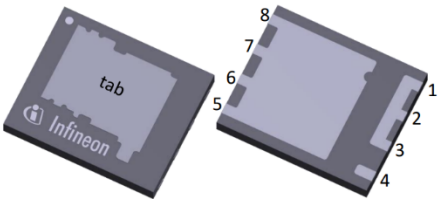
英飞凌 MOSFET

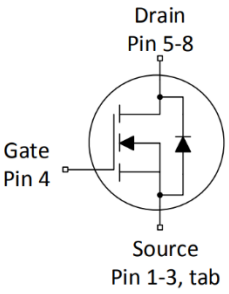
PG-WSON-8



OptiMOS™ 8 功率 MOSFET，80 V

特性

- 双面冷却封装，具有最低的结顶热阻
- N 沟道，标准电平
- 针对电机驱动、同步整流和电池保护进行了优化
- 软恢复体二极管
- 100% 雪崩测试
- 卓越的热阻
- 额定温度为 175°C
- 无铅镀层；符合 RoHS 标准
- 符合 IEC61249-2-21 标准的无卤素
- 基于 JSTD020 的 MSL 1 分类

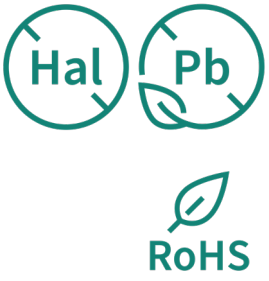


产品验证

通过 JEDEC 相关测试。

表 1　　主要性能参数

Parameter	Value	Unit
V_{DS}	80	V
$R_{DS(on),max}$	1.64	mΩ
I_D	269	A
Q_{oss}	147	nC
Q_G (0 V..10 V)	76	nC
Q_{rr} (100 A/µs)	162	nC



Part number	Package	Marking	Related links
ISC016N08NM8SC	PG-WSON-8	016N08SC	-

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1 最大额定值

除非另有规定，T_A = 25 °C

表 2 最大额定值

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Continuous drain current [1]	I_D	-	-	269	A	V_{GS}=10 V, T_C=25 °C
				190		V_{GS}=10 V, T_C=100 °C
				196		V_{GS}=15 V, T_C=100 °C
				29		V_{GS}=10 V, T_A=25 °C, R_{THJA}=50 °C/W [2]
Pulsed drain current [3]	$I_{D,pulse}$	-	-	1076	A	T_C=25 °C
Avalanche energy, single pulse [4]	E_{AS}	-	-	442	mJ	I_D=50 A, R_{GS}=25 Ω
Gate source voltage	V_{GS}	-20	-	20	V	-
Power dissipation	P_{tot}	-	-	263	W	T_C=25 °C
				3.0		T_A=25 °C, R_{THJA}=50 °C/W [2]
Operating and storage temperature	T_j, T_{stg}	-55	-	175	°C	IEC climatic category; DIN IEC 68-1: 55/175/56

[1] 额定值仅适用于满足数据手册规定绝对最大值的产品，保持外壳温度符合规定要求。其他外壳温度请参见图 2。需要根据实际环境条件降低额定值。

[2] 器件置于 40 mm × 40 mm × 1.5 mm 环氧树脂 PCB FR4 上，配有6 cm^2（单层，70 µm 厚）铜层面积用于漏极连接。PCB 在静止空气中垂直放置。

[3] 更多详细信息请参见图 3。

[4] 详细信息请参见图 13。

2 热特性

表 3 热特性

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Thermal resistance, junction - case, bottom	R_{thJC}	-	0.38	0.57	°C/W	-
Thermal resistance, junction - case, top	R_{thJC}		0.36	0.72		
Thermal resistance, junction - ambient , 6 cm^2 cooling area [5)]	R_{thJA}		-	50		

5) 器件置于 40 mm × 40 mm × 1.5 mm 环氧树脂 PCB FR4 上，配有6 cm^2（单层，70 µm 厚）铜层面积用于漏极连接。PCB 在静止空气中垂直放置。

3 电气特性

除非另有规定，T_j = 25°C

表 4 静态特性

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Drain-source breakdown voltage	$V_{(BR)DSS}$	80	-	-	V	V_{GS}=0 V, I_D=1 mA
Gate threshold voltage	$V_{GS(th)}$	2.5	3.0	3.5	V	V_{DS}=V_{GS}, I_D=111 µA
Zero gate voltage drain current	I_{DSS}	-	0.1	1	µA	V_{DS}=80 V, V_{GS}=0 V, T_j=25 °C
Zero gate voltage drain current [6]	I_{DSS}	-	10	100	µA	V_{DS}=80 V, V_{GS}=0 V, T_j=125 °C
Gate-source leakage current	I_{GSS}	-	10	100	nA	V_{GS}=20 V, V_{DS}=0 V
Drain-source on-state resistance	$R_{DS(on)}$	-	1.31	1.54	mΩ	V_{GS}=15 V, I_D=50 A
			1.44	1.64		V_{GS}=10 V, I_D=50 A
			1.61	1.87		V_{GS}=8 V, I_D=25 A
Gate resistance	R_G	-	0.95	-	Ω	-
Transconductance [6]	g_{fs}	55	110	-	S	$\|V_{DS}\|\geq 2\|I_D\|R_{DS(on)max}$, I_D=50 A

