 Repetitive peak reverse voltage	1200	V		
V_R	直流反向阻断电压 DC Peak Reverse Voltage	1200	V		
I_F	正向电流 Continuous Forward Current	46 23 10	A	T_C=25˚C T_C=135˚C T_C=163˚C	Figure 3
I_{FRM}	正向重复峰值电流 Repetitive Peak Forward Surge Current	80 66	A	T_C=25˚C, t_P=10ms, Half Sine Pulse T_C=110˚C, t_P=10ms, Half Sine Pulse	
I_{FSM}	正向浪涌电流 Non-Repetitive Forward Surge Current	96 84	A	T_C=25˚C, t_P=10ms, Half Sine Pulse T_C=110˚C, t_P=10ms, Half Sine Pulse	Figure 9
$I_{F,MAX}$	非重复正向峰值电流 Non-Repetitive Peak Forward Current	865 795	A	T_C=25˚C, t_P=10μs, Square Wave Pulse T_C=110˚C, t_P=10μs, Square Wave Pulse	Figure 9
P_{tot}	耗散功率 Power Dissipation	234 102	W	T_C=25˚C T_C=110˚C	Figure 4
T_J	工作结温 Operating Temperature	-55 to +175	˚C		
T_{stg}	储存温度 Storage Temperature	-55 to +175	˚C		

电气参数 / Electrical Characteristics（T_J=25°C unless otherwise specified）

符号 Symbol	参数 Parameter	值 / Value			单位 Unit	测试条件 Test Conditions	备注 Note
		Min.	Typ.	Max.			
V_{DC}	击穿电压 DC blocking voltage	1200			V	I_R=200μA	
V_F	正向电压 Forward Voltage		1.3 1.8	1.6 2.4	V	I_F=10A, T_J=25°C I_F=10A, T_J=175°C	Figure 1
I_R	反向电流 Reverse Current		1 10	200 280	μA	V_R=1200V, T_J=25°C V_R=1200V, T_J=175°C	Figure 2
Q_C	容性电荷 Total Capacitive Charge		71		nC	V_R=800V, T_J=25°C	Figure 5
C	总电容 Total Capacitance		1023 67 48		pF	V_R=0V, T_J=25°C, f=1MHz V_R=400V, T_J=25°C, f=1MHz V_R=800V, T_J=25°C, f=1MHz	Figure 6
E_C	电容存储能量 Capacitance Stored Energy		20		μJ	V_R=800 V	Figure 7

热阻 / Thermal Characteristics

符号 Symbol	参数 Parameter	值 Value	单位 Unit	备注 Note
$R_{\theta JC}$	结壳热阻 Thermal Resistance(Junction to Case)	0.64	°C/W	Figure 8

