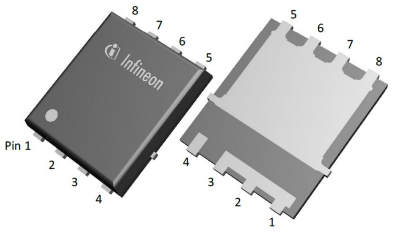
MOSFET

英飞凌OptiMOS ™ 6功率 MOSFET，80 V

PG-TDSON-8



特性

- N沟道，标准电平
- 针对高性能 SMPS 进行了优化
- 出色的栅极电荷 x $R_{DS(on)}$乘积 (FOM)
- 100% 雪崩测试
- 工作温度 175°C
- 无铅镀层；符合 RoHS 标准
- 符合 IEC61249-2-21 标准的无卤素

产品验证

已通过 JEDEC 相关测试。

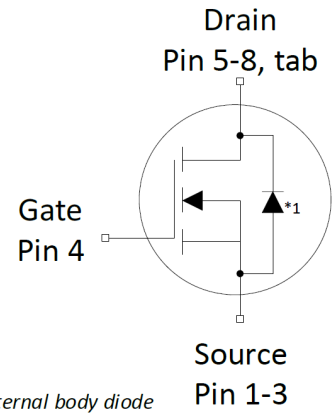


表 1　　主要性能参数

Parameter	Value	Unit
V_{DS}	80	V
$R_{DS(on),max}$	2.5	mΩ
I_D	171	A
Q_{oss}	91	nC
Q_G (0V..10V)	46	nC
Q_{rr} (100A/µs)	72	nC

Hal Pb RoHS

Part number	Package	Marking	Related links
ISC025N08NM6	PG-TDSON-8	025N08N6	-

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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	-	-	171	A	V_{GS}=10 V, T_C=25 °C
				121		V_{GS}=10 V, T_C=100 °C
				109		V_{GS}=8 V, T_C=100 °C
				23		V_{GS}=10 V, T_A=25 °C, R_{THJA}=50 °C/W [2]
Pulsed drain current [3]	$I_{D,pulse}$	-	-	684	A	T_A=25 °C
Avalanche energy, single pulse [4]	E_{AS}	-	-	219	mJ	I_D=50 A, R_{GS}=25 Ω
Gate source voltage	V_{GS}	-20	-	20	V	-
Power dissipation	P_{tot}	-	-	167	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	-

1) 额定值指产品仅依据数据手册指定的绝对最大值，保持外壳温度对于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 环氧树脂印刷电路板 FR4 上，配有6 cm^2（单层，70 µm厚）铜层面积用于漏极连接。印刷电路板垂直放置在静止空气中。

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}	-	0.45	0.90	°C/W	-
Thermal resistance, junction - case, top	R_{thJC}		-	20		
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 环氧树脂印刷电路板 FR4 上，配有6 cm^2（单层，70 µm厚）铜层面积用于漏极连接。印刷电路板垂直放置在静止空气中。

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	$V_{GS(th)}$	2.4	3.0	3.5	V	V_{DS}=V_{GS}, I_D=81 µA
Zero gate voltage drain current	I_{DSS}	-	0.1	1.0	µA	V_{DS}=64 V, V_{GS}=0 V, T_j=25 °C
Zero gate voltage drain current [6]	I_{DSS}	-	10	100	µA	V_{DS}=64 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	$R_{DS(on)}$	-	2.1	2.5	mΩ	V_{GS}=10 V, I_D=50 A
			2.5	3.15		V_{GS}=8 V, I_D=25 A
Gate resistance [6]	R_G	0.45	0.65	0.95	Ω	-
Transconductance [6]	g_{fs}	40	95	-	S	$\|V_{DS}\|\geq 2\|I_D\|R_{DS(on)max}$, I_D=50 A

[6] 由设计指定，

表 5 动态特性

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Input capacitance [7]	C_{iss}	-	3300	4000	pF	V_{GS}=0 V, V_{DS}=40 V, f=1 MHz
Output capacitance [7]	C_{oss}		1100	1380		
Reverse transfer capacitance [7]	C_{rss}		28	39		
Turn-on delay time	$t_{d(on)}$	-	15	-	ns	V_{DD}=40 V, V_{GS}=10 V, I_D=25 A, $R_{G,ext}$=1.6 Ω
Rise time	t_r		8.6			
Turn-off delay time	$t_{d(off)}$		22			
Fall time	t_f		5.3			

[7] 由设计指定，

表 6 栅极电荷特性 [8)]

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Gate to source charge [9)]	Q_{gs}	-	16	19	nC	V_{DD}=40 V, I_D=25 A, V_{GS}=0 to 10 V
Gate charge at threshold [9)]	$Q_{g(th)}$		9.8	11.8	nC	
Gate to drain charge [9)]	Q_{gd}		9.3	13	nC	
Switching charge	Q_{sw}		16	-	nC	
Gate charge total [9)]	Q_g		46	55	nC	
Gate plateau voltage	$V_{plateau}$		4.9	-	V	
Output charge [9)]	Q_{oss}	-	91	114	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，

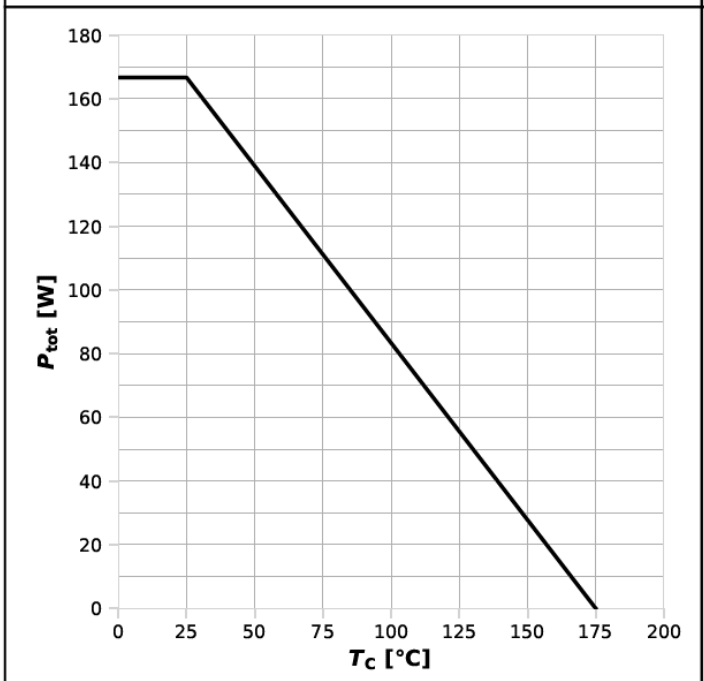
表 7 反向二极管

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Diode continuous forward current [10)]	I_S	-	-	155	A	T_C=25 °C
Diode pulse current [10)]	$I_{S,pulse}$			684		
Diode forward voltage	V_{SD}	-	0.81	1.0	V	V_{GS}=0 V, I_F=50 A, T_j=25 °C
Reverse recovery time [10)]	t_{rr}	-	51	77	ns	V_R=40 V, I_F=25 A, di_F/dt=100 A/µs
Reverse recovery charge [10)]	Q_{rr}		72	108	nC	
Reverse recovery time [10)]	t_{rr}	-	28	42	ns	V_R=40 V, I_F=25 A, di_F/dt=1000 A/µs
Reverse recovery charge [10)]	Q_{rr}		302	453	nC	

