英飞凌汽车级100V 175°C N沟道

增强型OptiMOS™ 5 功率晶体管

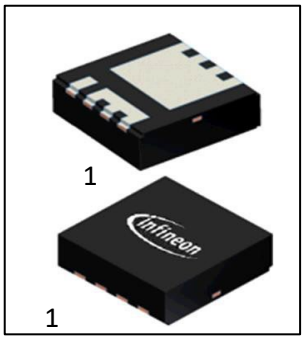
产品概述

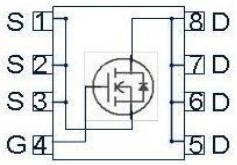
V_{DS}	100	V
$R_{DS(on),max}$	42	mΩ
I_D	18	A

特点

- 适用于汽车应用的功率MOSFET
- N 沟道 - 增强型 - 逻辑电平
- 通过 AEC-Q101 认证
- MSL1 回流焊峰值温度高达 260°C
- 工作温度 175°C
- 绿色产品：符合 RoHS 标准
- 100% 雪崩测试
- 可进行自动光学检测（AOI）

PG-TSDSON-8





Type	Package	Marking
IAUZ18N10S5L420	PG-TSDSON-8	5N1L420

除非另有规定，否则均为T_j=25 °C 的**最大额定值。**

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_C=25°C, V_{GS}=10V	18	A
		T_C=100°C, V_{GS}=10V[1]	13	
Pulsed drain current[1]	$I_{D,pulse}$	T_C=25°C	72	
Avalanche energy, single pulse[1]	E_{AS}	I_D=7A	11	mJ
Avalanche current, single pulse	I_{AS}	-	7	A
Gate source voltage	V_{GS}	-	±20	V
Power dissipation	P_{tot}	T_C=25°C T_J =175°C	30	W
Operating and storage temperature	T_j, T_{stg}	-	-55 ... +175	°C
IEC climatic category; DIN IEC 68-1	-	-	55/175/56	–

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Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

热特性[1)]

Thermal resistance, junction - case	R_{thJC}	-	-	-	5.0	K/W
Thermal resistance, junction - ambient	R_{thJA}	6 cm² cooling area[2)]	-	-	62	

除非另有规定，否则均为T_j=25 °C 的**电气特性。**

静态参数特性

Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D= 1mA	100	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=8µA	1.2	1.7	2.2	
Zero gate voltage drain current	I_{DSS}	V_{DS}=100V, V_{GS}=0V, T_j=25°C	-	-	1	µA
		V_{DS}=100V, V_{GS}=0V, T_j=125°C[1)]	-	-	100	
Gate-source leakage current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=4.5V, I_D=9A	-	46	55	mΩ
		V_{GS}=10V, I_D=9A	-	34.5	42	
Gate resistance[1)]	R_G		-	1.8	-	Ω

