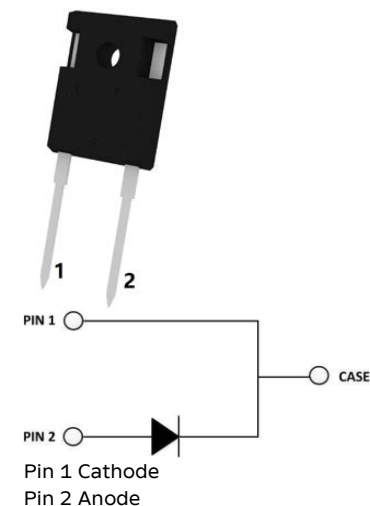


SCD040HA065S22F

3th Generation 650V/40A SiC Schottky Barrier Diode

第三代 650V/40A 碳化硅肖特基二极管

Package Type: TO-247-2L

 $V_{RRM} = 650\text{ V}$ $I_F(135\text{ }^{\circ}\text{C}) = 47\text{ A}$ $V_F(25\text{ }^{\circ}\text{C}) = 1.35\text{ V}$

- High-speed switching performance
高速开关表现
- No reverse recovery
无反向恢复

Maximum ratings 最大额定值^{1 2}

PARAMETER 参数	SYMBOL 符号	CONDITIONS 条件	MIN 最小	MAX 最大	UNIT 单位
Repetitive peak reverse voltage 重复反向峰值电压	V_{RRM}	$T_{vj} = 25\text{ }^{\circ}\text{C}$		650	V
Surge peak reverse voltage 浪涌峰值反向电压	V_{RSM}			650	V
DC reverse voltage 直流反向电压	V_{DC}			650	V
Continuous forward current 连续正向电流	I_F	$T_C = 25\text{ }^{\circ}\text{C}$		97	A
		$T_C = 135\text{ }^{\circ}\text{C}$		47	A
		$T_C = 146\text{ }^{\circ}\text{C}$		40	A
Surge non-repetitive forward current 非重复正向浪涌电流	I_{FSM}	$T_C = 25\text{ }^{\circ}\text{C}$ $t_p = 10\text{ ms}$, half sine pulse		252	A
Repetitive peak forward current 重复峰值正向电流	I_{FRM}	$T_C = 25\text{ }^{\circ}\text{C}$, $t_p = 10\text{ ms}$, half sine wave $D = 0.1$		181	A
Power dissipation 耗散功率	P_{tot}			319	W
i^2t value 安秒平方值	$\int i^2 dt$	$T_C = 25\text{ }^{\circ}\text{C}$, $t_p = 10\text{ ms}$		317	A^2s
Operation junction temperature 工作结温范围	T_{vj}		-55	175	$^{\circ}\text{C}$
Storage temperature 存储温度范围	T_{stg}		-55	175	$^{\circ}\text{C}$



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¹ Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747¹ 根据标准 IEC 60747 要求，最大额定值表示超过该限值可能会对器件造成损坏² $T_{vj} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified / 除非另有规定, $T_{vj} = 25\text{ }^{\circ}\text{C}$



SiC Diode^{3 4}

PARAMETER 参数	SYMBOL 符号	CONDITIONS 条件	MIN 最小	TYP 典型	MAX 最大	UNIT 单位
DC blocking voltage 直流击穿电压	V _{DC}	I _R = 100 µA	650			V
Forward voltage 正向导通压降	V _F	I _F = 40 A		1.35	1.50	V
				1.55	2.20	V
Reverse current 反向电流	I _R	V _R = 650 V		3	120	µA
				20	240	µA
Total capacitance 总电容	C	f = 1 MHz		2200		pF
				203		pF
				165		pF
Total capacitive charge 总电容电荷	Q _C	V _R = 400 V (∫C(V)dV)		107		nC
Capacitance stored energy 电容储存能量	E _C	V _R = 400 V (∫Q _C (V)dV)		16		µJ

Package properties 封装特性

PARAMETER 参数	SYMBOL 符号	CONDITIONS 条件	MIN 最小	TYP 典型	MAX 最大	UNIT 单位
Thermal resistance from junction to case 结到壳热阻	R _{th(j-c)}			0.47		K/W