6) 由设计指定，未经过生产测试。

表 5 动态特性

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Input capacitance [7]	C_{iss}	-	5500	7200	pF	V_{GS}=0 V, V_{DS}=40 V, f=1 MHz
Output capacitance [7]	C_{oss}		2230	2900		
Reverse transfer capacitance [7]	C_{rss}		24	42		
Turn-on delay time	$t_{d(on)}$	-	14	-	ns	V_{DD}=40 V, V_{GS}=10 V, I_D=50 A, $R_{G,ext}$=1.6 Ω
Rise time	t_r		6.1			
Turn-off delay time	$t_{d(off)}$		28			
Fall time	t_f		7.2			

7) 由设计指定，未经过生产测试。

表 6　　栅极电荷特性 [8)]

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Gate to source charge	Q_{gs}	-	29	-	nC	V_{DD}=40 V, I_D=50 A, V_{GS}=0 to 10 V
Gate charge at threshold	$Q_{g(th)}$		17	-	nC	
Gate to drain charge [9)]	Q_{gd}		15	19	nC	
Switching charge	Q_{sw}		27	-	nC	
Gate charge total [9)]	Q_g		76	99	nC	
Gate plateau voltage	$V_{plateau}$		5.3	-	V	
Gate charge total, sync. FET	$Q_{g(sync)}$	-	69	-	nC	V_{DS}=0.1 V, V_{GS}=0 to 10 V
Output charge [9)]	Q_{oss}	-	147	191	nC	V_{DS}=40 V, V_{GS}=0 V

8)　栅极电荷参数定义见图 16。

9)　由设计指定。未经过生产测试。

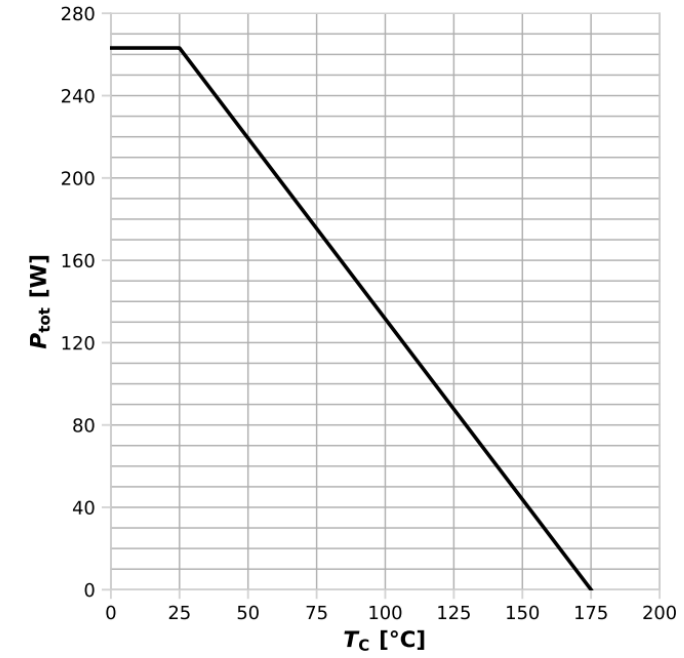
表 7　　反向二极管

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Diode continuous forward current	I_S	-	-	232	A	T_C=25 °C
Diode pulse current	$I_{S,pulse}$			1076		
Diode forward voltage	V_{SD}	-	0.84	1.0	V	V_{GS}=0 V, I_F=50 A, T_j=25 °C
Reverse recovery time [10)]	t_{rr}	-	187	374	ns	V_R=40 V, I_F=50 A, di_F/dt=100 A/µs
Reverse recovery charge [10)]	Q_{rr}		162	325	nC	
Reverse recovery time [10)]	t_{rr}	-	39	78	ns	V_R=40 V, I_F=50 A, di_F/dt=500 A/µs
Reverse recovery charge [10)]	Q_{rr}		209	418	nC	