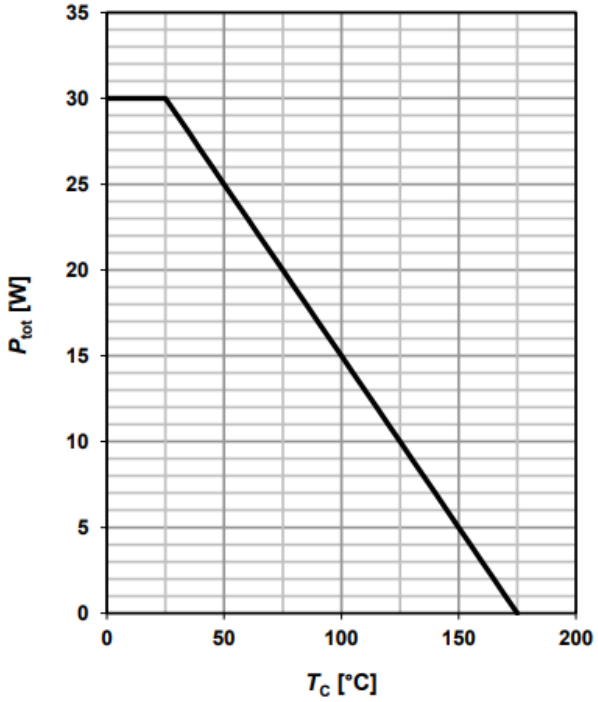
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
动态参数特性[1)]						
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	356	470	pF
Output capacitance	C_{oss}		-	68	88	
Reverse transfer capacitance	C_{rss}		-	6	9	
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V, I_D=18A, R_G=3.5 Ω	-	1	-	ns
Rise time	t_r		-	1	-	
Turn-off delay time	$t_{d(off)}$		-	3	-	
Fall time	t_f		-	3	-	
门极电荷特点[1)]						
Gate to source charge	Q_{gs}	V_{DD}=50V, I_D=9A, V_{GS}=0 to 10V	-	1.2	1.7	nC
Gate to drain charge	Q_{gd}		-	1.2	2.0	
Gate charge total	Q_g		-	5.4	8	
Gate plateau voltage	$V_{plateau}$		-	3.3	-	V
反向二极管						
Diode continous forward current[1)]	I_S	T_C=25°C	-	-	18	A
Diode pulse current	$I_{S,pulse}$		-	-	72	
Diode forward voltage	V_{SD}	V_{GS}=0V, I_F=9A, T_j=25°C	-	0.9	1.1	V
Reverse recovery time[1)]	t_{rr}	V_R=50V, I_F=18A, di_F/dt=100A/µs	-	36	-	ns
Reverse recovery charge[1)]	Q_{rr}		-	33	-	nC

[1)]由设计标定，不受制于生产测试。

[2)] 器件安装在 40 mm x 40 mm x 1.5 mm环氧树脂印刷电路板 FR4 上，漏极连接用铜面积为 6 cm^2 （一层，70 µm厚）。印刷电路板垂直放置在静止空气中。