特性曲线 / Typical Performance

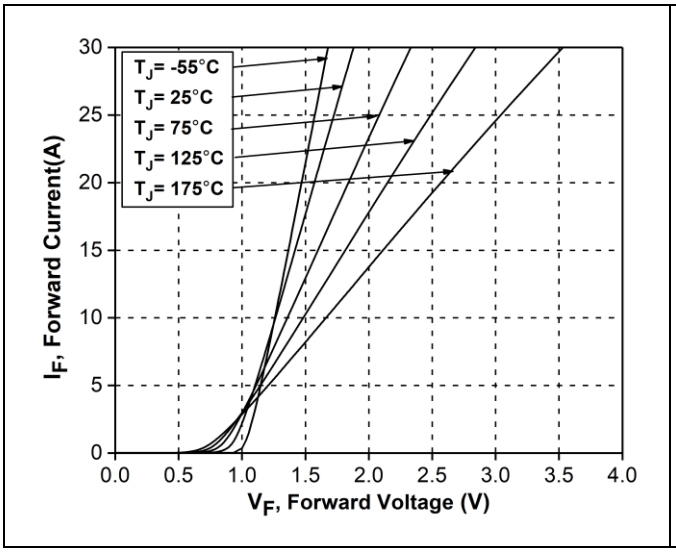


Figure 1. Forward Characteristics

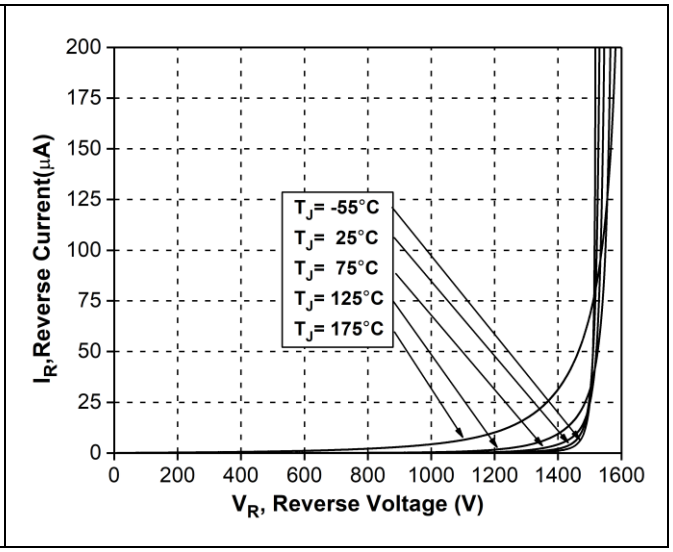


Figure 2. Reverse Characteristics

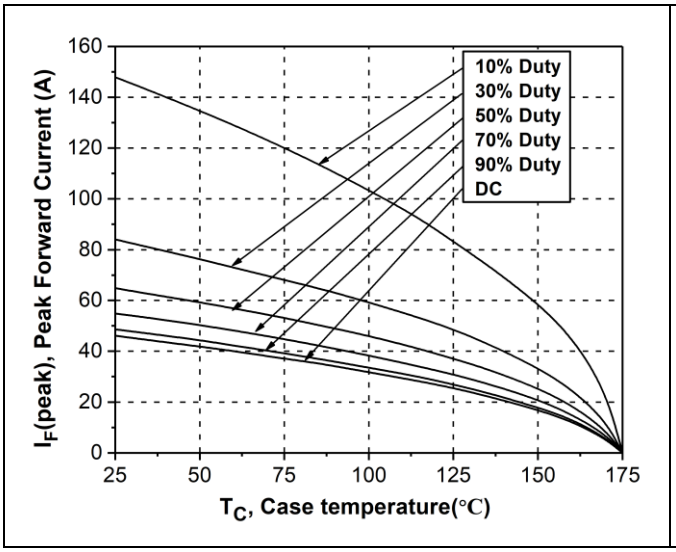


Figure 3. Current Derating