10)　由设计指定。未经过生产测试。

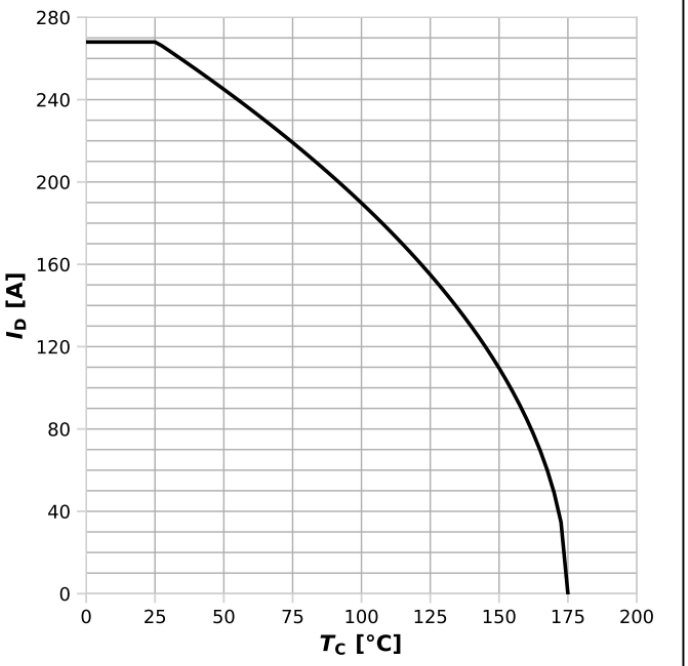
4 电气特性图

Diagram 1: Power dissipation



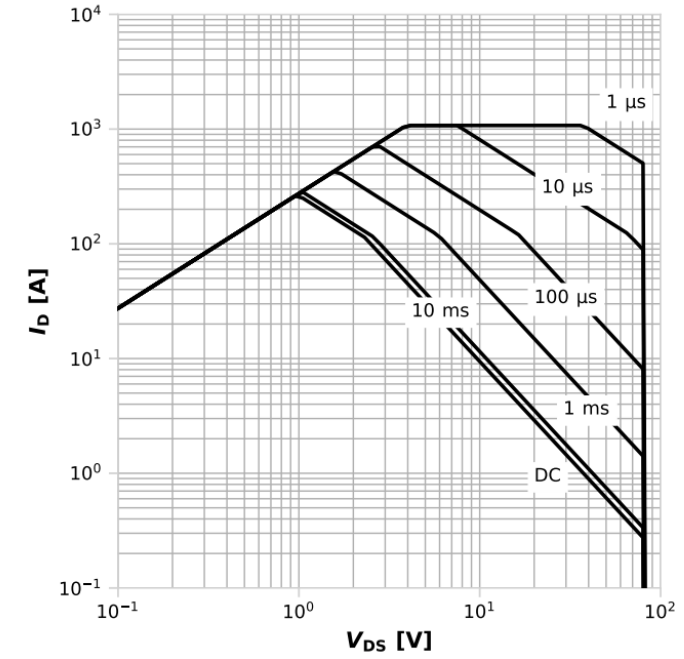
P_{tot}=f(T_C)

Diagram 2: Drain current



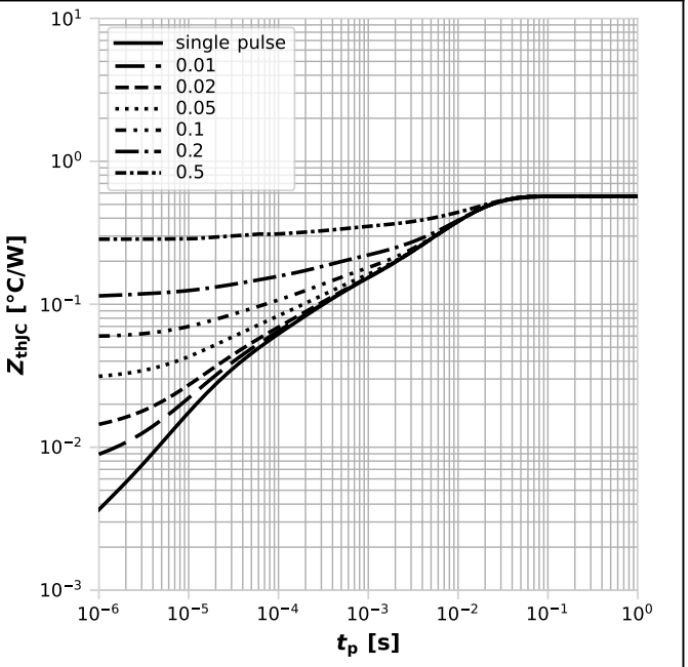
I_D=f(T_C); V_{GS}≥10 V

Diagram 3: Safe operating area



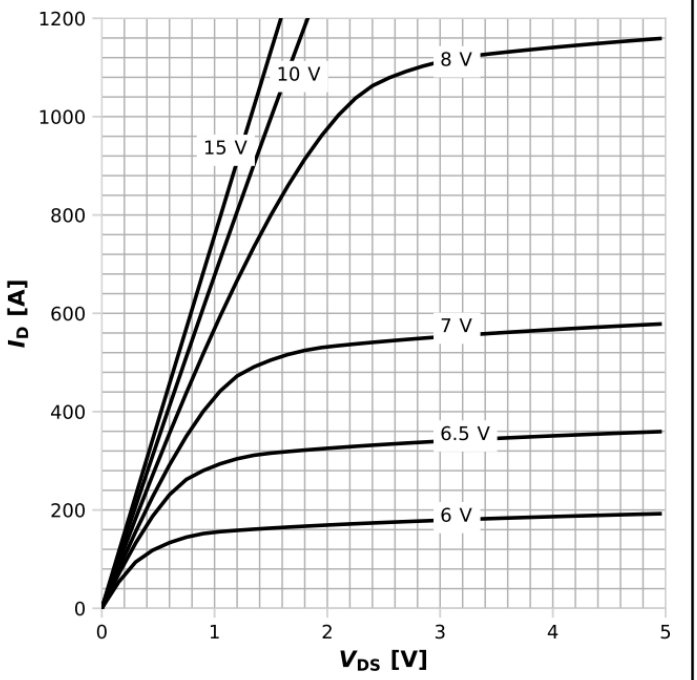
I_D=f(V_{DS}); T_C=25 °C; D=0; parameter: t_p