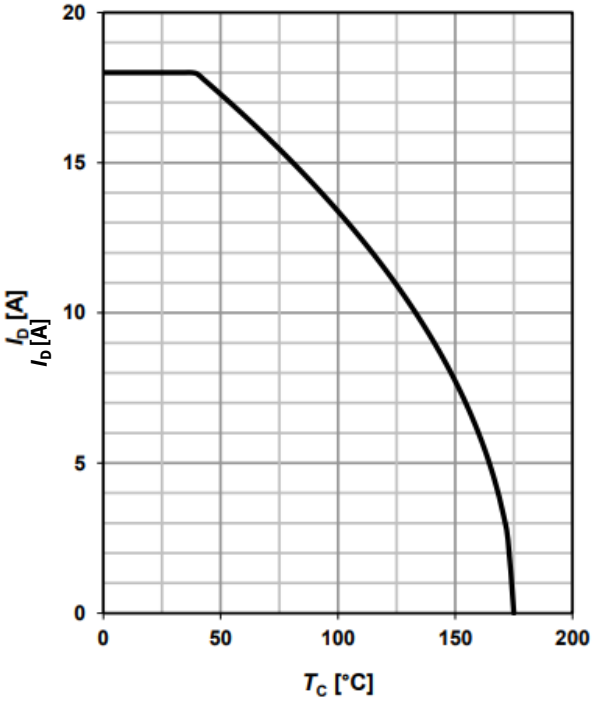
1 功率耗散

$P_{tot} = f(T_C); V_{GS} \geq 6\ V$



2 漏极电流

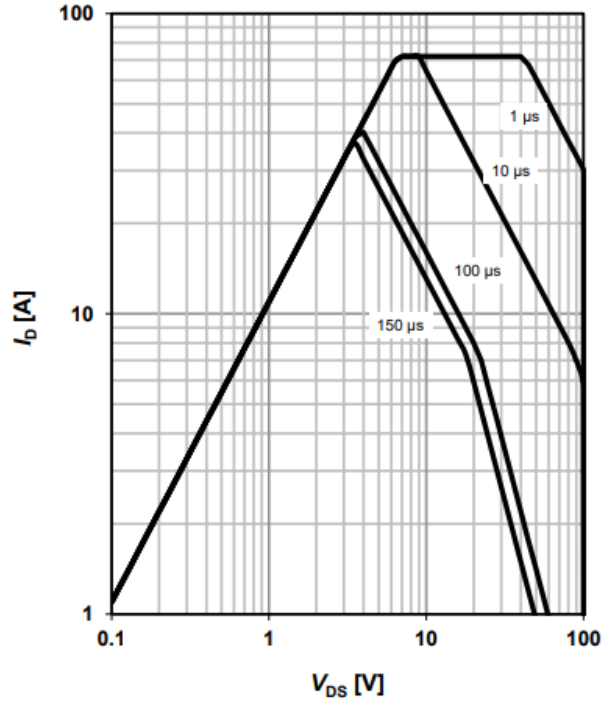
$I_D = f(T_C); V_{GS} \geq 6\ V$



3 安全工作区

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

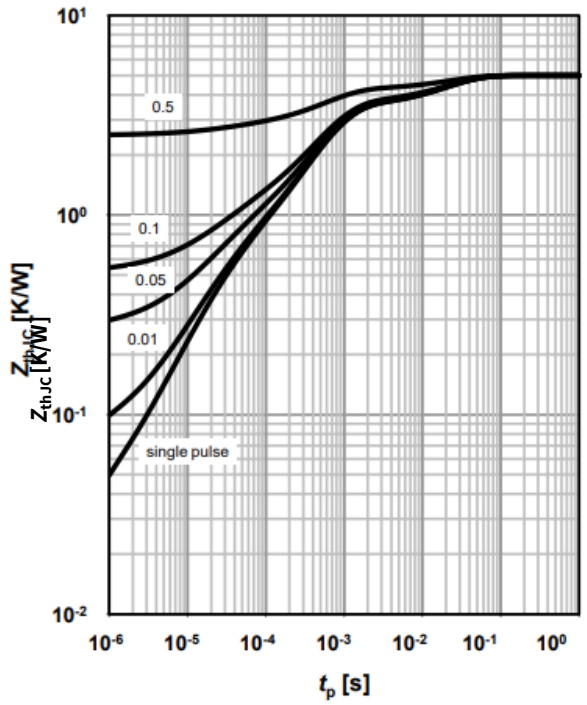
parameter: t_p



4 最大瞬态热阻抗

$Z_{thJC} = f(t_p)$

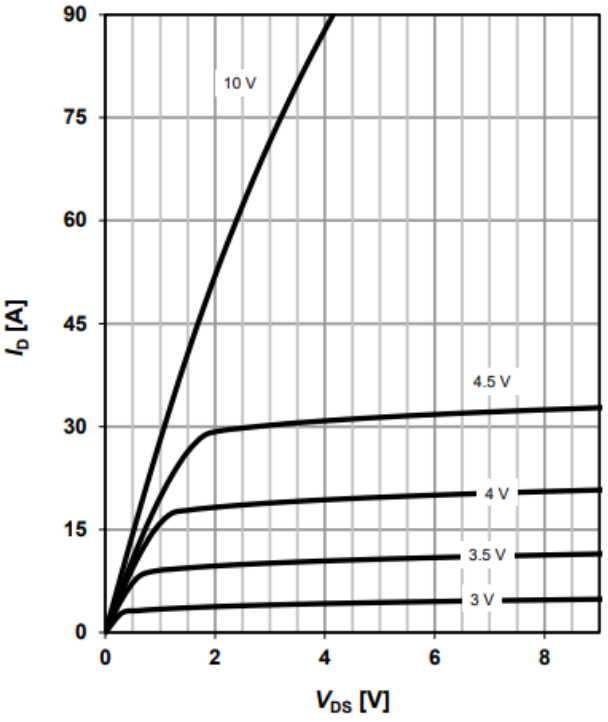
parameter: $D = t_p/T$



5 典型输出特性

$I_D = f(V_{DS})$; $T_j = 25\ °C$

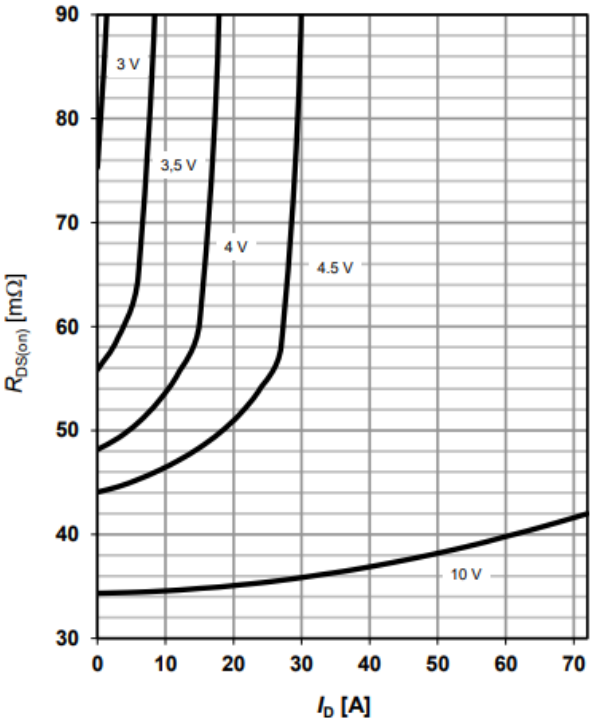
parameter: V_{GS}



6 典型漏源导通电阻

$R_{DS(on)} = f(I_D)$; $T_j = 25\ °C$

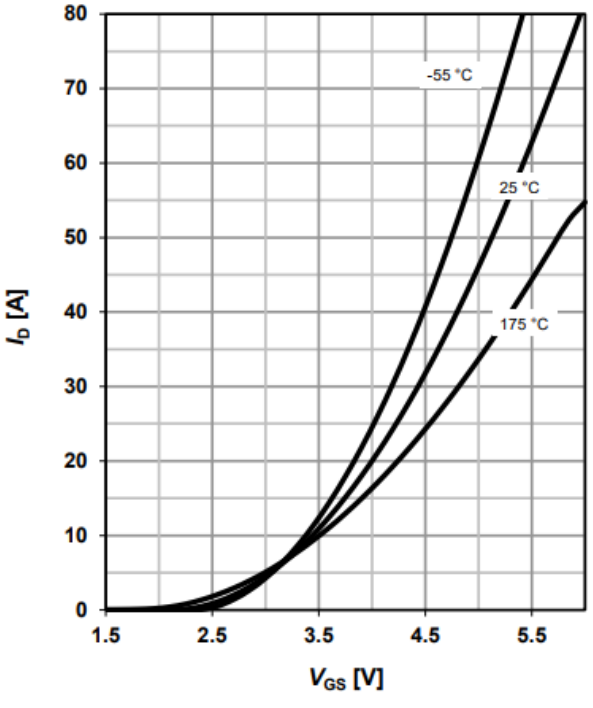
parameter: V_{GS}