³ Characteristic values according to IEC 60747-2 / 特性值依据 IEC 60747-2

⁴ T_{vj} = 25 °C, unless otherwise specified / 除非另有规定, T_{vj} = 25 °C

Characteristics 特性曲线

Figure 1. Forward characteristics

图 1. 正向特性

$$I_F = f(V_F)$$

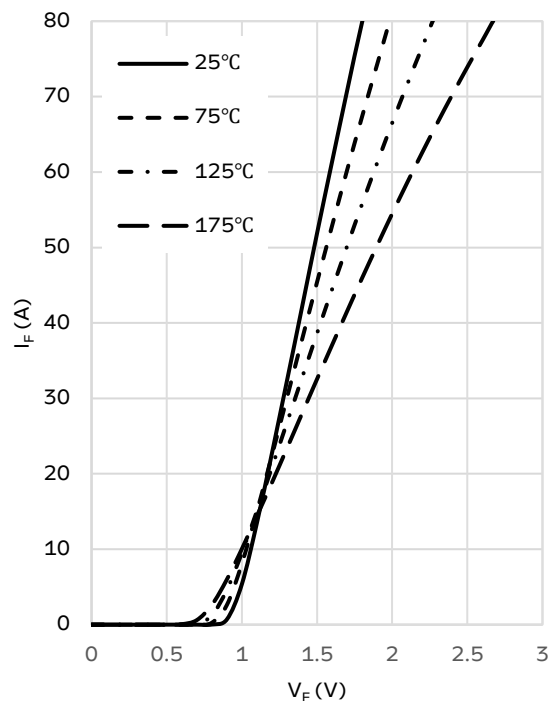


Figure 2. Reverse characteristics

图 2. 反向特性

$$I_R = f(V_R)$$