Diagram 4: Max. transient thermal impedance



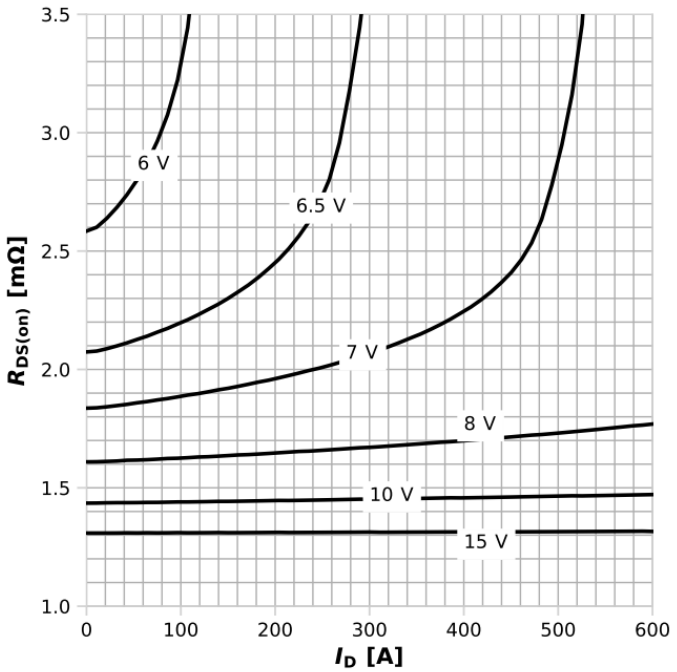
Z_{thJC}=f(t_p); parameter: D=t_p/T

Diagram 5: Typ. output characteristics



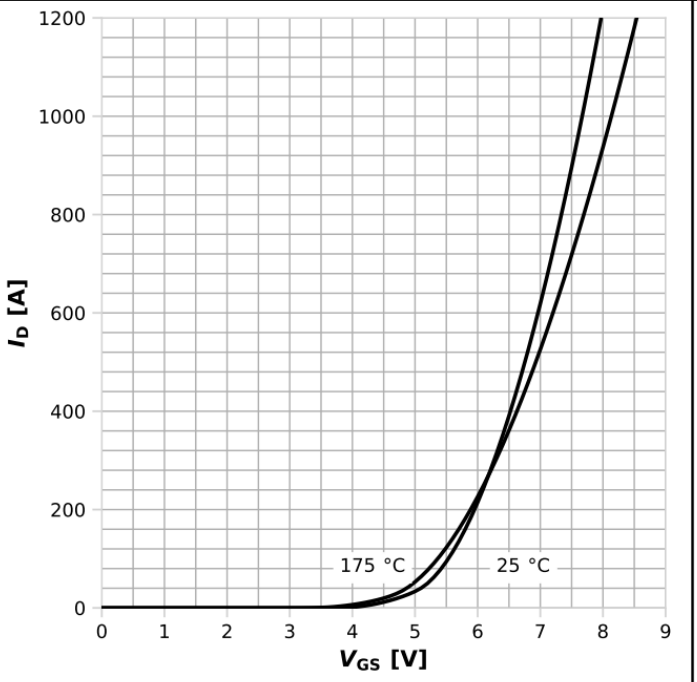
$I_D=f(V_{DS})$, $T_j=25$ °C; parameter: V_{GS}

Diagram 6: Typ. drain-source on resistance



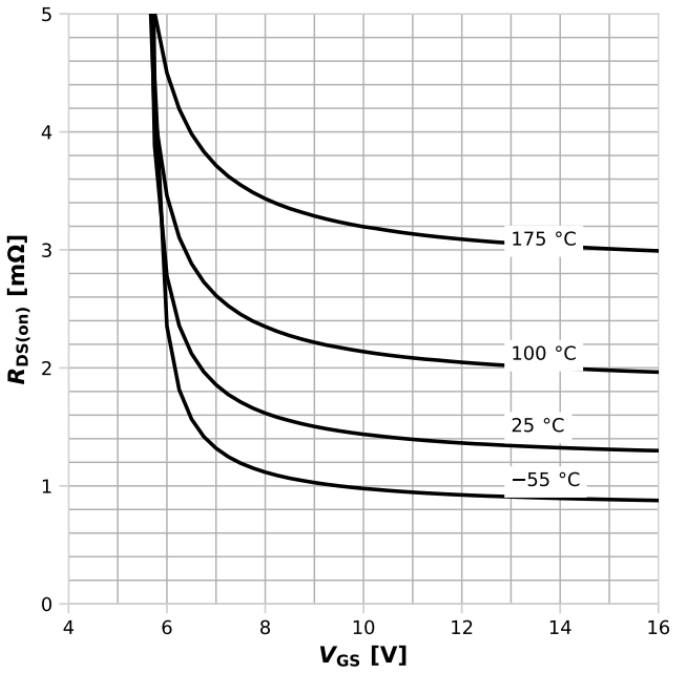
$R_{DS(on)}=f(I_D)$, $T_j=25$ °C; parameter: V_{GS}

Diagram 7: Typ. transfer characteristics



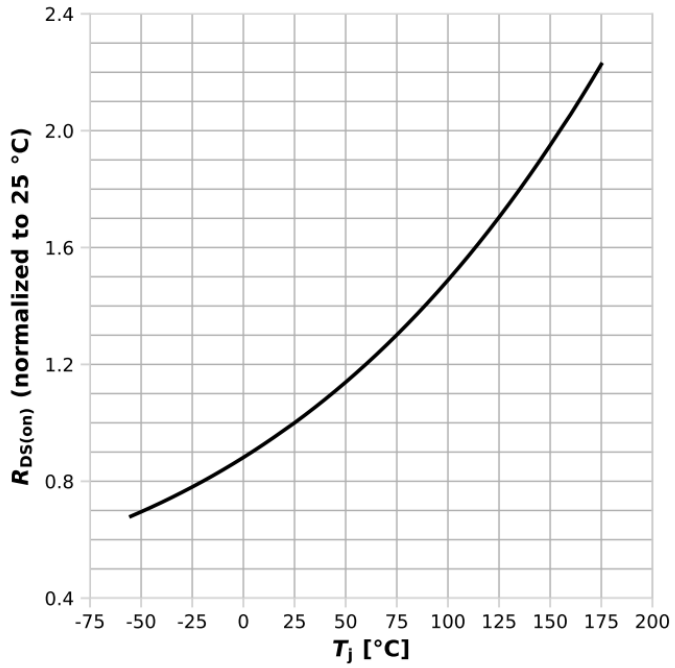
$I_D=f(V_{GS})$, $|V_{DS}|>2|I_D|R_{DS(on)max}$; parameter: T_j