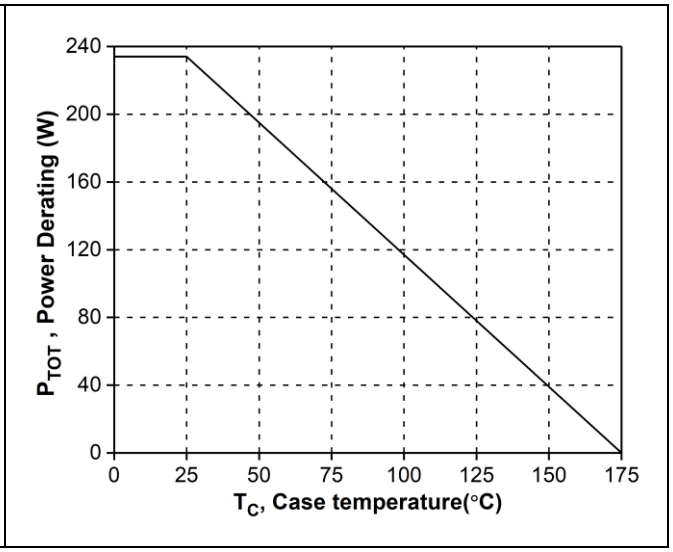


Figure 4. Power Derating

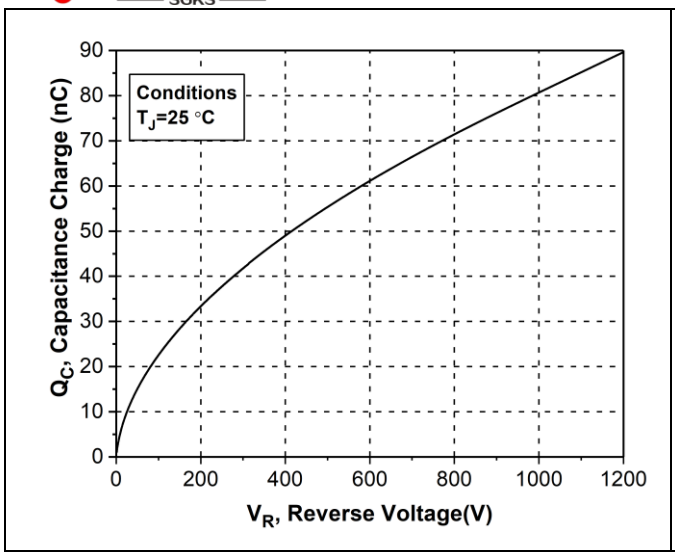


Figure 5. Capacitance Charge Vs. Reverse Voltage

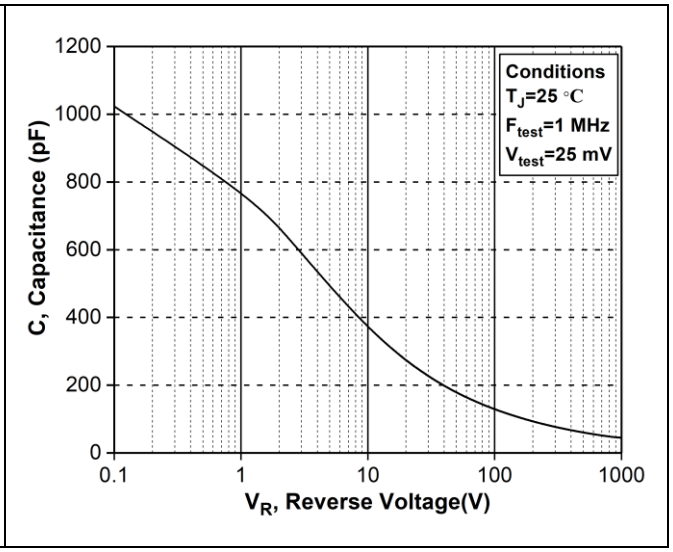


Figure 6. Capacitance Vs. Reverse Voltage