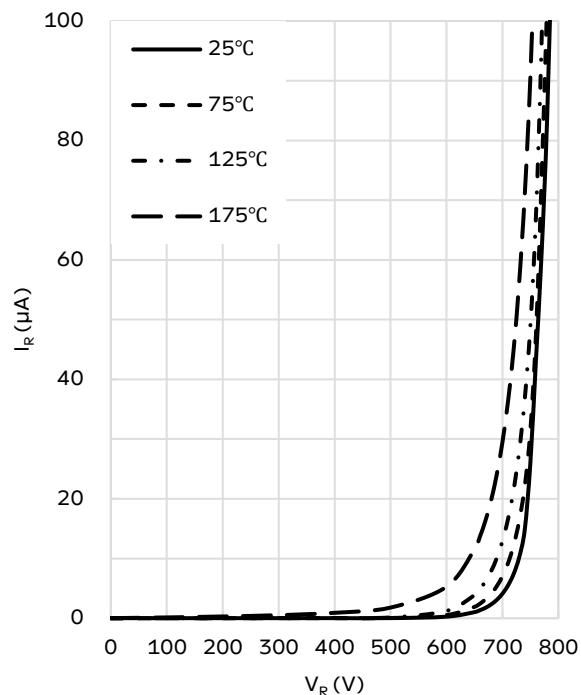


Figure 3. Current derating

图 3. 电流降额

$$I_{F(\text{peak})} = f(T_C)$$

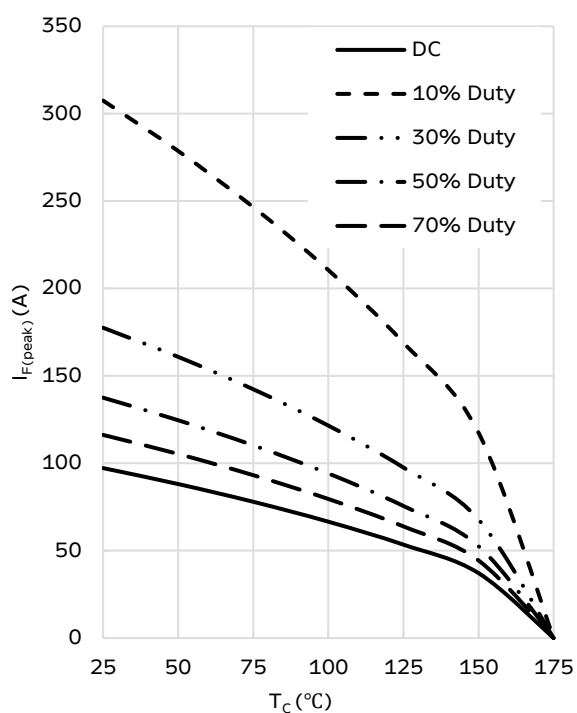


Figure 4. Power derating

图 4. 功率降额

$$P_{\text{tot}} = f(T_C)$$

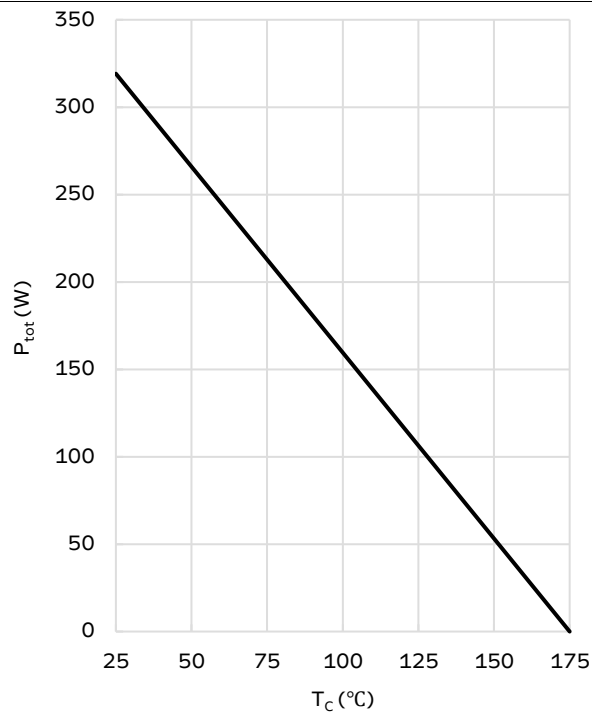




Figure 5. Capacitance vs. reverse voltage

图 5. 电容 vs 反向电压

$$C = f(V_R)$$