Diagram 8: Typ. drain-source on resistance



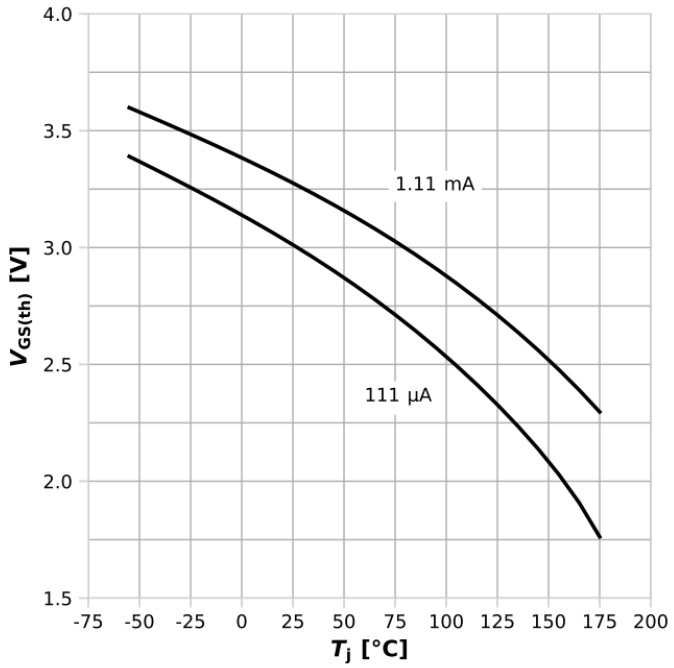
$R_{DS(on)}=f(V_{GS})$, $I_D=50$ A; parameter: T_j

Diagram 9: Normalized drain-source on resistance



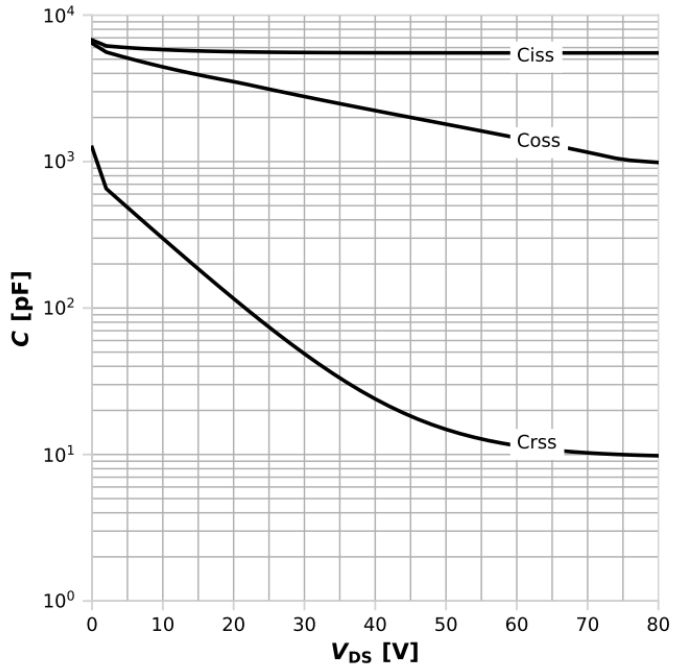
$R_{DS(on)}$=f(T_j), I_D=50 A, V_{GS}=10 V

Diagram 10: Typ. gate threshold voltage



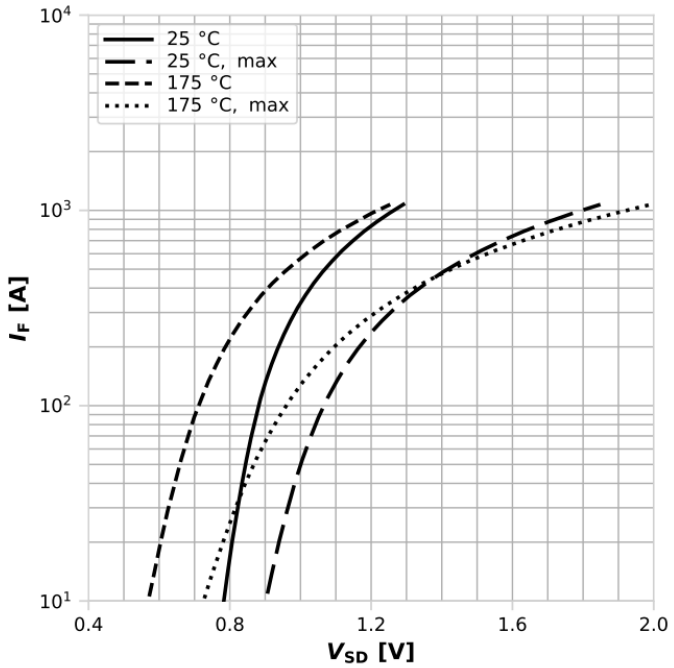
$V_{GS(th)}$=f(T_j), V_{GS}=V_{DS}; parameter: I_D

Diagram 11: Typ. capacitances



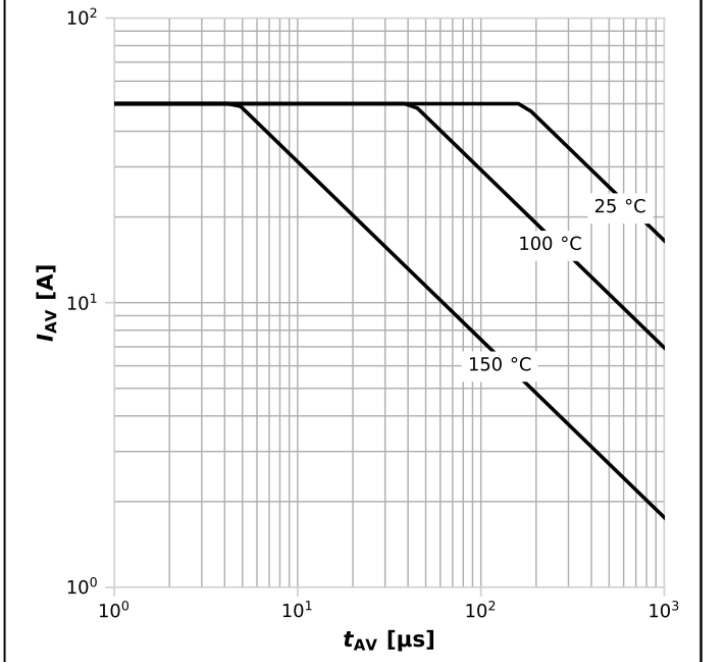
C=f(V_{DS}); V_{GS}=0 V; f=1 MHz

Diagram 12: Forward characteristics of reverse diode



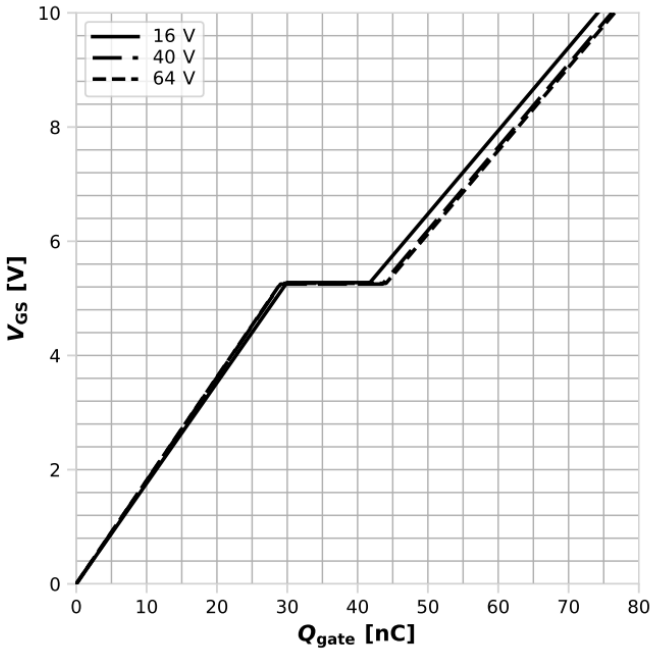
I_F=f(V_{SD}); parameter: T_j

Diagram 13: Avalanche characteristics



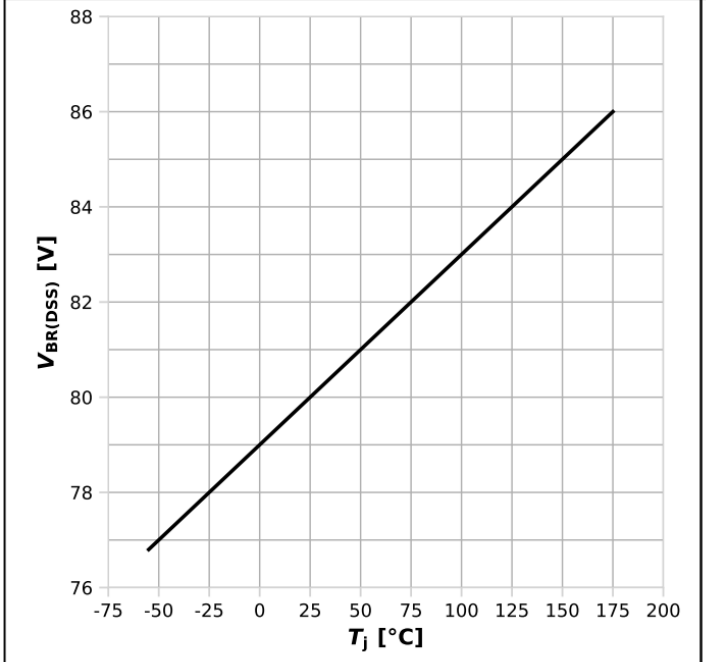
I_{AS}=f(t_{AV}); R_{GS}=25 Ω; parameter: $T_{j,start}$

Diagram 14: Typ. gate charge



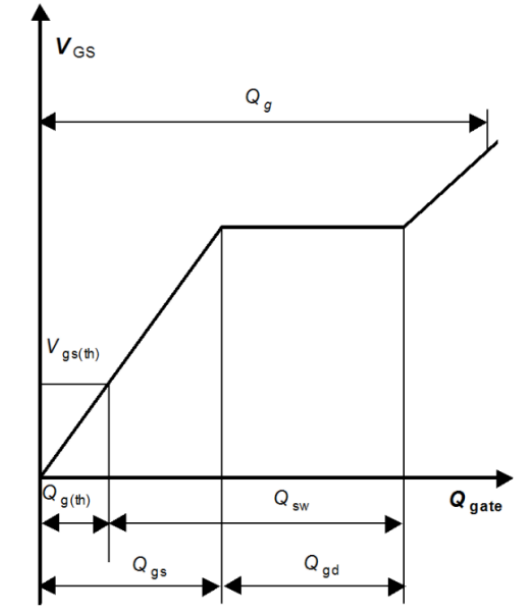
V_{GS}=f(Q_{gate}), I_D=50 A pulsed, T_j=25 °C; parameter: V_{DD}