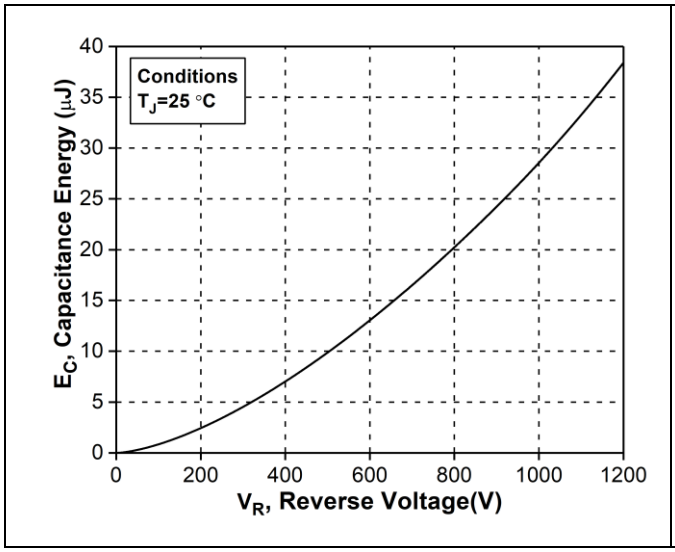


Figure 7. Capacitance Stored Energy

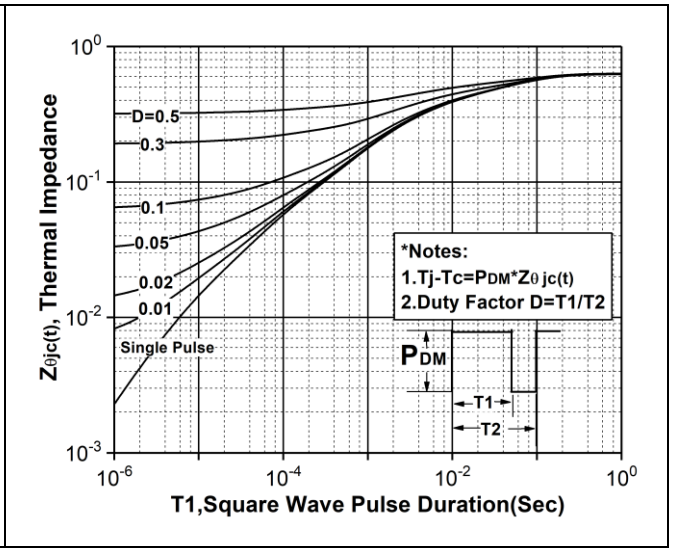


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

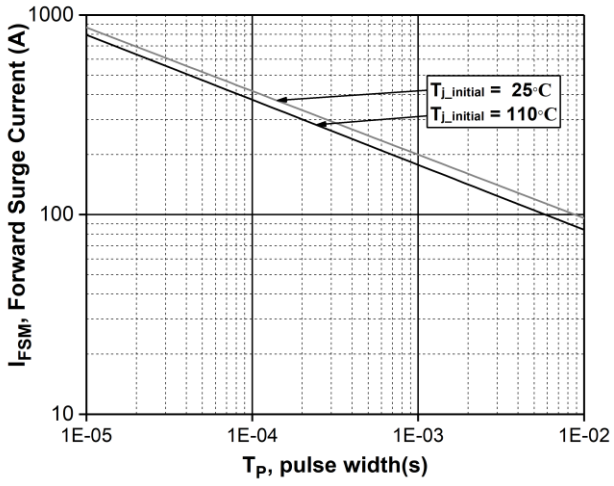
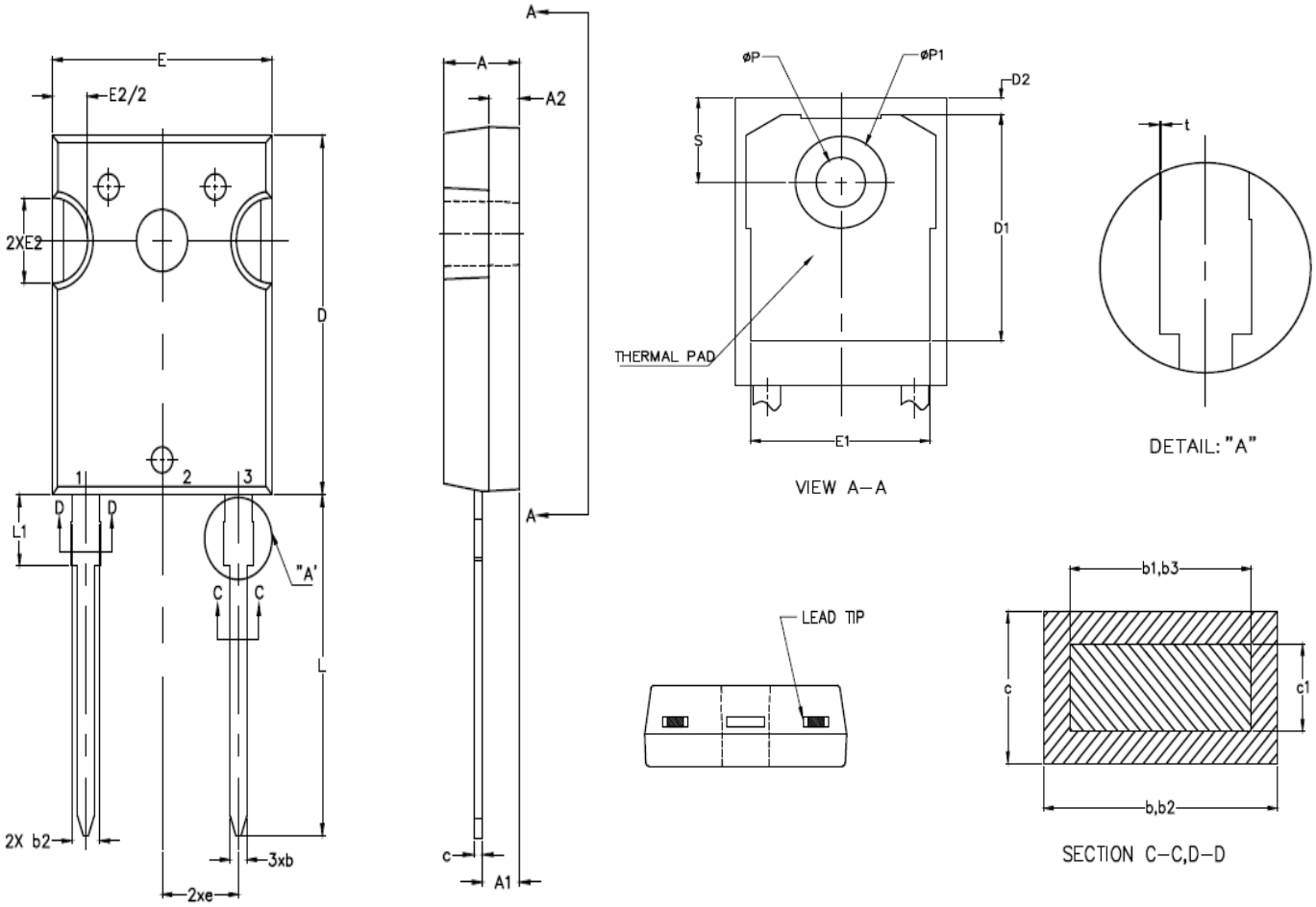