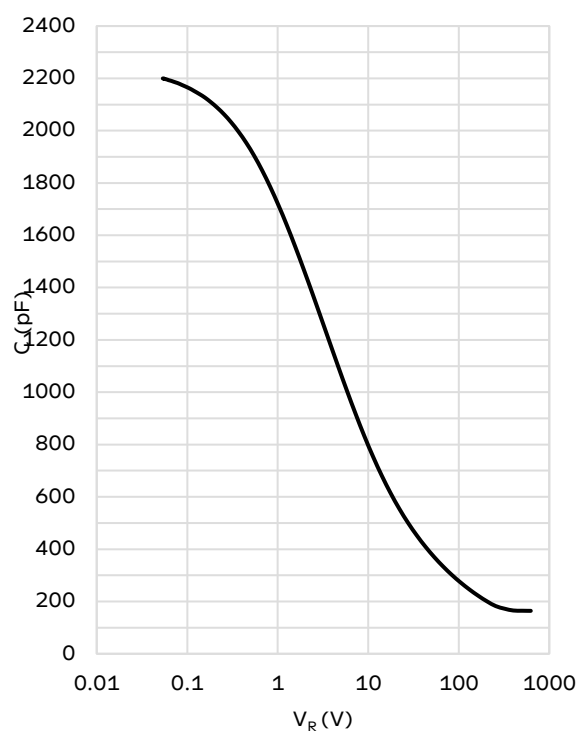


Figure 6. Total capacitance charge vs. reverse voltage

图 6. 总电容电荷 vs 反向电压

$$Q_C = f(V_R)$$

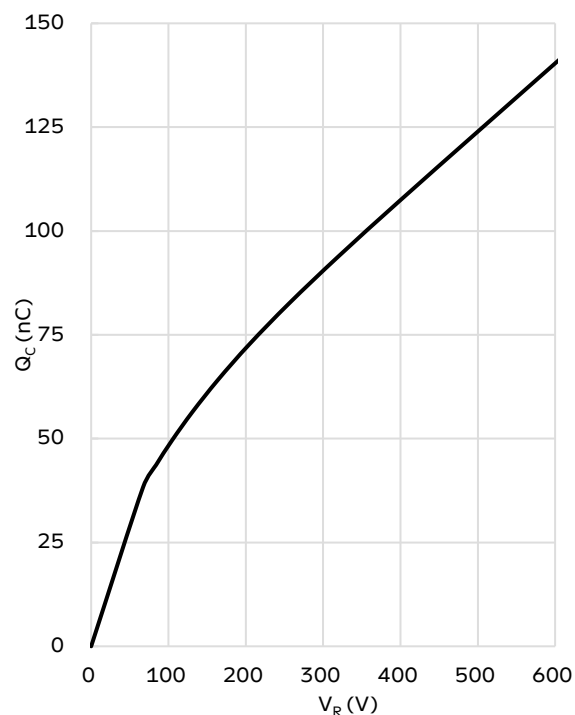


Figure 7. Capacitance stored energy

图 7. 电容储存能量

$$E_C = f(V_R)$$

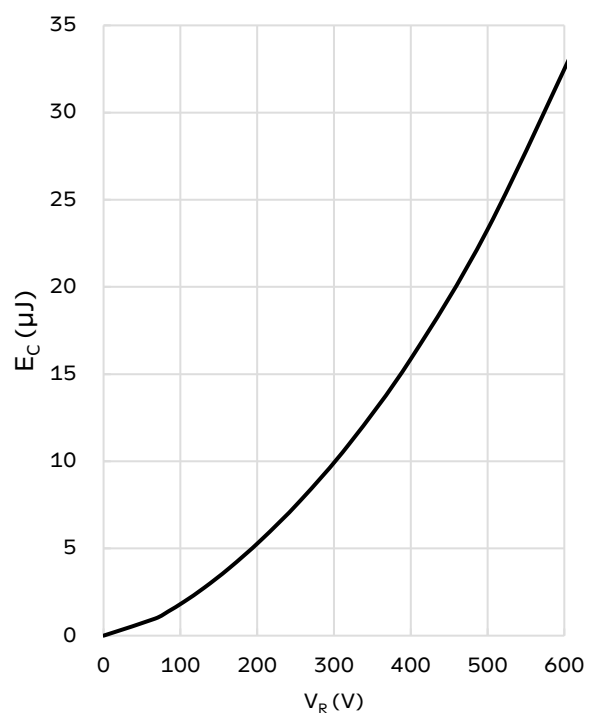
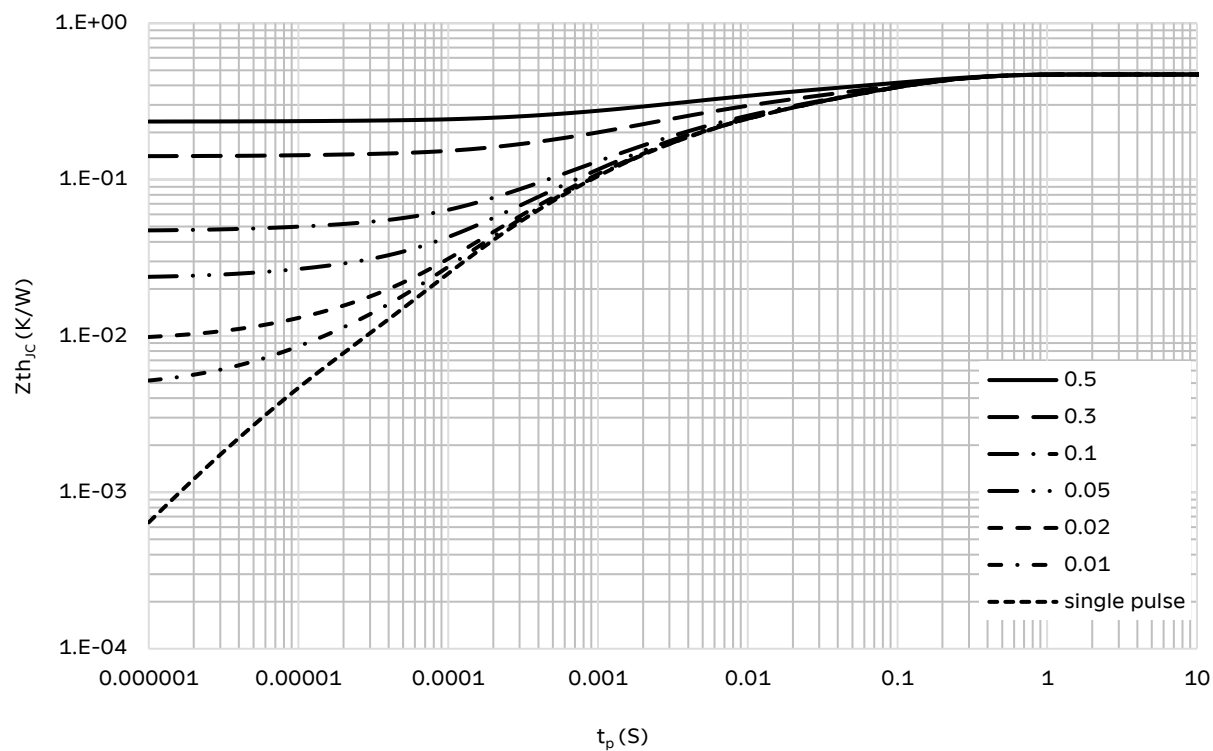