Diagram 15: Min. drain-source breakdown voltage



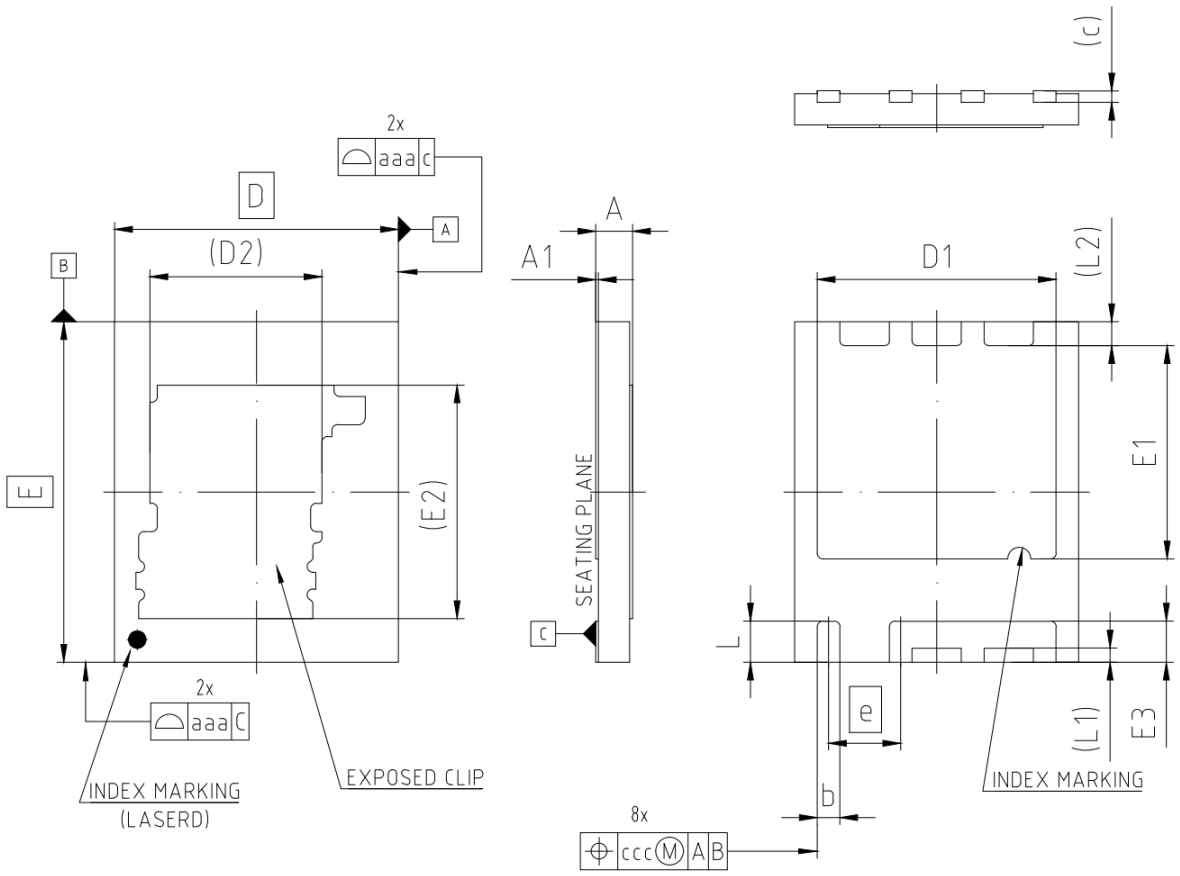
$V_{BR(DSS)}$=f(T_j); I_D=1 mA

Gate charge waveforms



-

5 封装外形



PACKAGE - GROUP NUMBER:	PG-WSON-8-U01				
DIMENSIONS	MILLIMETERS		DIMENSIONS	MILLIMETERS	
	MIN.	MAX.		MIN.	MAX.
A	0.55	0.75	e	1.27	
A1	0.00	0.05	L	0.68	0.78
b	0.35	0.45	L1	0.25	
c	0.20		L2	0.42	
D	5.00		aaa	0.05	
D1	4.11	4.31	ccc	0.10	
D2	3.03				
E	6.00				
E1	3.66	3.86			
E2	4.11				
E3	0.63	0.83			

NOTE: DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSION OR GATE BURRS

图 1 PG-WSON-8 外形图，尺寸单位为 mm

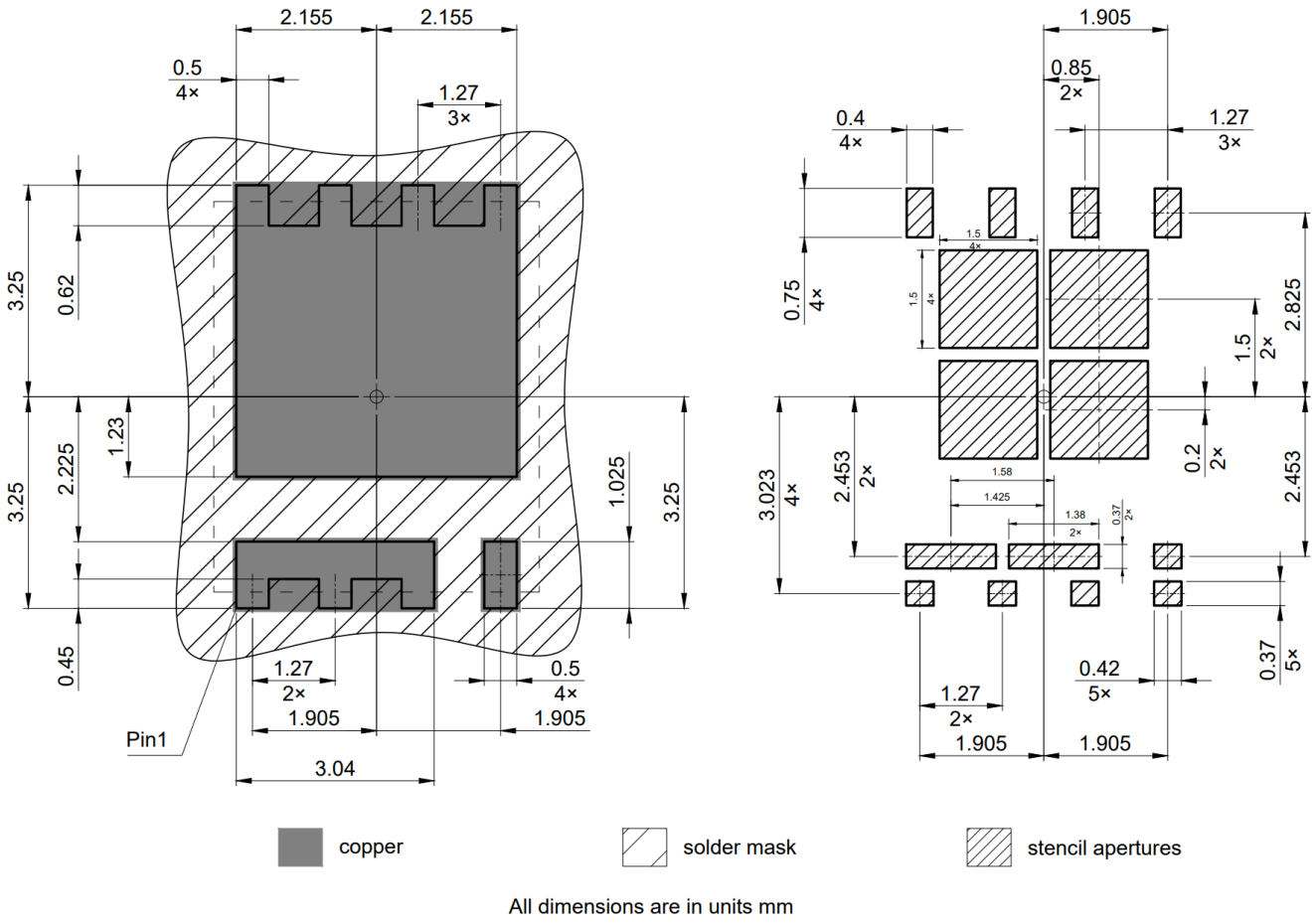


图 2 PG- WSON- 8 焊盘图，尺寸单位为 mm

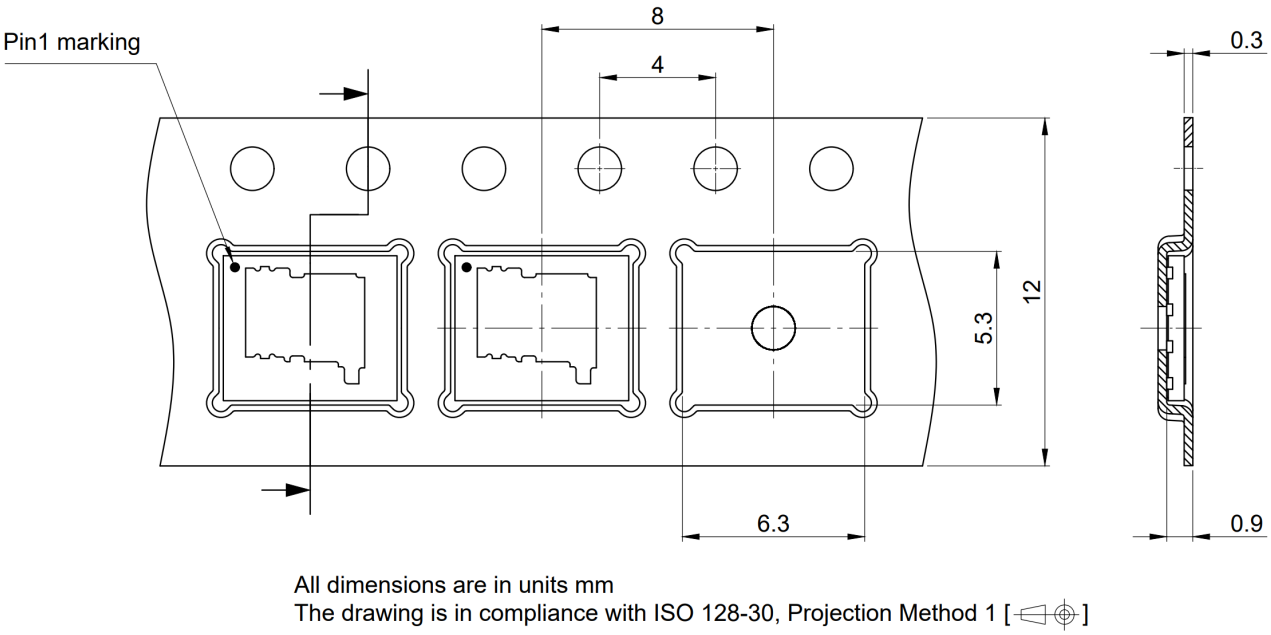


图 3 PG-WSON-8 封装变体，尺寸单位为 mm

修订记录

ISC016N08NM8SC

Revision 2025 - 12 - 17 , Rev. 1 . 2

历史修订版本

Revision	Date	Subjects (major changes since last revision)
1.0	2025-08-21	Release of final version
1.1	2025-10-17	Updated part marking from "16N08SC" to "016N08SC"
1.2	2025-12-17	Updated RthJC

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版本 **2026-09-21**

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