[10)] 由设计指定，

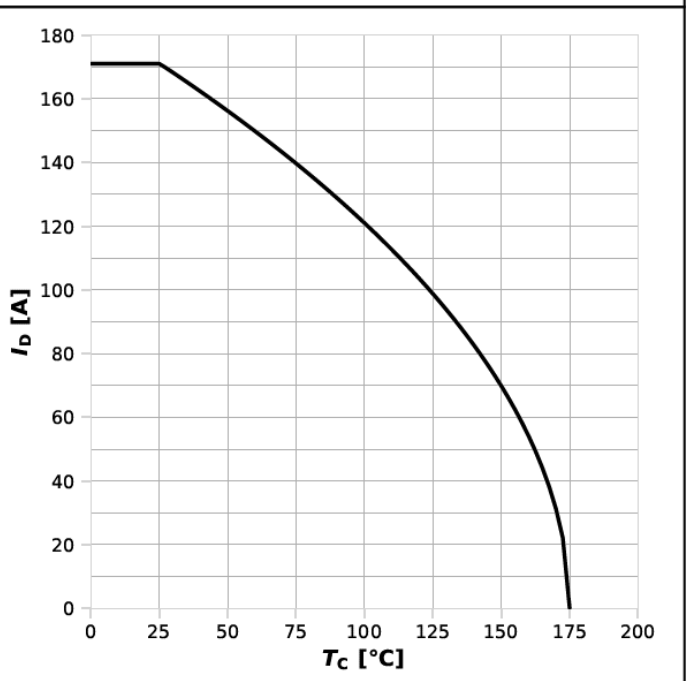
4 电气特性图

Diagram 1: Power dissipation



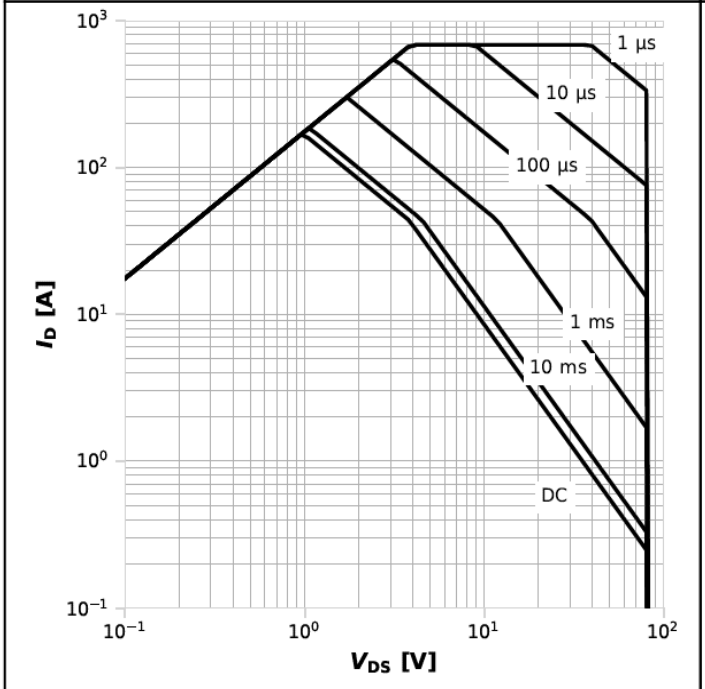
$P_{tot}=f(T_C)$

Diagram 2: Drain current



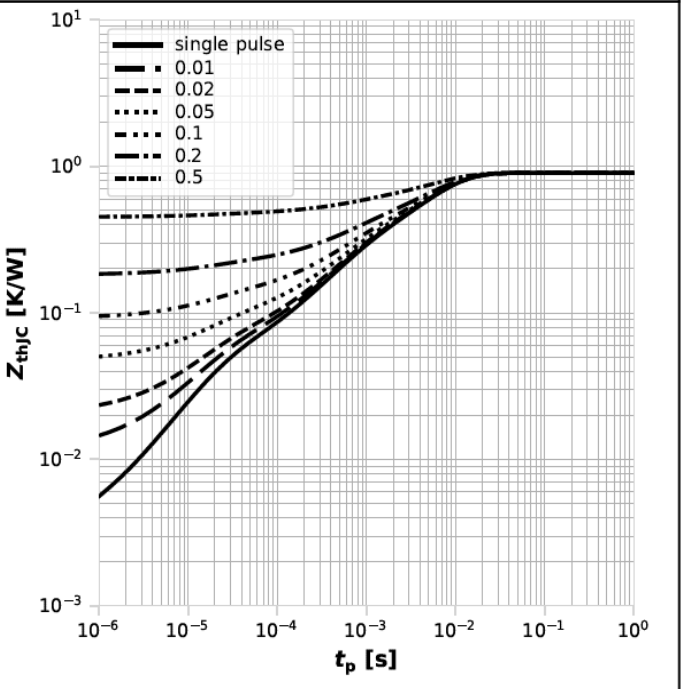
$I_D=f(T_C)$; $V_{GS}\geq 10$ V

Diagram 3: Safe operating area



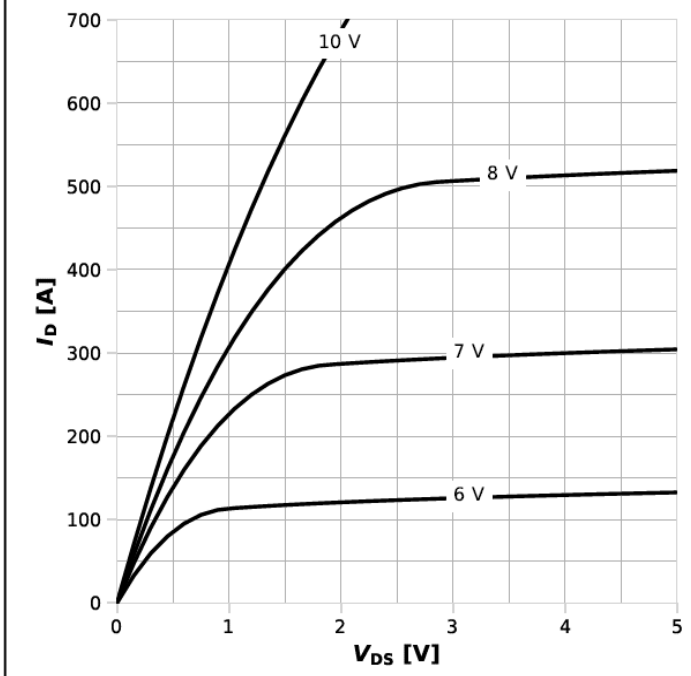
$I_D=f(V_{DS})$; $T_C=25$ °C; $D=0$; parameter: t_p

Diagram 4: Max. transient thermal impedance



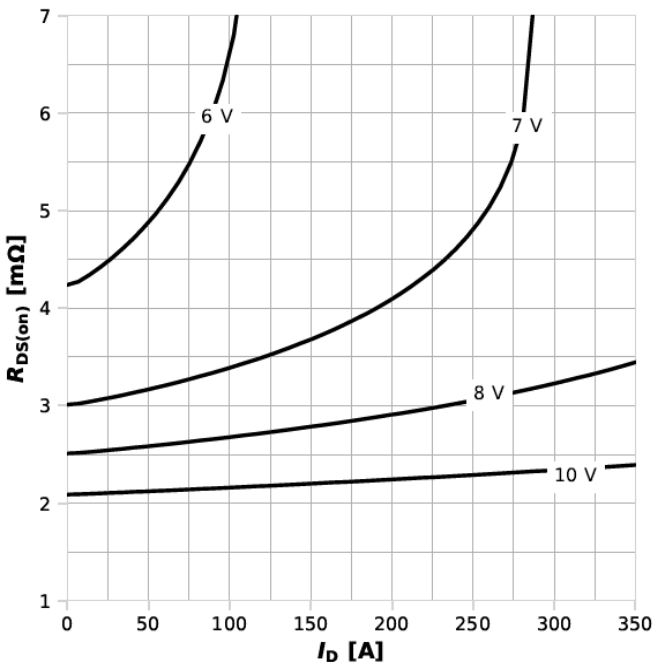
$Z_{thJC}=f(t_p)$; parameter: $D=t_p/T$

Diagram 5: Typ. output characteristics



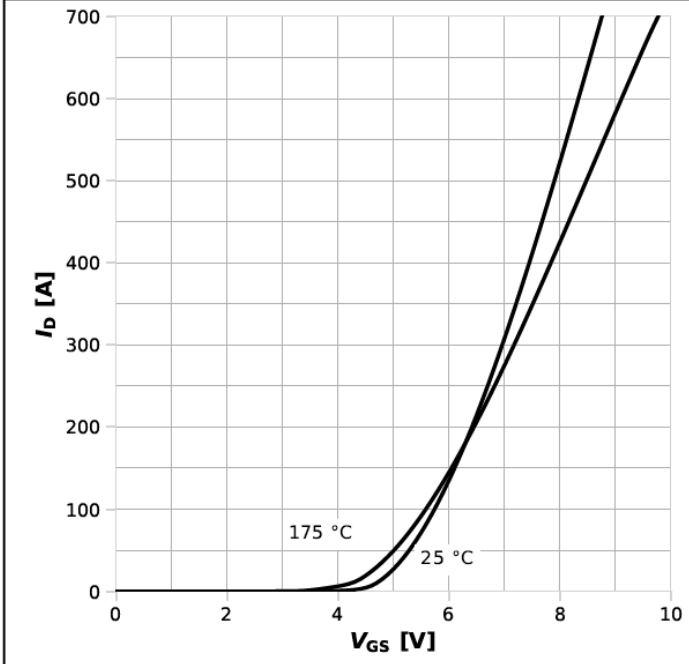
$I_D=f(V_{DS})$, $T_j=25$ °C; parameter: V_{GS}

Diagram 6: Typ. drain-source on resistance



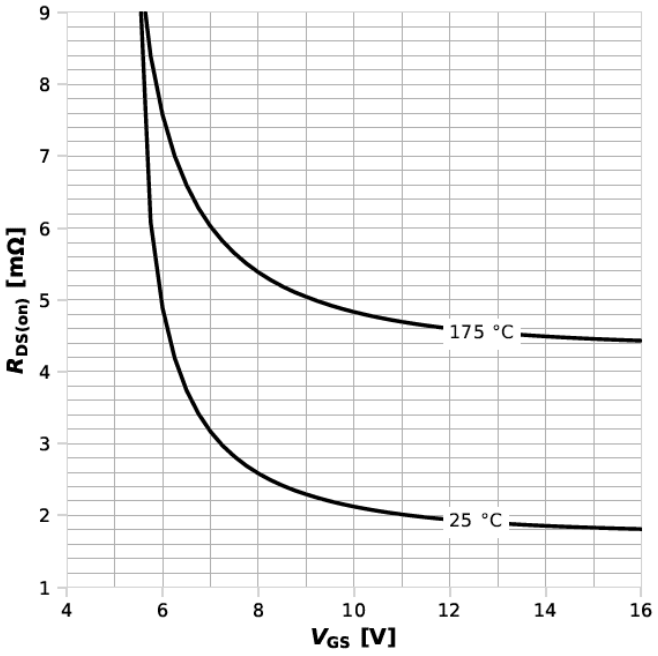
$R_{DS(on)}=f(I_D)$, $T_j=25$ °C; parameter: V_{GS}

Diagram 7: Typ. transfer characteristics



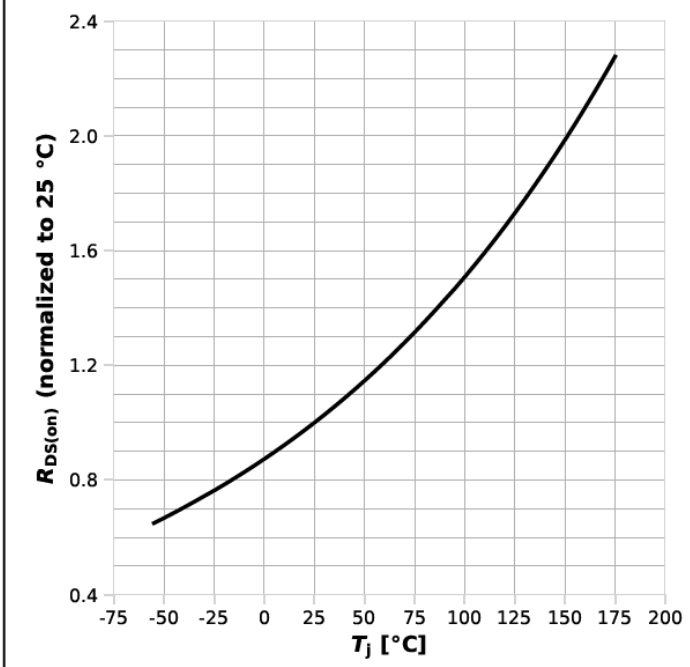
$I_D=f(V_{GS})$, $|V_{DS}|>2|I_D|R_{DS(on)max}$; parameter: T_j

Diagram 8: Typ. drain-source on resistance



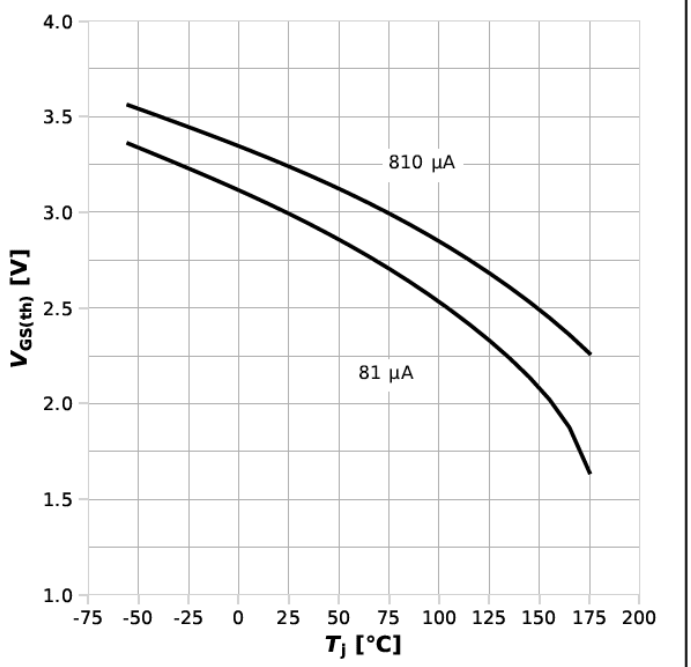
$R_{DS(on)}=f(V_{GS})$, $I_D=50$ A; parameter: T_j

Diagram 9: Normalized drain-source on resistance



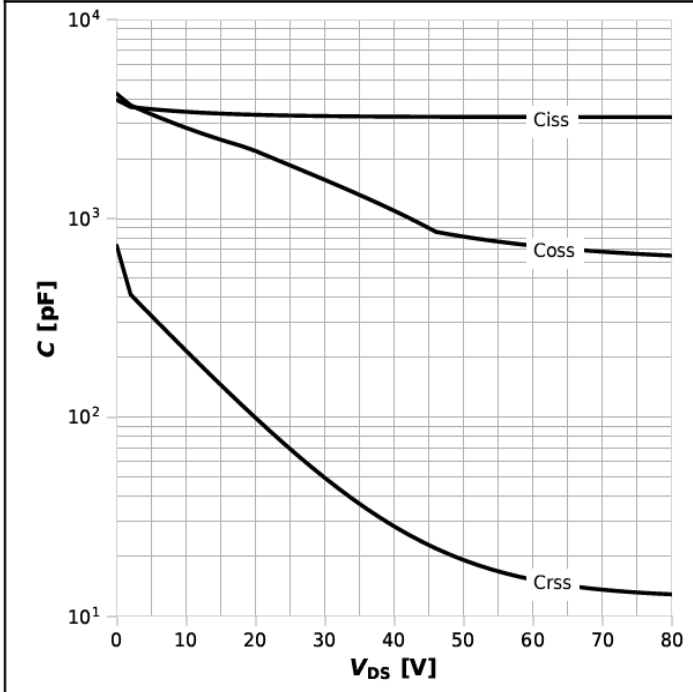
$R_{DS(on)}=f(T_j)$, I_D=50 A, V_{GS}=10 V

Diagram 10: Typ. gate threshold voltage



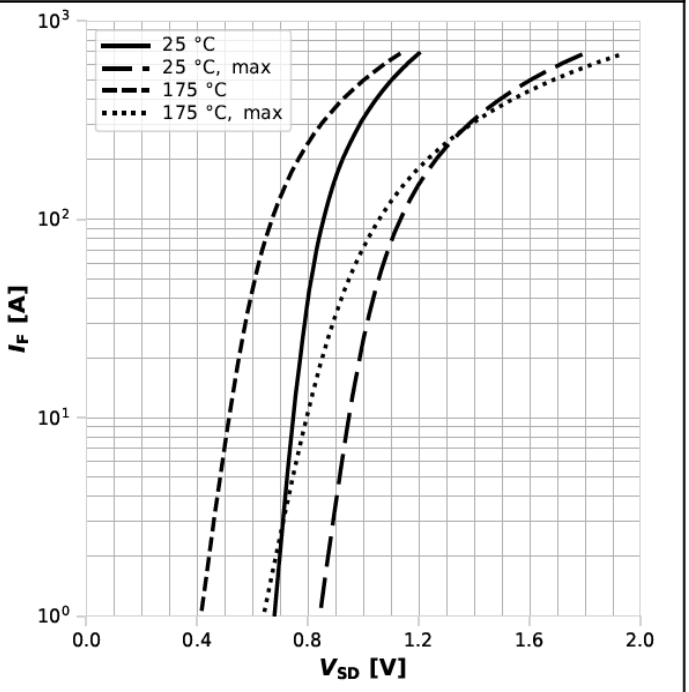
$V_{GS(th)}=f(T_j)$, $V_{GS}=V_{DS}$; parameter: I_D

