

碳化硅肖特基二极管

Silicon Carbide Schottky Diode

KS20120-R2

V_{RRM}	=	1200 V
$I_F (T_C=164^{\circ}C)$	=	20 A **
Q_C	=	67 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

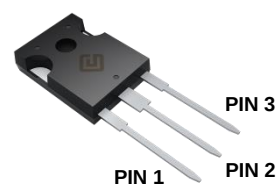
优势 / Benefits

- 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

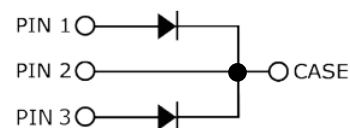
应用领域 / Applications

- 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



TO-247-3L



Part Number	Package	Marking
KS20120-R2	TO-247-3L	KS20120R2

* Per Leg ** Per Device

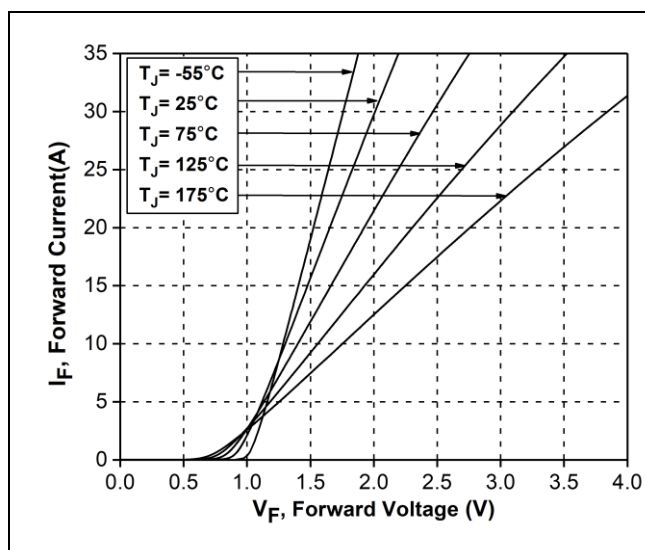
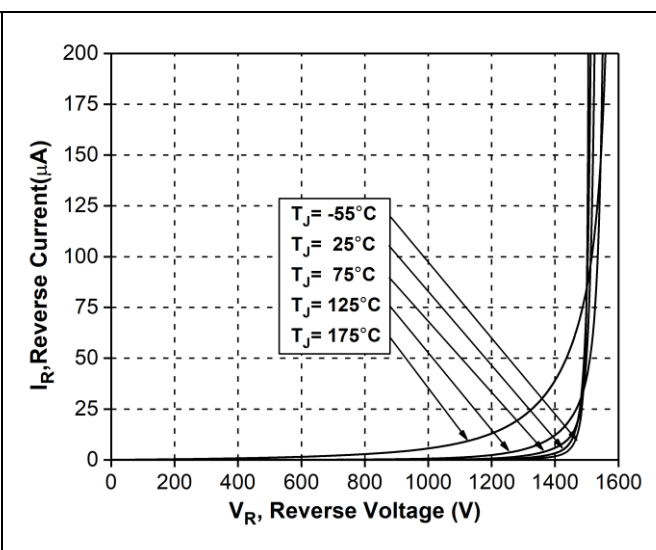
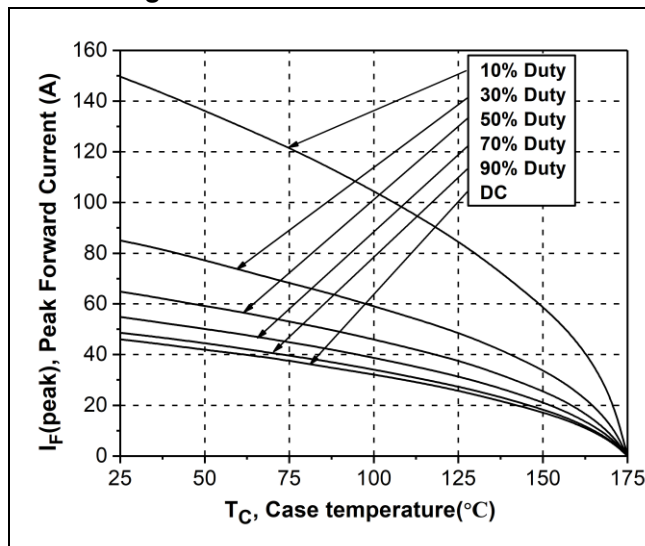
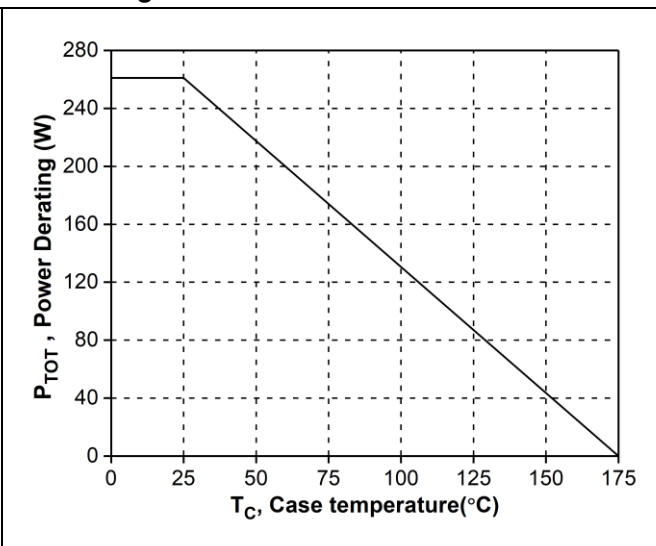
最大额定值 / Maximum Rated Values ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

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 (Per Leg/Per Device)	48/96 24/48 10/20	A	$T_C=25^{\circ}\text{C}$ $T_C=135^{\circ}\text{C}$ $T_C=164^{\circ}\text{C}$	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	261* 113*	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 (Per Leg, $T_J=25^{\circ}\text{C}$ 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		67		nC	$V_R=800\text{V}$, $T_J=25^{\circ}\text{C}$	Figure 5
C	总电容 Total Capacitance		981 63 45		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		19		μJ	$V_R=800\text{V}$	Figure 7

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) (Per Leg/Per Device)	0.57/0.29	°C/W	Figure 8

特性曲线 / Typical Performance(Per leg)

Figure 1. Forward Characteristics

Figure 2. Reverse Characteristics

Figure 3. Current Derating

Figure 4. Power Derating

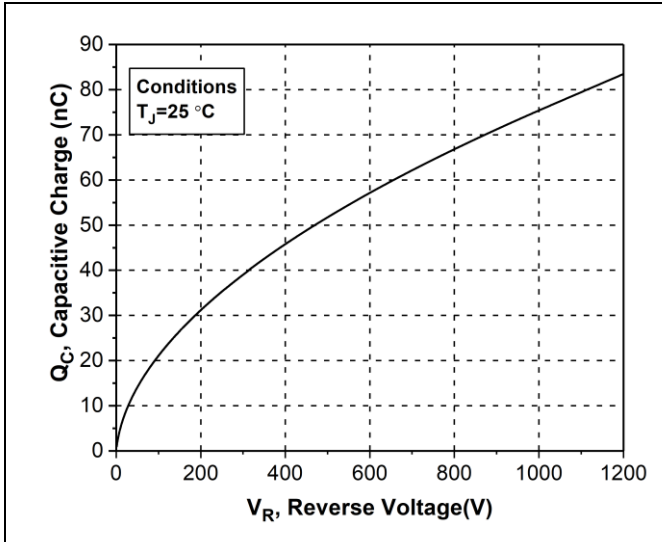


Figure 5. Capacitance Charge Vs. Reverse Voltage

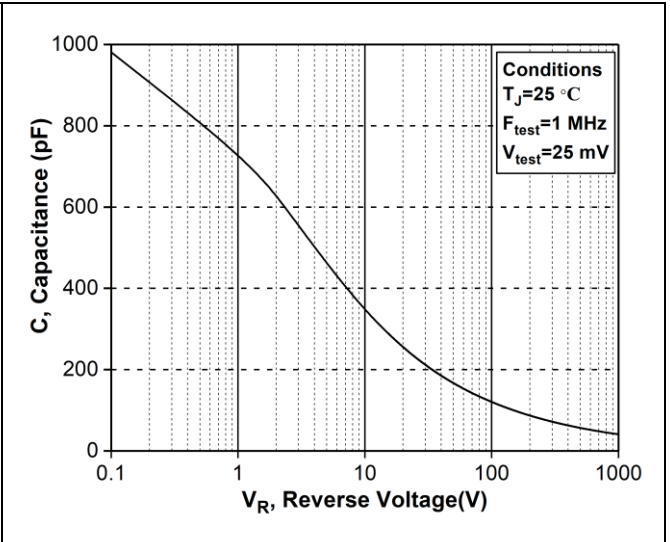


Figure 6. Capacitance Vs. Reverse Voltage

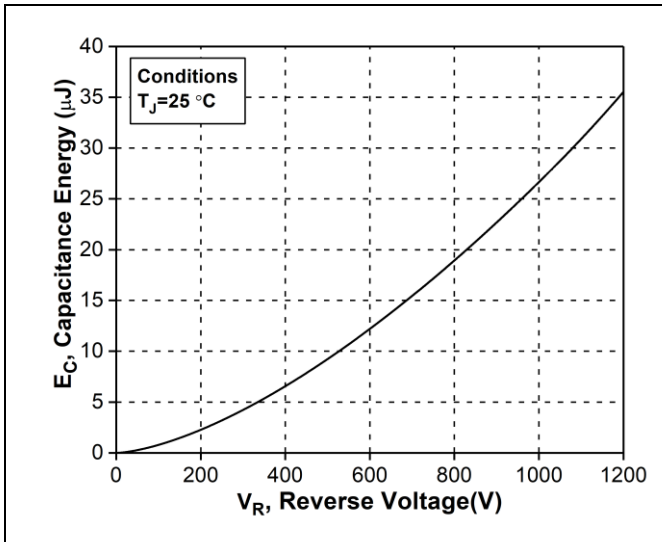


Figure 7. Capacitance Stored Energy

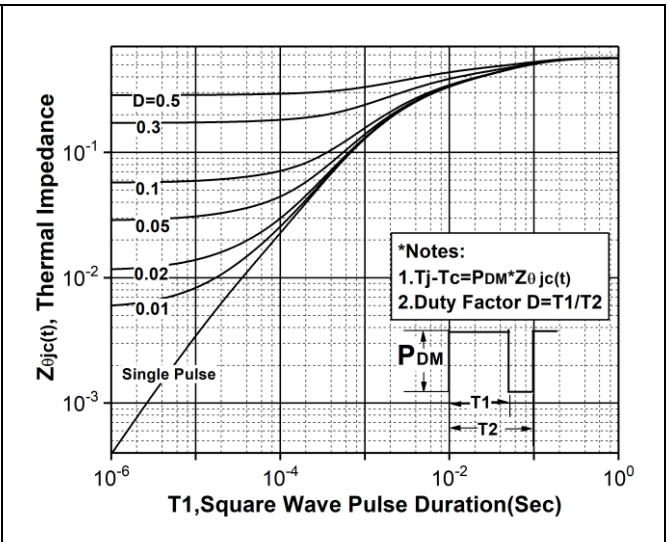


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

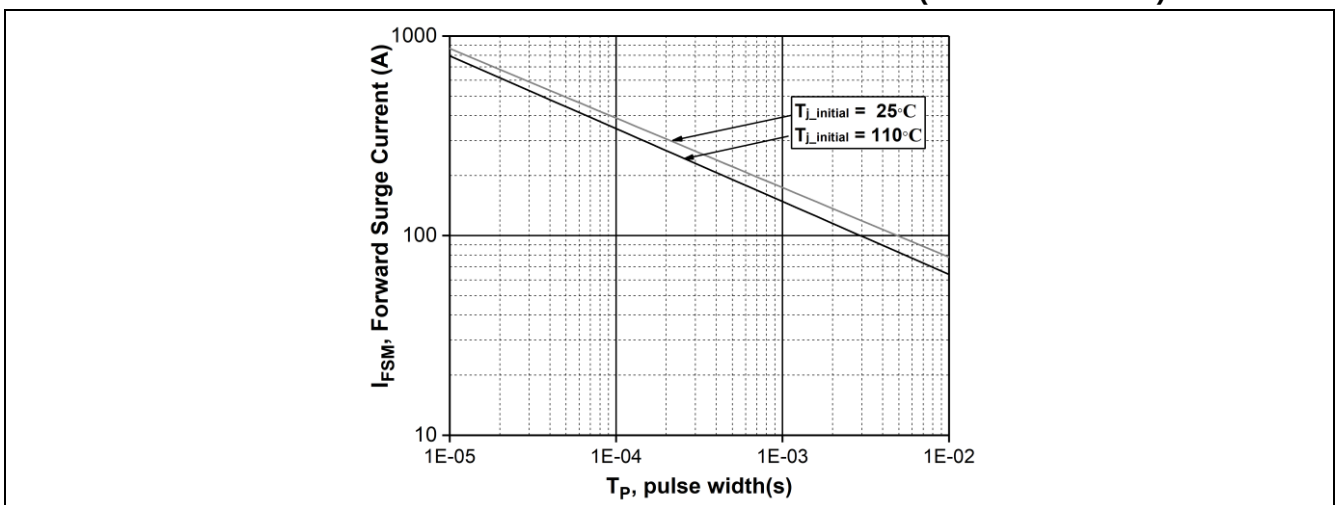
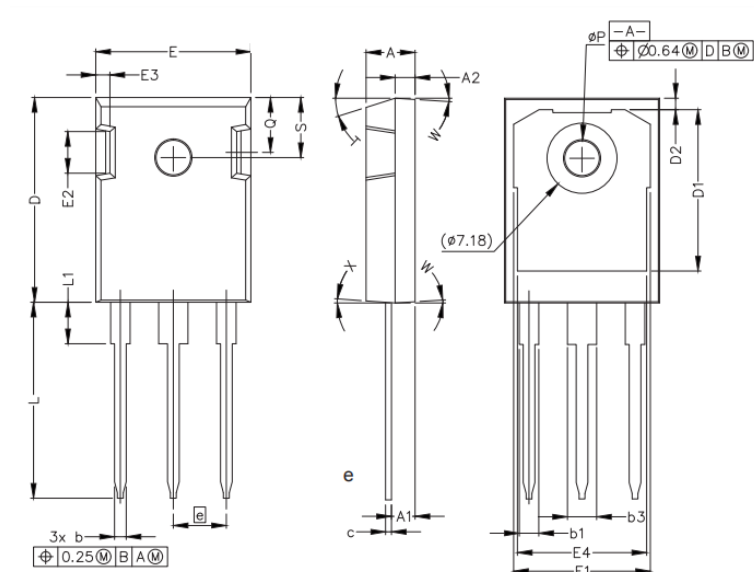
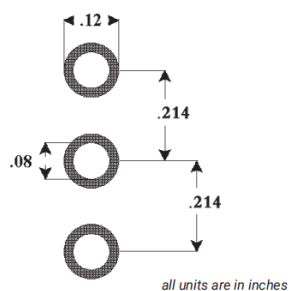


Figure 9. Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

Package TO-247-3L


POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.042	.052	1.07	1.33
b1	.075	.095	1.91	2.41
b3	.113	.133	2.87	3.38
c	.022	.027	0.55	0.68
D	.819	.831	20.80	21.10
D1	.640	.695	16.25	17.65
D2	.037	.049	0.95	1.25
E	.620	.635	15.75	16.13
E1	.516	.557	13.10	14.15
E2	.145	.201	3.68	5.10
E3	.039	.075	1.00	1.90
E4	.487	.529	12.38	13.43
e	.214 BSC		5.44 BSC	
L	.780	.800	19.81	20.32
L1	.161	.173	4.10	4.40
N	3			
ØP	.138	.144	3.51	3.65
Q	.216	.236	5.49	6.00
S	.238	.248	6.04	6.30
T	17.5° REF			
W	3.5° REF			
X	4° REF			

参考焊盘图 / Recommended Solder Pad Layout

TO-247-3L

注意事项 / Attention

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