7 典型转移特性

$I_D = f(V_{GS})$; $V_{DS} = 6V$

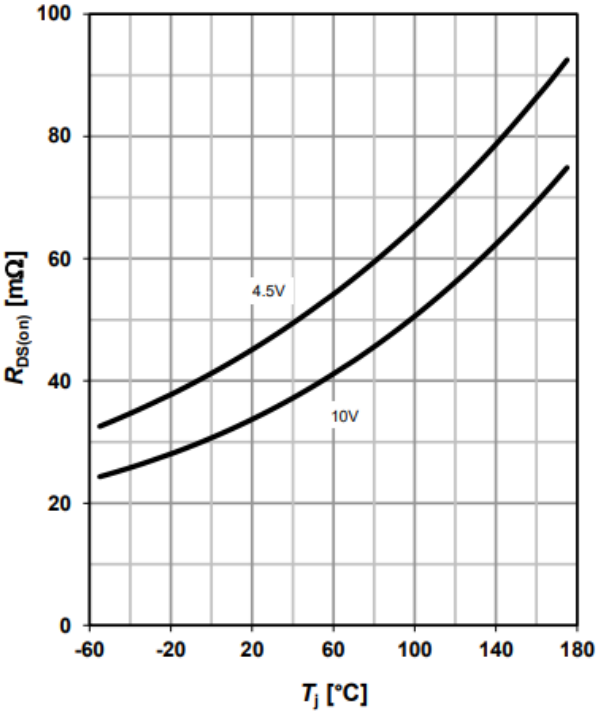
parameter: T_j



8 典型漏源导通电阻

$R_{DS(on)} = f(T_j)$; $I_D = 9\ A$

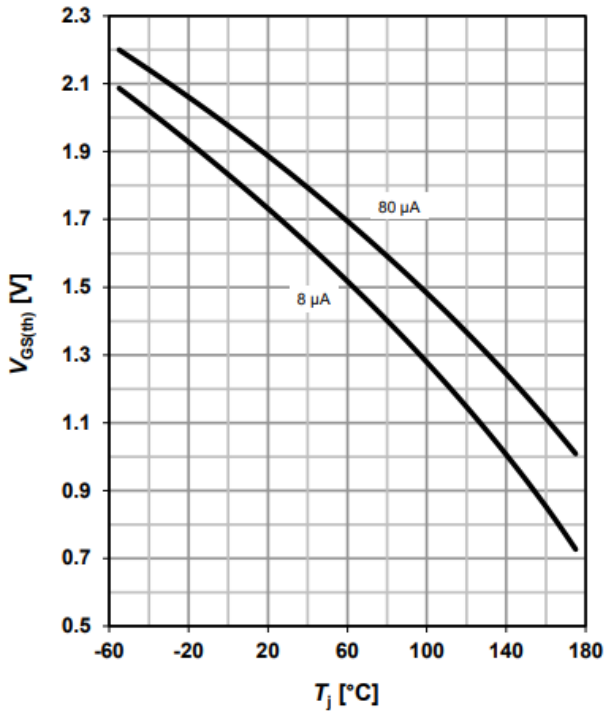
Parameter: V_{GS}



9 典型栅极阈值电压

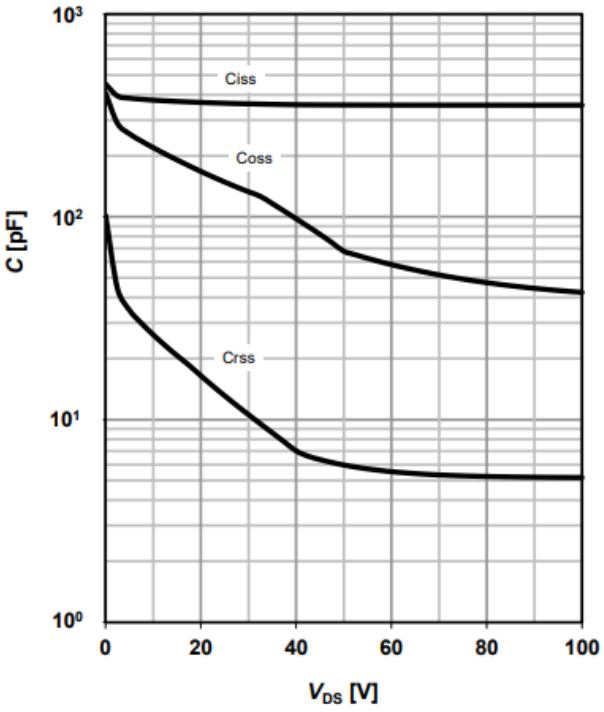
$V_{GS(th)} = f(T_j)$; $V_{GS} = V_{DS}$

parameter: I_D



10 典型电容值

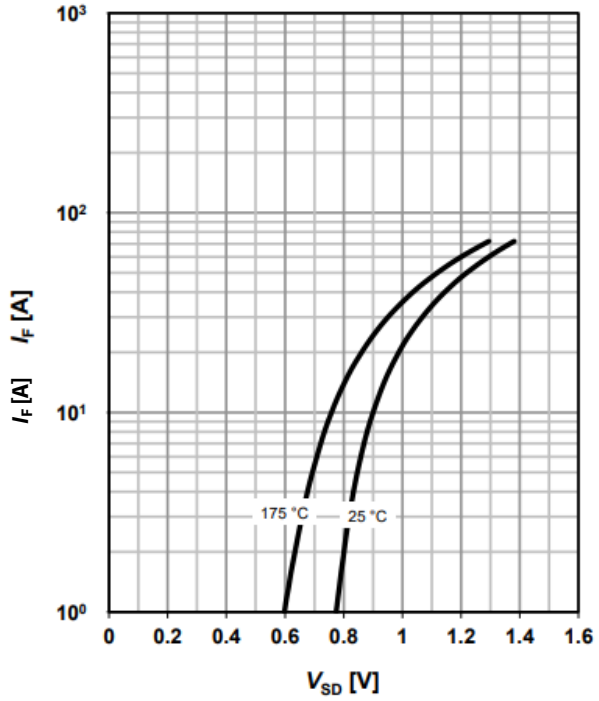
$C = f(V_{DS})$; $V_{GS} = 0$ V; $f = 1$ MHz



11 典型二极管正向导通特性

IF = f(V_{SD})

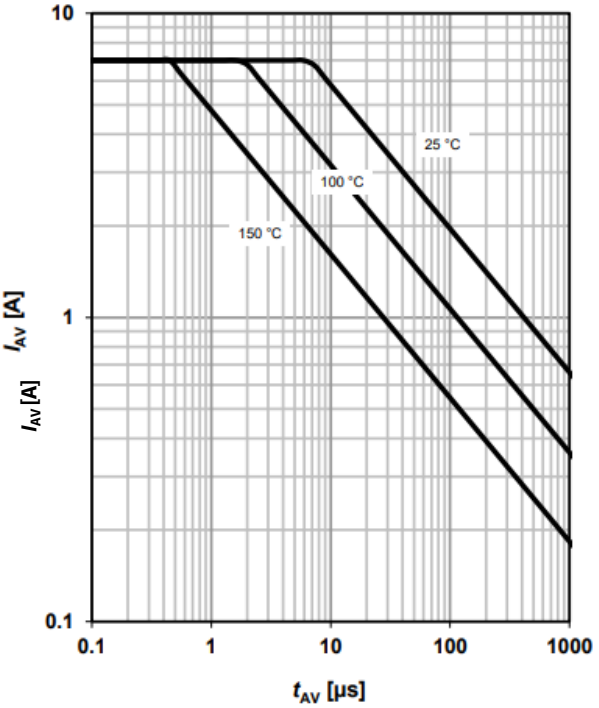
parameter: T_j



12 典型雪崩特性

$I_{AS} = f(t_{AV})$

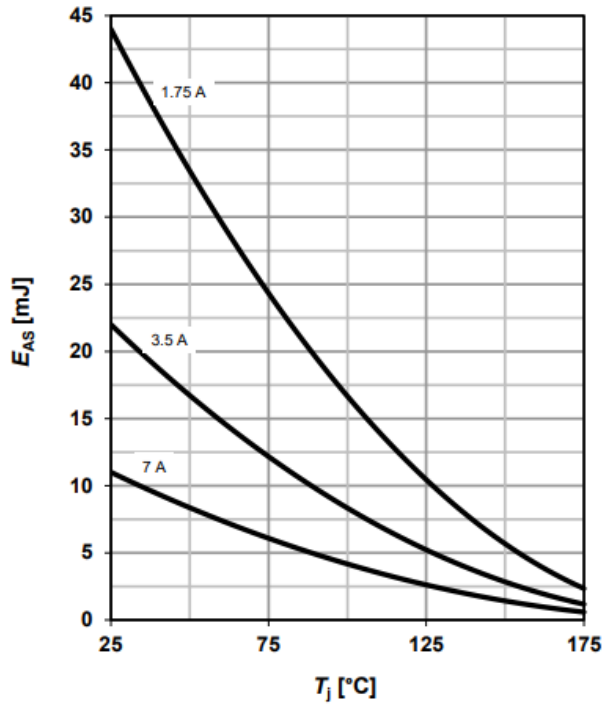
parameter: $T_{j(start)}$



13 典型雪崩能量

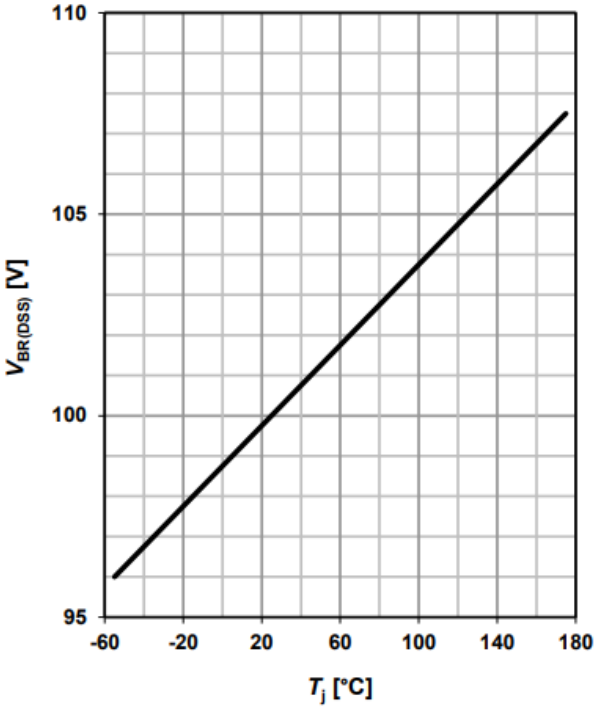
$E_{AS} = f(T_j)$

parameter: I_D