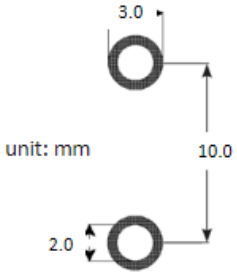
Figure 9. Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

Package TO-247-2L（Units: mm）



SYMBOLS	DIMENSIONS				SYMBOLS	DIMENSIONS			
	mm		inch			mm		inch	
	MIN.	MAX.	MIN.	MAX.		MIN.	MAX.	MIN.	MAX.
A	4.90	5.10	0.193	0.201	D2	1.05	1.35	0.041	0.053
A1	2.31	2.51	0.091	0.099	E	15.75	15.90	0.620	0.626
A2	1.90	2.10	0.075	0.083	E1	13.26	--	0.552	--
b	1.16	1.26	0.046	0.050	E2	4.90	5.10	0.193	0.201
b1	1.15	1.22	0.045	0.048	e	5.44BSC		0.214BSC	
b2	1.96	2.06	0.077	0.081	L	19.80	20.10	0.780	0.791
b3	1.95	2.02	0.077	0.080	L1	--	4.30	--	0.169
c	0.59	0.66	0.023	0.026	ØP	3.50	3.70	0.138	0.146
c1	0.58	0.62	0.023	0.024	ØP1	--	7.40	--	0.291
D	20.90	21.10	0.823	0.831	S	6.05	6.25	0.238	0.246
D1	16.25	16.85	0.640	0.663	t	0.00	0.15	0.000	0.006

参考焊盘图 / Recommended Solder Pad Layout



TO-247-2L

注意事项 / Attention

- 本文所述产品规定了产品在各状态下的性能、特点和功能，并不保证所述产品安装在客户产品或设备中的性能、特点和功能。为了保证产品在客户产品中工作状态，客户应严谨评估和测试。

  Specifications of any and all products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

- 本产品在使用过程中，如应用条件超出本规格书规定值（如最大额定值、工作条件范围或其他参数），即使是短时超过，而引起使用该产品的设备出现故障，森国科不承担任何责任。

  SGKS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Silicon products described or contained herein.

- 由于产品/技术改进等原因，本文所述或包含的任何和所有信息可能会发生更改，恕不另行通知。

  Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc.