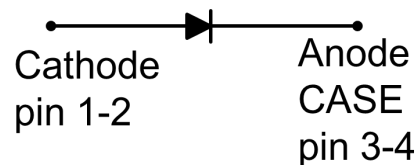
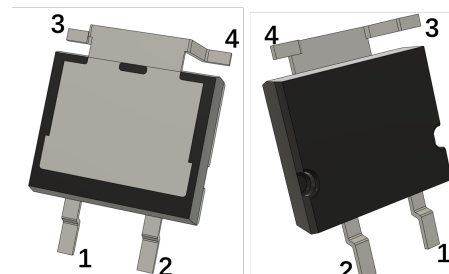


HD020N065H6T

650V-20A Silicon Carbide Schottky Diode

Product features/产品特点

- Top side cooling technology
顶部散热技术
- 650 V Schottky Rectifier
650V肖特基整流器
- Zero Reverse Recovery Current
零反向恢复电流
- High-Frequency Operation
高频运行
- Temperature-Independent Switching
温度无关型开关
- Extremely Fast Switching
超快开关
- Halogen free, RoHs compliant
无卤, 符合RoHs



Applications/应用领域

- Switching Mode Power Supply
开关电源
- Boost Diodes in PFC
PFC升压二极管
- DC/DC Converters
直流/直流变换器
- AC/DC Converters
交流/直流变换器
- Free Wheeling Diodes in Inverter
逆变器续流二极管



Key performance parameters/关键性能参数

Parameter/参数	Value/值	Unit/单位
V_{RRM}	650	V
I_F	20	A
V_F	1.4	V

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650V-20A Silicon Carbide Schottky Diode



Package parameters/封装信息

Type/型号	Package/封装	Marking/标识	Packaging method/包装方式
HD020N065H6T	TSC263-4L	HD020N065T	Tape and Reel/卷带包装

1. Maximum ratings at $T_J=25^{\circ}\text{C}$, unless otherwise specified.

最大额定值 默认 $T_J=25^{\circ}\text{C}$ 除非另有说明

Table 1 Maximum ratings/最大额定值

Parameter 参数	Symbol 符号	Test conditions 测试条件	Value 值	Unit 单位
Repetitive peak reverse voltage 重复峰值反向电压	V_{RRM}		650	V
Crest working reverse voltage 最高工作反向电压	V_{RWM}		650	V
Average Forward Current 平均正向电流	$I_{F,AV}$	$T_C=25^{\circ}\text{C}$	63	A
		$T_C=135^{\circ}\text{C}$	28	
		$T_C=152^{\circ}\text{C}$	20	
Surge non-repetitive forward current, sine halfwave 非重复峰值正向浪涌电流, 正弦半波	$I_{F,SM}$	$T_C=25^{\circ}\text{C}, t_p=10\text{ms}^1$	160	A
Power dissipation 总耗散功率	P_{tot}	$T_C=25^{\circ}\text{C}$	214	W
		$T_C=100^{\circ}\text{C}$	92	

1: After test: $V_F \geq 0.5\text{V}$ @ $I_F=1\text{mA}$; $V_R \geq 520\text{V}$ @ $I_R=1\text{mA}$; $I_R \leq 5\text{mA}$ @ $V_R=650\text{V}$



2. Thermal characteristics

热特性

Table 2 Thermal characteristics/热特性

Parameter 参数	Symbol 符号	Test conditions 测试条件	Value/值			Unit 单位
			Min.	Typ.	Max.	
Storage temperature 存储温度	T_{stg}		-55		175	°C
Operating junction temperature 工作结温	T_j		-55		175	°C
Thermal resistance, junction-case 结-壳热阻	$R_{th(j-c)}$				0.7	K/W
Thermal resistance, junction-ambient 结-环境热阻	$R_{th(j-a)}$				61	K/W
Soldering temperature, reflow solderin 焊接温度, 回流焊	T_{sold}	reflow MSL1			260	°C

HD020N065H6T

650V-20A Silicon Carbide Schottky Diode



3. Electrical characteristics at $T_J=25^{\circ}\text{C}$, unless otherwise specified.

电气特性 默认 $T_J=25^{\circ}\text{C}$ 除非另有说明

Table 3 Static characteristics/静态特性

Parameter 参数	Symbol 符号	Test conditions 测试条件		Value/值			Unit 单位
				Min.	Typ.	Max.	
DC blocking voltage 直流阻断电压	V_{DC}	$I_R=10\mu\text{A}$		650			V
Forward voltage 正向压降	V_F	$I_F=20\text{A}$	$T_J=25^{\circ}\text{C}$		1.4	1.7	V
			$T_J=125^{\circ}\text{C}$		1.55		
			$T_J=175^{\circ}\text{C}$		1.65	2.4	
Reverse leakage current 反向漏电流	I_R	$V_R=650\text{V}$	$T_J=25^{\circ}\text{C}$		5	100	μA
			$T_J=125^{\circ}\text{C}$		10		
			$T_J=175^{\circ}\text{C}$		25	300	

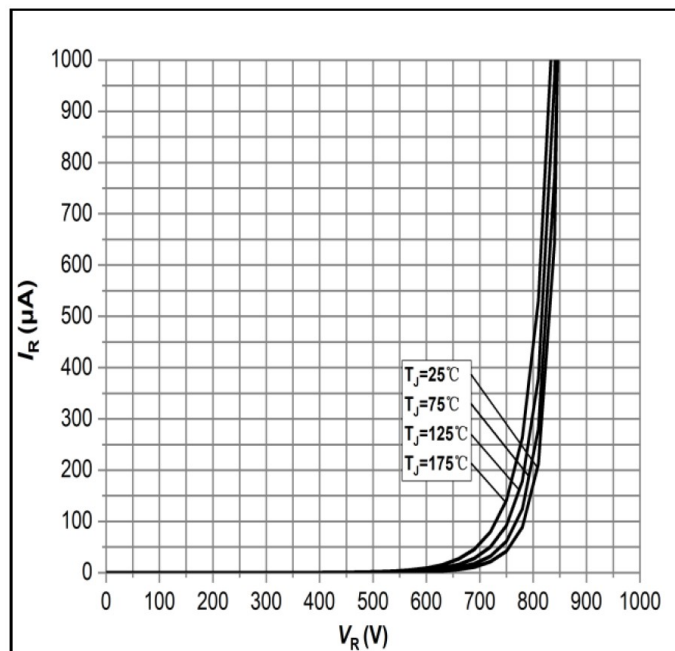
Table 4 Dynamic characteristics/动态特性

Parameter 参数	Symbol 符号	Test conditions 测试条件		Value/值			Unit 单位
				Min.	Typ.	Max.	
Total capacitive charge 总电容电荷	Q_C	$V_R=400\text{V}$			75		nC
Total capacitance 总电容	C	$f=1\text{MHz}, V_R=0\text{V}$			1559		pF
		$f=1\text{MHz}, V_R=200\text{V}$			143		
		$f=1\text{MHz}, V_R=400\text{V}$			111		
Capacitance stored energy 电容存储能量	E_C	$V_R=400\text{V}$			9.6		μJ

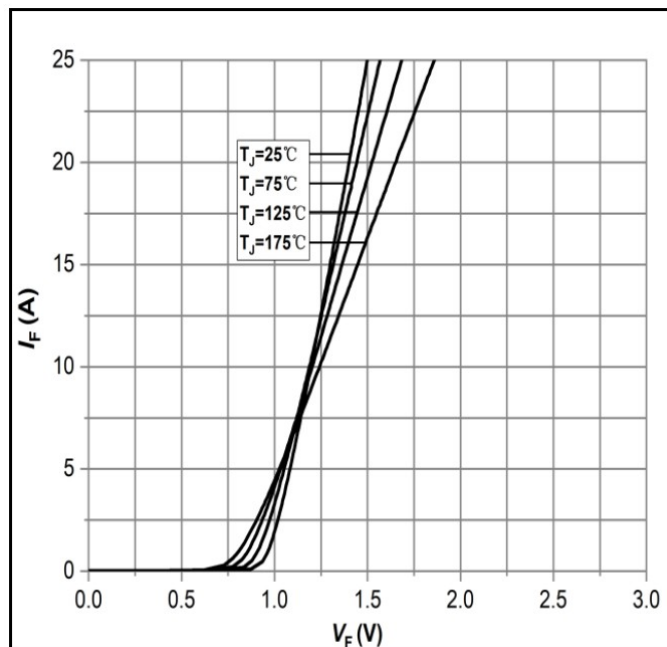
4. Electrical characteristics diagrams

电气特性图表

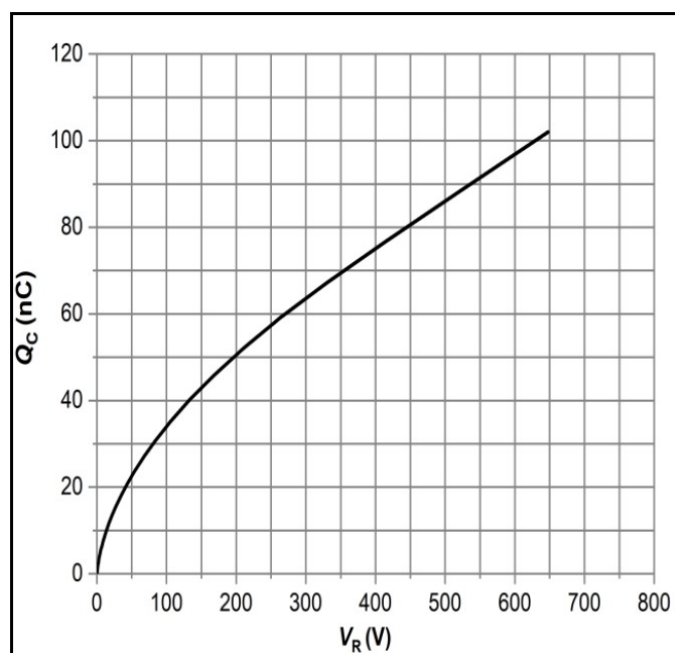
Typ.Reverse current of voltage /典型漏电与电压函数
 $I_R=f(V_R)$;



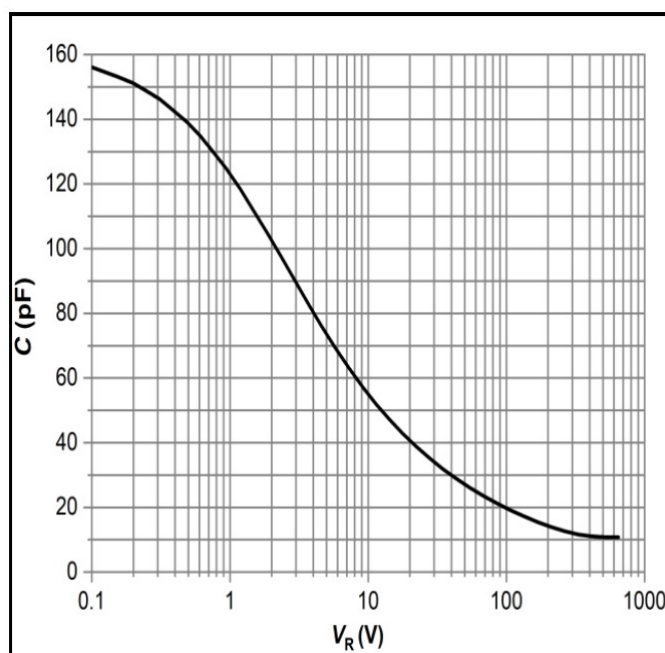
Typ.Forward characteristics/典型正向特性
 $I_F=f(V_F)$;



Typ.Capacitance charge vs. reverse voltage/电容电荷特性
 $Q_C=f(V_R)$; $T_J=25^\circ\text{C}$



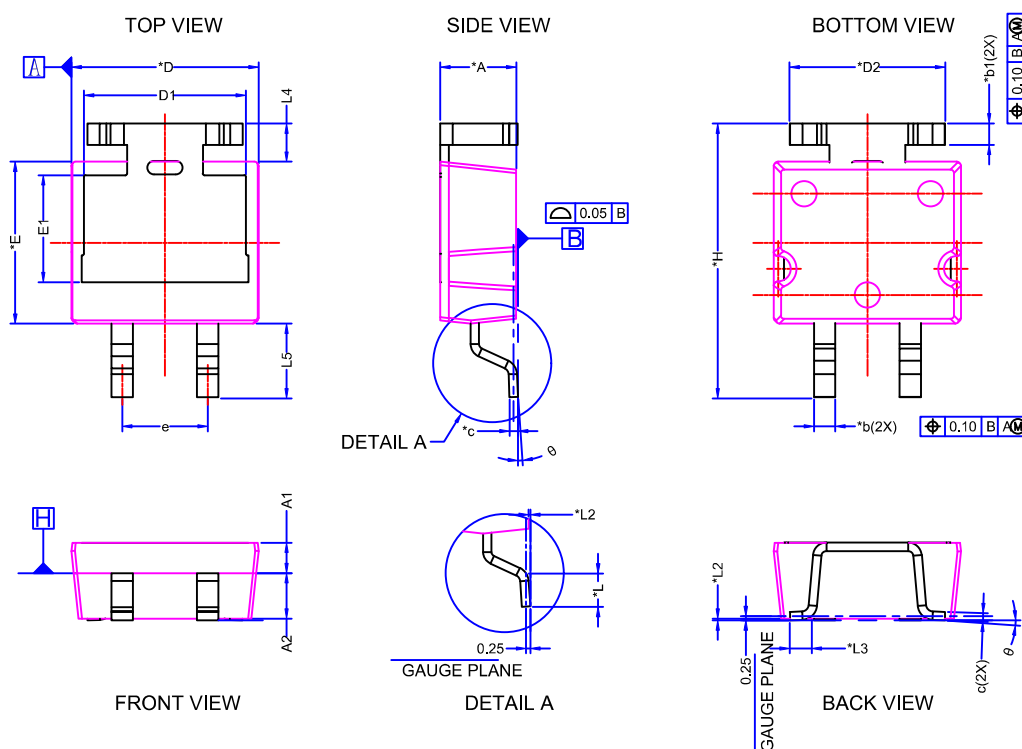
Typ.Capacitance vs. reverse voltage/电容与反向电压特性
 $C=f(V_R)$; $T_J=25^\circ\text{C}$, $f=1\text{MHz}$



5. Package outline

封装外形

Figure 1. Outline TSC263-4L, dimensions in mm/TSC263-4L外形尺寸 (毫米)



DIM SYMBOL	MIN.	TYP.	MAX.	DIM SYMBOL	MIN.	TYP.	MAX.
*A	4.40	4.50	4.60	*E	9.45	9.60	9.75
A1	1.75	1.80	1.85	E1	6.15	6.35	6.55
A2	2.65	2.70	2.75	e	5.08 BSC		
*b	1.22	1.27	1.32	*H	16.02	16.22	16.42
*b1	1.22	1.27	1.32	*L	1.70	1.90	2.15
*c	0.45	0.50	0.55	*L2	0.05	0.10	0.15
*D	15.95	11.15	11.25	*L3	1.15	1.30	1.50
D1	9.50	9.60	9.70	L4	2.27 REF		
*D2	9.00	9.20	9.40	L5	4.15	4.35	4.55
				θ	0°	-	8°

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETER. ANGLES ARE IN DEGREE.
- DIMENSION "D" DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSIONS. INTERLEAD FLASH SHALL NOT EXCEED 0.150 MM PER SIDE. DIMENSION "E" DOES NOT INCLUDE MOLD FLASH, GATE BURRS, THE GATE BURRS SHALL NOT EXCEED 0.15MM.
- DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.

注:

- 所有尺寸均以毫米为单位。角度以度为单位。
- 尺寸 D 不包括引脚间飞边或突出物。引脚间飞边在每侧不得超过0.15mm。尺寸 E 不包括模具飞边、浇口残余物，浇口残余物不得超过0.15mm。
- 尺寸 D、E 是在塑胶本体的最外极限确定的，不包括模具飞边、连接条残余、浇口残余和引脚间飞边，但包括塑胶本体顶部和底部之间可能存在的任何不匹配或错位。



6. Revision history
修订历史

Table 5 Date and version number/日期与版本号

Date日期	Revision版本	Changes更改内容
2025-12-22	Rev. G 1.0	Target Datasheet (目标规格书)

7. Matters needing attention
注意事项

Appendix 1. Important Technical Guidance, Application Policy, and Copyright Notice/重要技术指南、应用规范与版权声明

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