

碳化硅肖特基二极管

Silicon Carbide Schottky Diode

KS10120-E1

V_{RRM}	=	1200 V
$I_F (T_C=161^{\circ}C)$	=	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

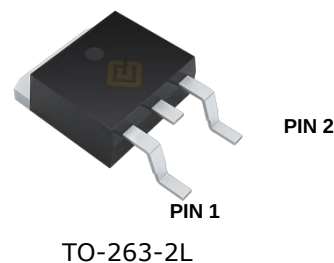
优势 / Benefits

- 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

- 开关电源 / Switch Mode Power Supplies (SMPS)
- 功率因数校正 / Power Factor Correction
- 电机驱动 / Motor Drives

封装 / Package



Part Number	Package	Marking
KS10120-E1	TO-263-2L	KS10120E1

最大额定值 / Maximum Rated Values ($T_C=25^{\circ}\text{C}$ 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	42 20 10	A	$T_C=25^{\circ}\text{C}$ $T_C=135^{\circ}\text{C}$ $T_C=161^{\circ}\text{C}$	Figure 3
I_{FRM}	正向重复峰值电流 Repetitive Peak Forward Surge Current	80 66	A	$T_C=25^{\circ}\text{C}$, $t_P=10\text{ms}$, Half Sine Pulse $T_C=110^{\circ}\text{C}$, $t_P=10\text{ms}$, Half Sine Pulse	
I_{FSM}	正向浪涌电流 Non-Repetitive Forward Surge Current	96 84	A	$T_C=25^{\circ}\text{C}$, $t_P=10\text{ms}$, Half Sine Pulse $T_C=110^{\circ}\text{C}$, $t_P=10\text{ms}$, 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	$T_C=25^{\circ}\text{C}$, $t_P=10\mu\text{s}$, Square Wave Pulse $T_C=110^{\circ}\text{C}$, $t_P=10\mu\text{s}$, Square Wave Pulse	Figure 9
P_{tot}	耗散功率 Power Dissipation	200 86	W	$T_C=25^{\circ}\text{C}$ $T_C=110^{\circ}\text{C}$	Figure 4
T_J	工作结温 Operating Temperature	-55 to +175	$^{\circ}\text{C}$		
T_{stg}	储存温度 Storage Temperature	-55 to +175	$^{\circ}\text{C}$		

电气参数 / Electrical Characteristics ($T_J=25^{\circ}\text{C}$ 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	$I_R=200\mu\text{A}$	
V_F	正向电压 Forward Voltage		1.3 1.8	1.6 2.4	V	$I_F=10\text{A}$, $T_J=25^{\circ}\text{C}$ $I_F=10\text{A}$, $T_J=175^{\circ}\text{C}$	Figure 1
I_R	反向电流 Reverse Current		1 10	200 280	μA	$V_R=1200\text{V}$, $T_J=25^{\circ}\text{C}$ $V_R=1200\text{V}$, $T_J=175^{\circ}\text{C}$	Figure 2
Q_C	容性电荷 Total Capacitive Charge		71		nC	$V_R=800\text{V}$, $T_J=25^{\circ}\text{C}$	Figure 5
C	总电容 Total Capacitance		1023 67 48		pF	$V_R=0\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R=400\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R=800\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$	Figure 6

E_C	电容存储能量 Capacitance Stored Energy	20	μJ	$V_R=800\text{ V}$	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)	0.75	$^{\circ}C/W$	Figure 8

特性曲线 / Typical Performance

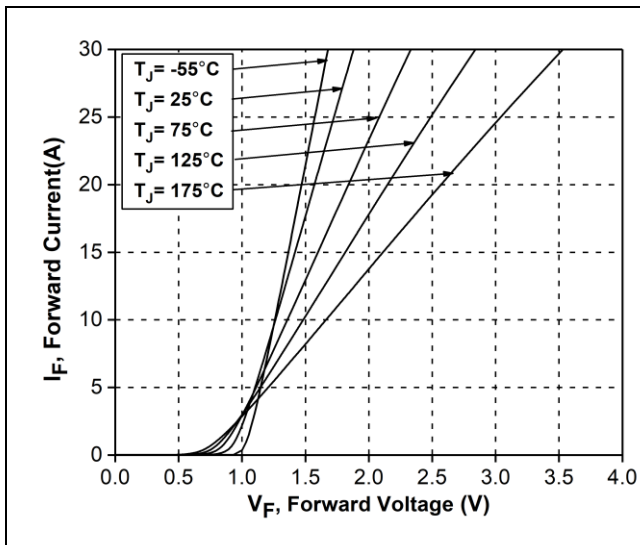


Figure 1. Forward Characteristics

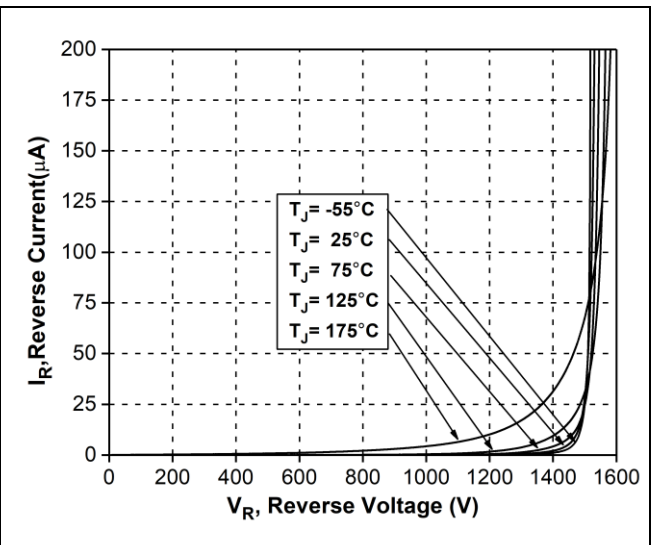


Figure 2. Reverse Characteristics

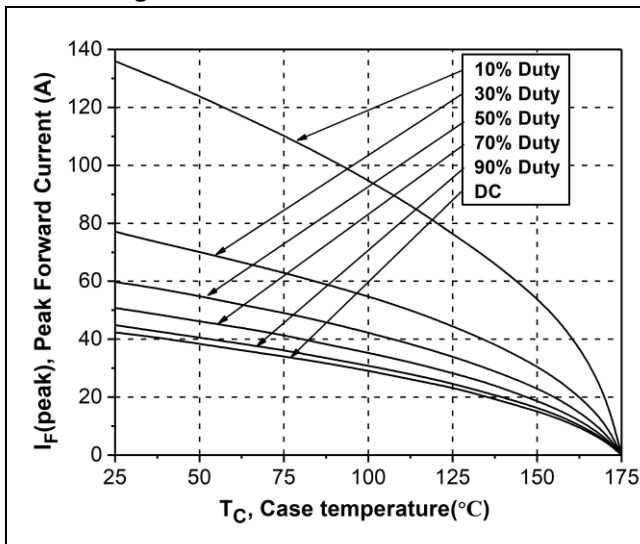


Figure 3. Current Derating

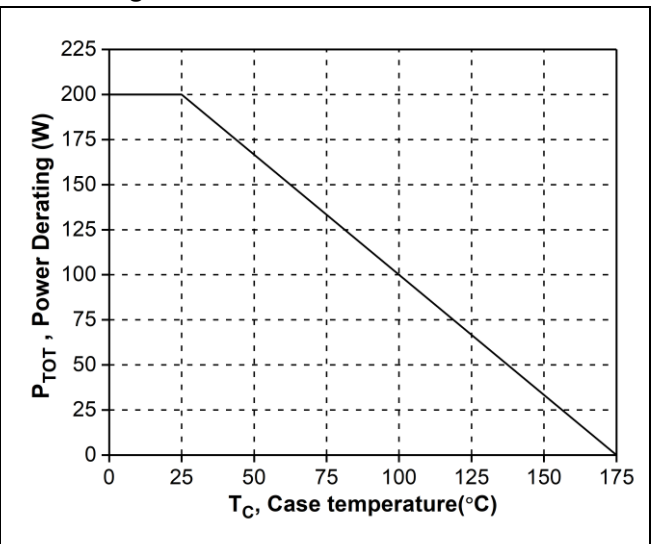


Figure 4. Power Derating

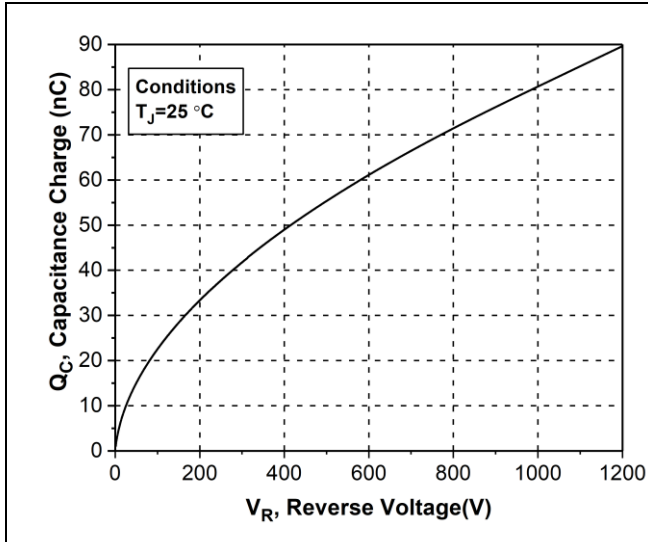


Figure 5. Capacitance Charge Vs. Reverse Voltage

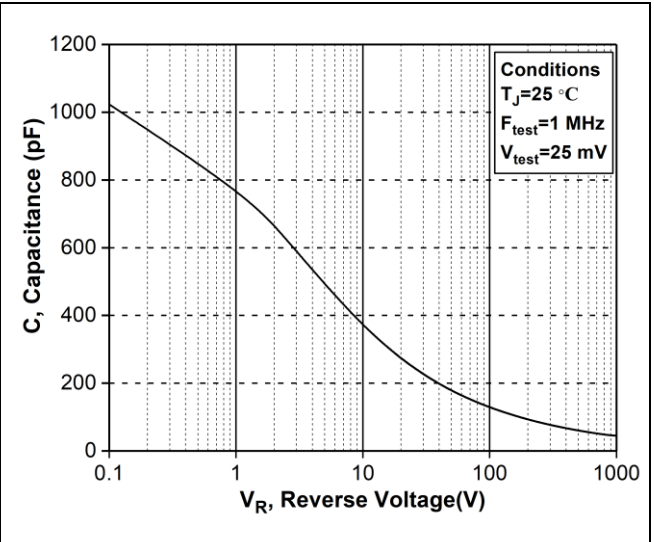


Figure 6. Capacitance Vs. Reverse Voltage

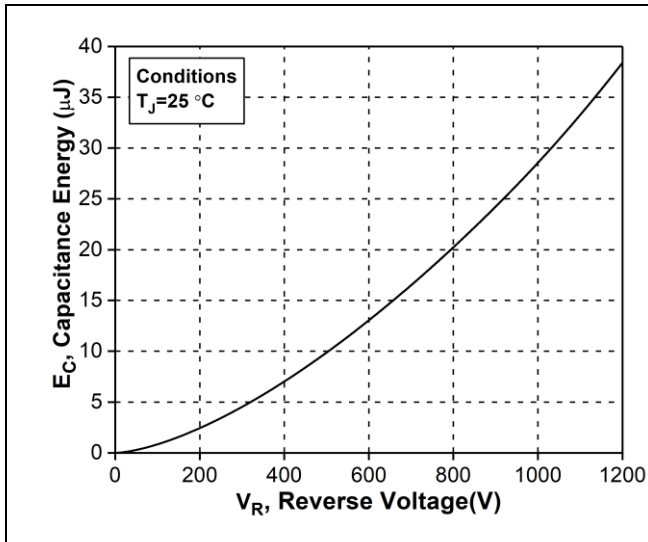


Figure 7. Capacitance Stored Energy

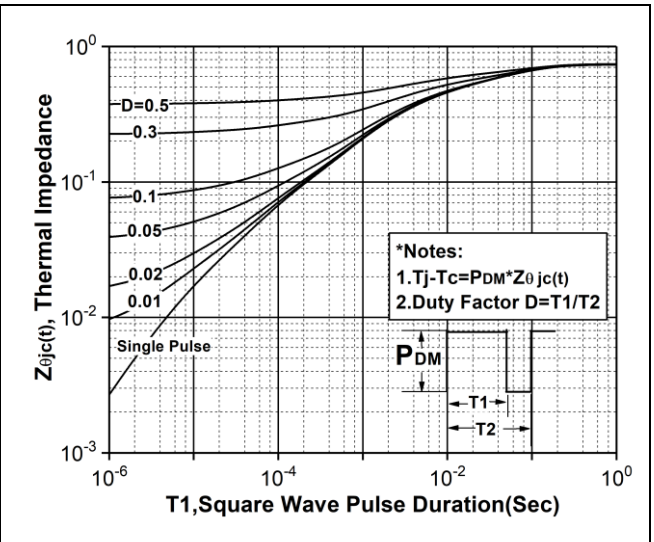


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

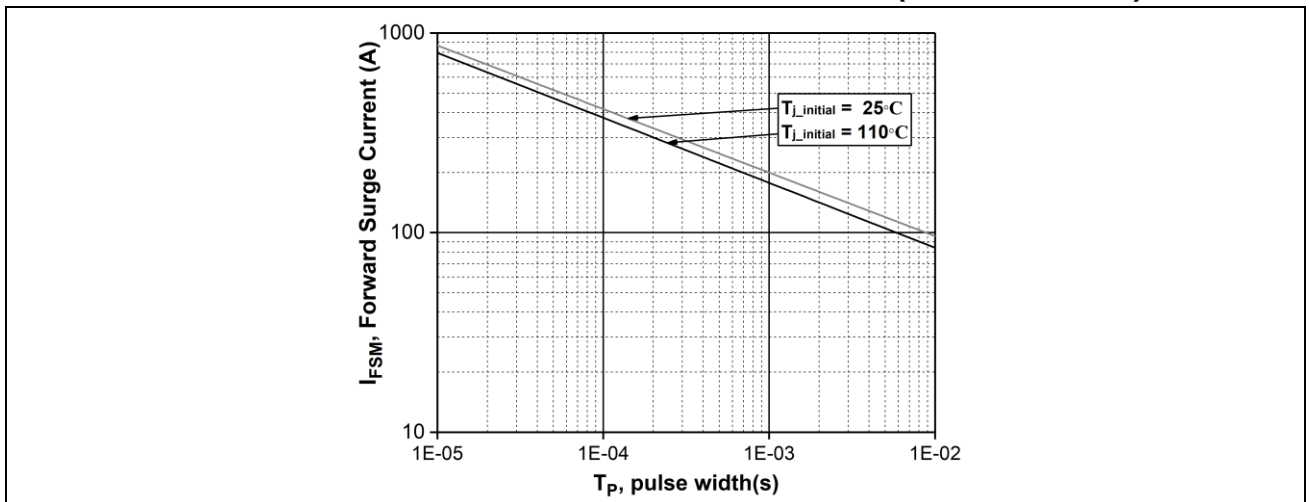
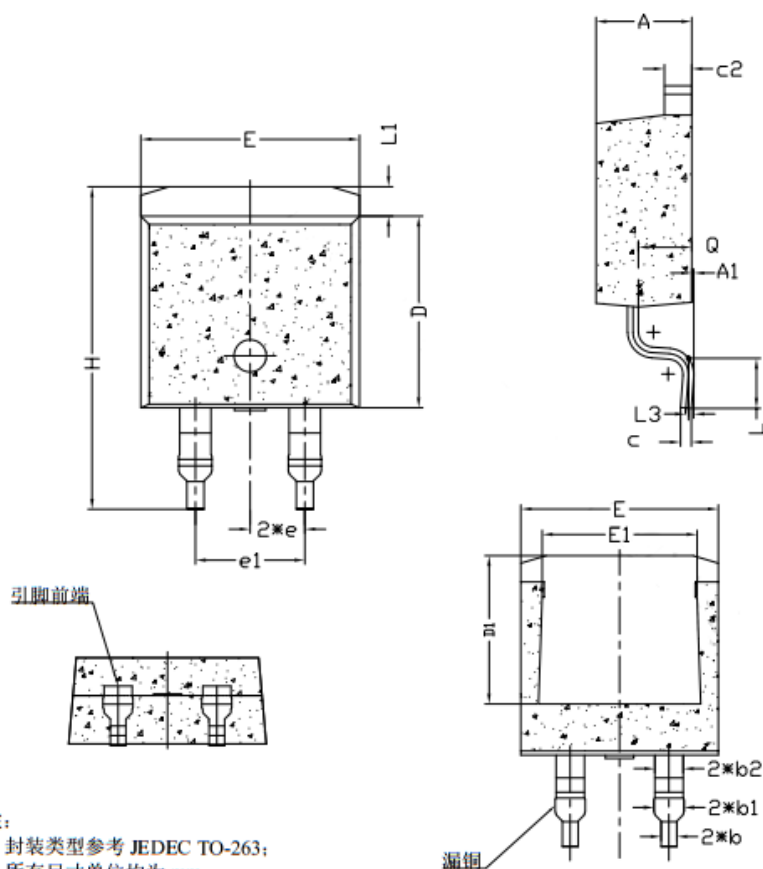


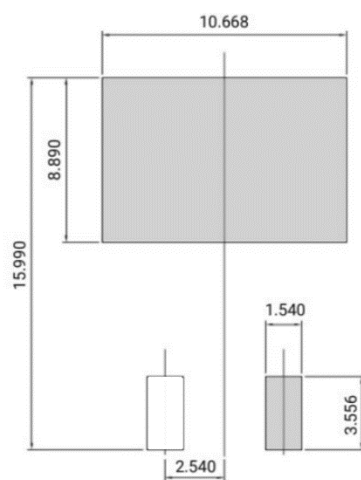
Figure 9. Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

Package TO-263-2L


备注:

1. 封装类型参考 JEDEC TO-263;
2. 所有尺寸单位均为 mm;
3. 尺寸A&D&E不包含塑封溢料, 塑封体毛边不能超过 0.127mm, 尺寸测量都是在塑封体的最外层测量;

标号	尺寸			备注
	最小值	典型值	最大值	
A	4.24	4.44	4.64	3
A1	0.00	0.10	0.25	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1.20	1.45	1.70	
c	0.40	0.50	0.60	
c2	1.15	1.27	1.40	
D	8.82	8.92	9.02	3
D1	6.86	7.65	—	
E	9.96	10.16	10.36	3
E1	6.89	7.77	7.89	
e	2.54 BSC			
e1	5.08 BSC			
H	14.61	15.00	15.88	
L	1.78	2.32	2.79	
L1	1.36 REF.			
L3	0.25 BSC			
Q	2.30	2.48	2.70	

参考焊盘图 / Recommended Solder Pad Layout

TO-263-2L

- 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.