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

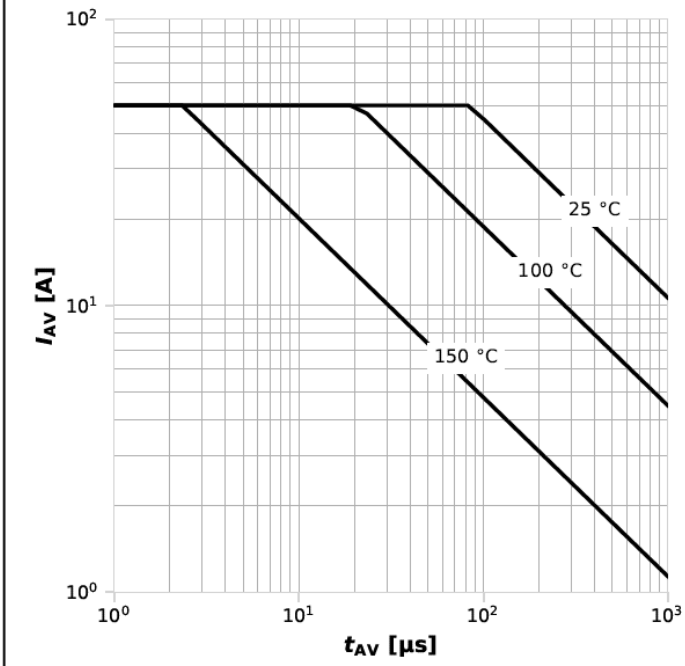
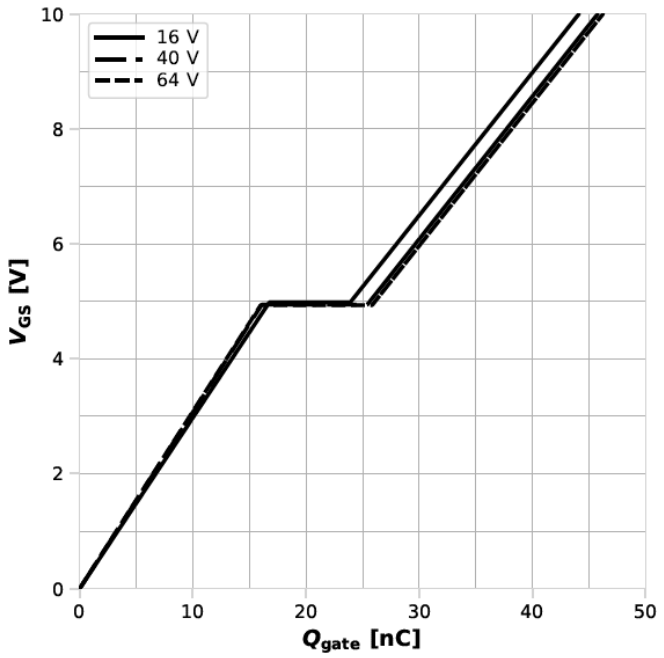
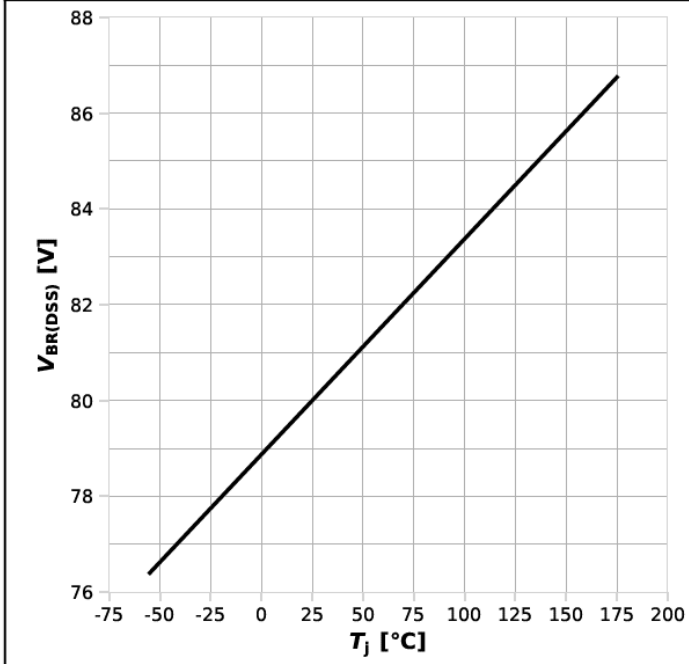
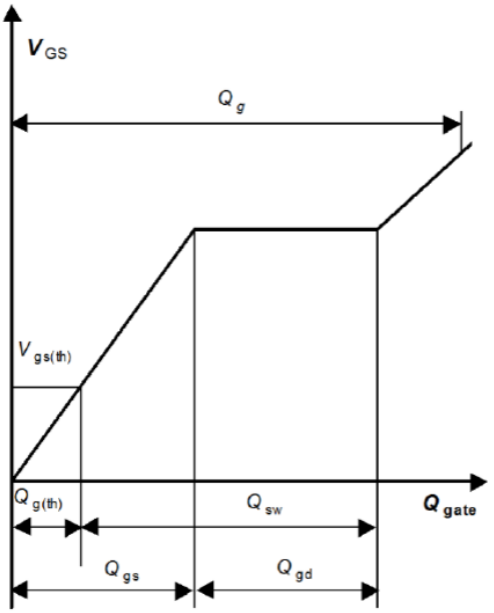
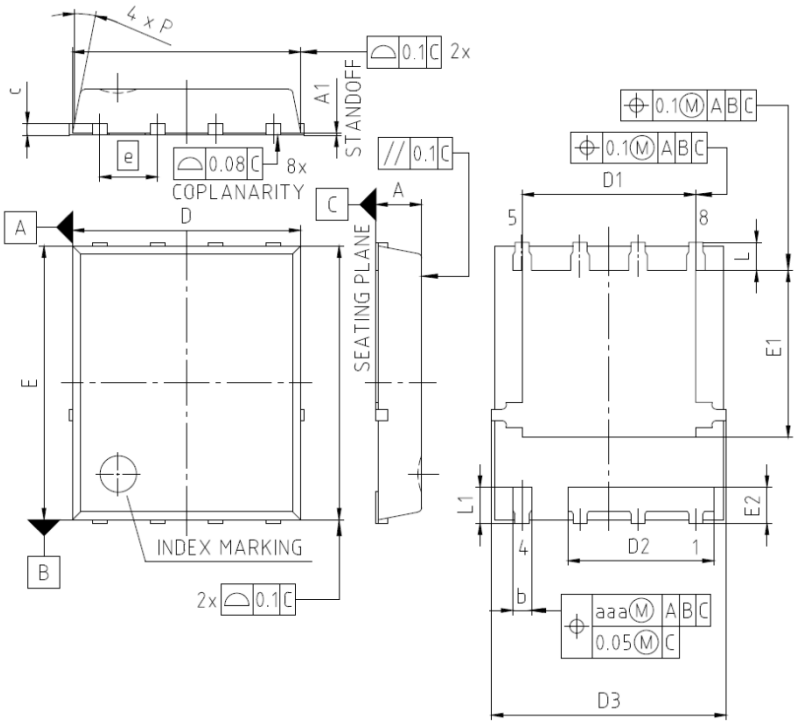
Diagram 13: Avalanche characteristics	Diagram 14: Typ. gate charge
	
I_{AS}=f(t_{AV}); R_{GS}=25 Ω; parameter: $T_{j,start}$	V_{GS}=f(Q_{gate}), I_D=25 A pulsed, T_j=25 °C; parameter: V_{DD}

Diagram 15: Drain-source breakdown voltage	Gate charge waveforms
	
$V_{BR(DSS)}$=f(T_j); I_D=1 mA	-

5 封装外形



PACKAGE - GROUP NUMBER:	PG-TDSON-8-U04	
DIMENSIONS	**MILLIMETERS**	
	MIN.	MAX.
A	0.90	1.20
A1	0	0.05
b	0.26	0.54
c	0.15	0.35
D	4.80	5.35
D1	3.70	4.40
D2	2.94	3.25
D3	4.80	5.61
E	5.70	6.10
E1	3.40	3.76
E2	0.69	0.90
e	1.27	
L	0.45	0.72
L1	0.69	0.90
aaa	0.10	0.25
P	8°	12°

1) EXCLUDING MOLD FLASH
2) REMOVAL ON MOLD GATE
   INTRUSION 0.1 MM
   PROTRUSION 0.1 MM
3) LEAD LENGTH UP TO ANTI FLASH LINE
4) ALL METAL SURFACES ARE PLATED,
   EXCEPT AREA OF CUT

图 1　　PG- TDSON- 8 封装外形，尺寸单位为毫米

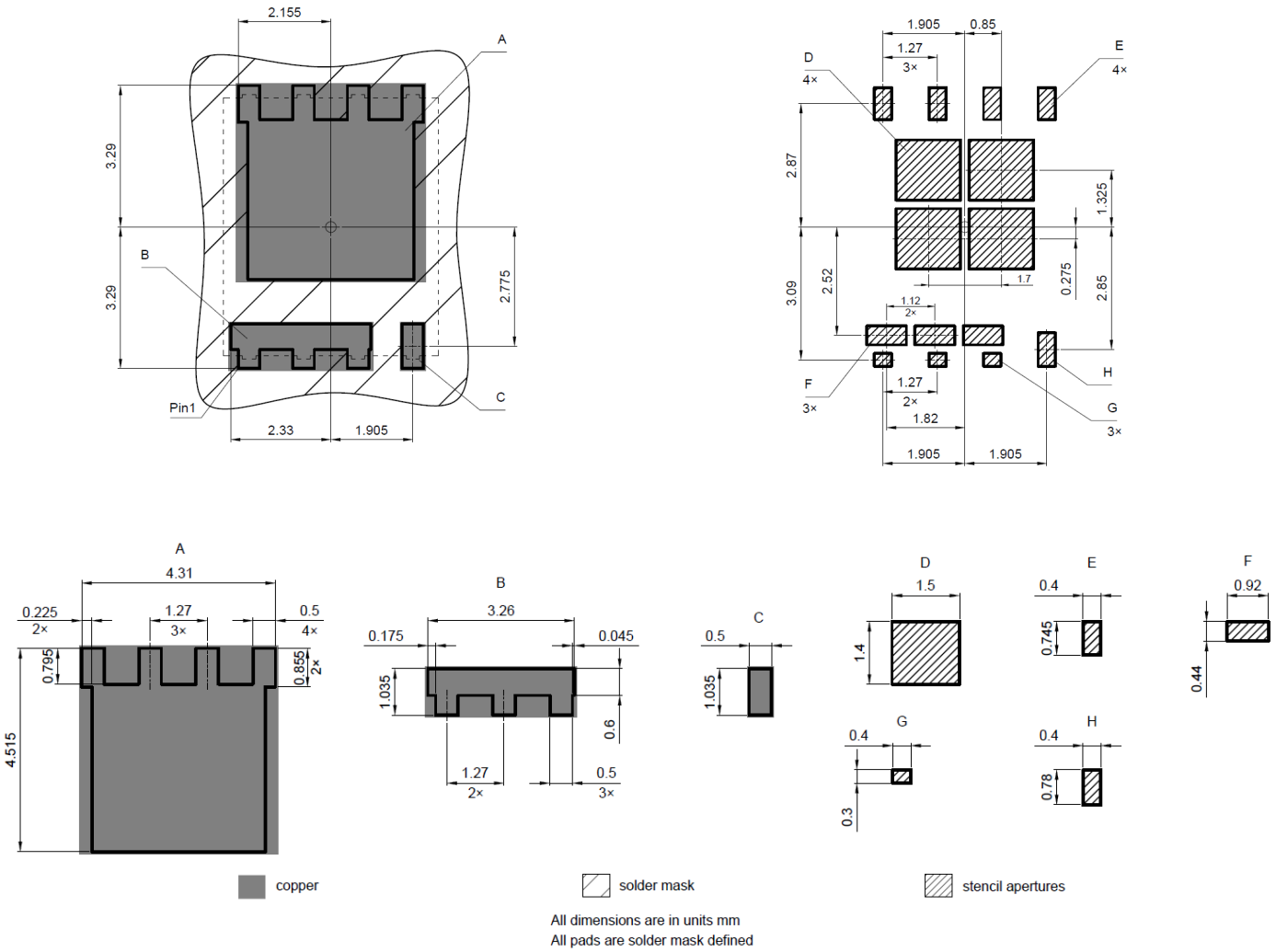


图 2　　PG- TDSON- 8 封装图，尺寸单位为毫米

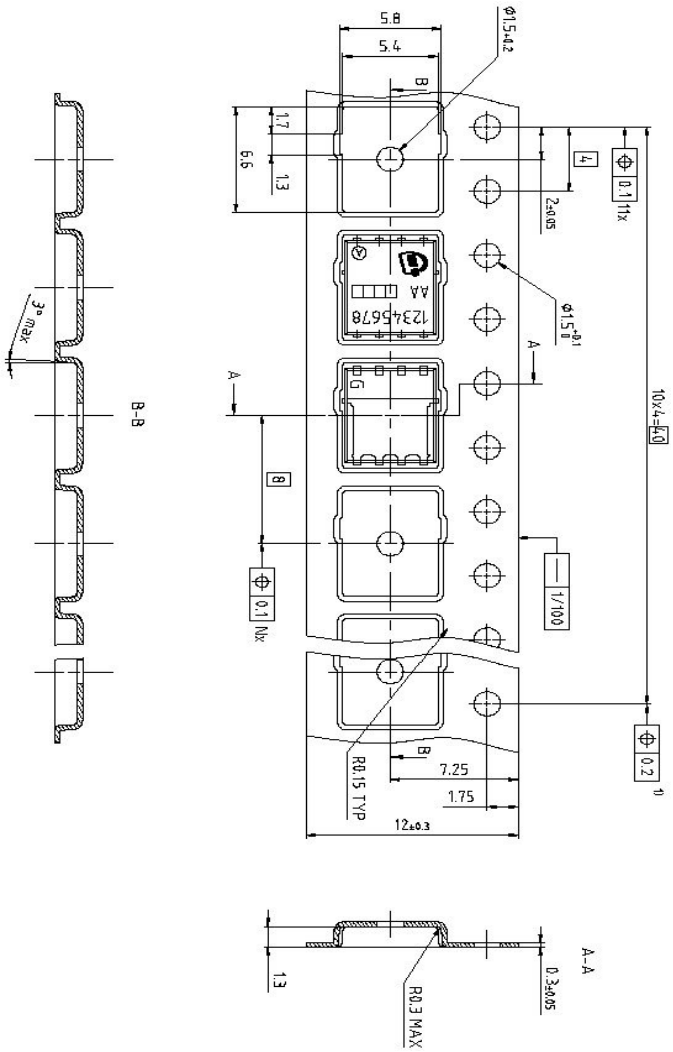


图 3　　PG- TDSON- 8 封装变体，尺寸单位为毫米

修订记录

ISC025N08NM6

Revision 2026 - 03 - 16 , Rev. 1 . 0

Previous revisions

Revision	Date	Subjects (major changes since last revision)
1.0	2026-03-16	Release of final version

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