Figure 8. Transient thermal impedance (Junction - Case)

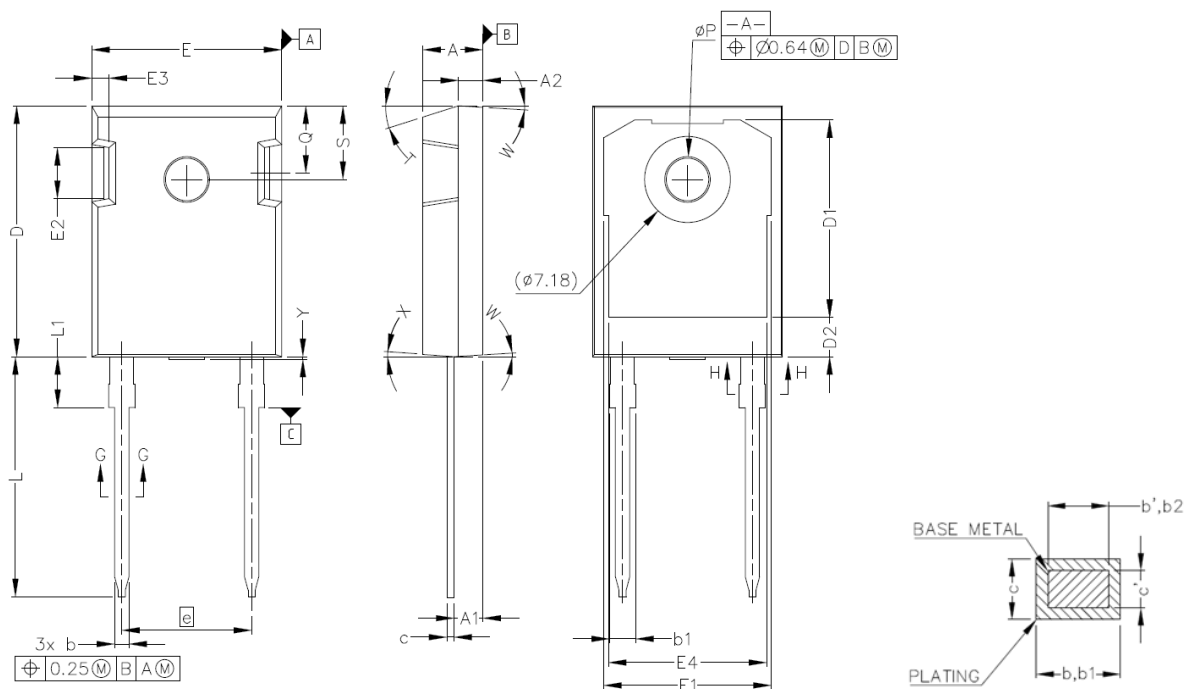
图 8. 瞬态热阻

$$Z_{th,jc} = f(t_p)$$



Outline drawing 外形图

Marking SCDS22F040HA065



Sym- bol	Dimensions In Mil- limeters	
	Min.	Max.
A	4.83	5.21
A1	2.29	2.54
A2	1.91	2.16
b'	1.07	1.28
b	1.07	1.33
b1	1.91	2.41
b2	1.91	2.16
c'	0.55	0.65
c	0.55	0.68
D	20.80	21.10
D1	16.25	17.35
D2	2.86	3.16
E	15.75	16.13
E1	13.10	14.15

Sym- bol	Dimensions In Mil- limeters	
	Min.	Max.
E2	3.68	5.10
E3	1.00	1.90
E4	12.38	13.43
e	10.88 BSC	
L	19.81	20.32
L1	4.10	4.40
ΦP	3.51	3.65
Q	5.49	6.00
s	6.04	6.30
T	17.5° REF	
W	3.5° REF	
X	4° REF	
Y	0	0.50

This is an electrostatic sensitive device. 本产品对静电特别敏感.

This product has been designed and qualified for Industrial Level. 本产品的设计符合工业级标准.

Note: All dimensions are in mm



Ordering Information 订购信息

OPTION 选项		ARTICLE NUMBER 商品编号
Qualification grade	Industrial (F)	SCD040HA065S22F
Packaging Method 包装方式	Tube (_P20)	SCD040HA065S22F_P20

Revision History 修订历史

Release 发布	Version 版本	Description 描述
2026-07-30	v1.0	Preliminary Datasheet 初始规格书