14 漏源击穿电压

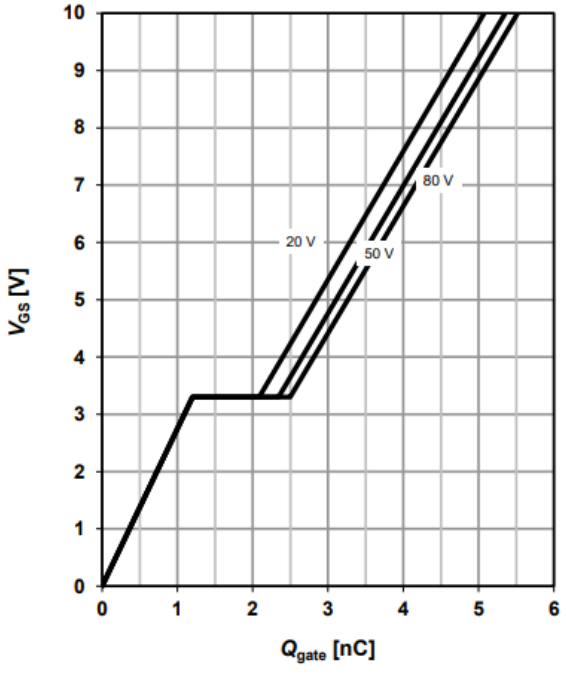
$V_{BR(DSS)} = f(T_j)$; I_D = 1 mA



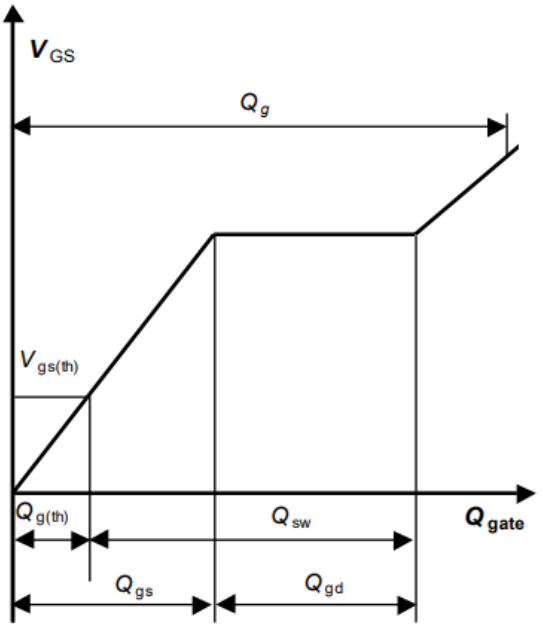
15 典型栅极电荷

$V_{GS} = f(Q_{gate})$; I_D = 9 A pulsed

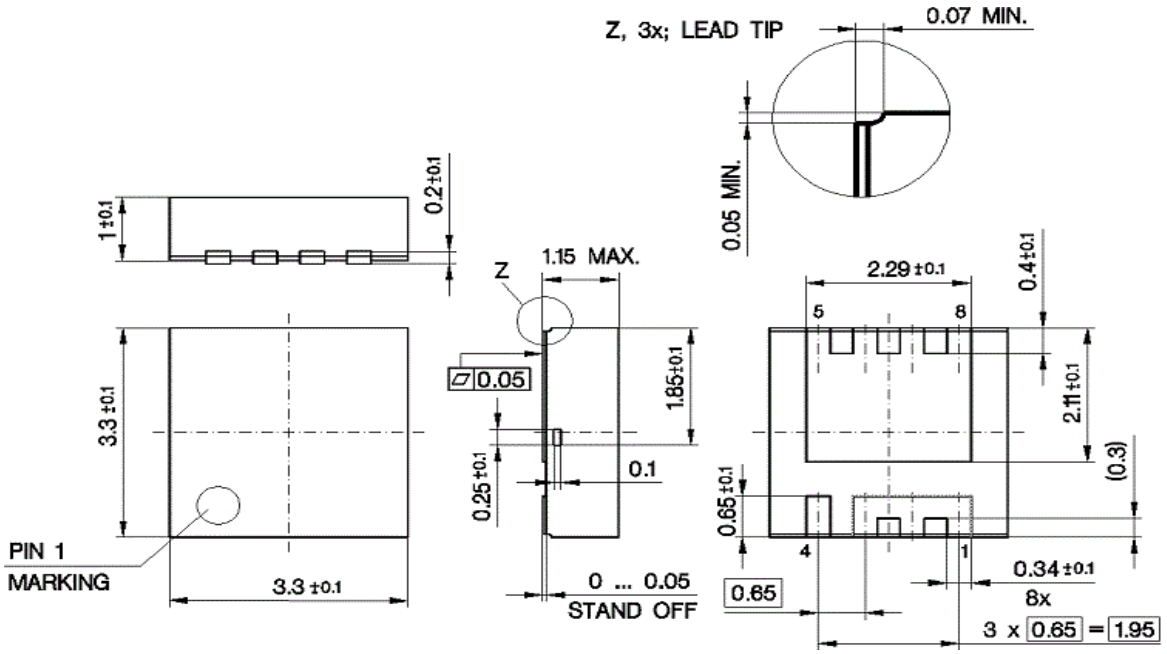
parameter: V_{DD}



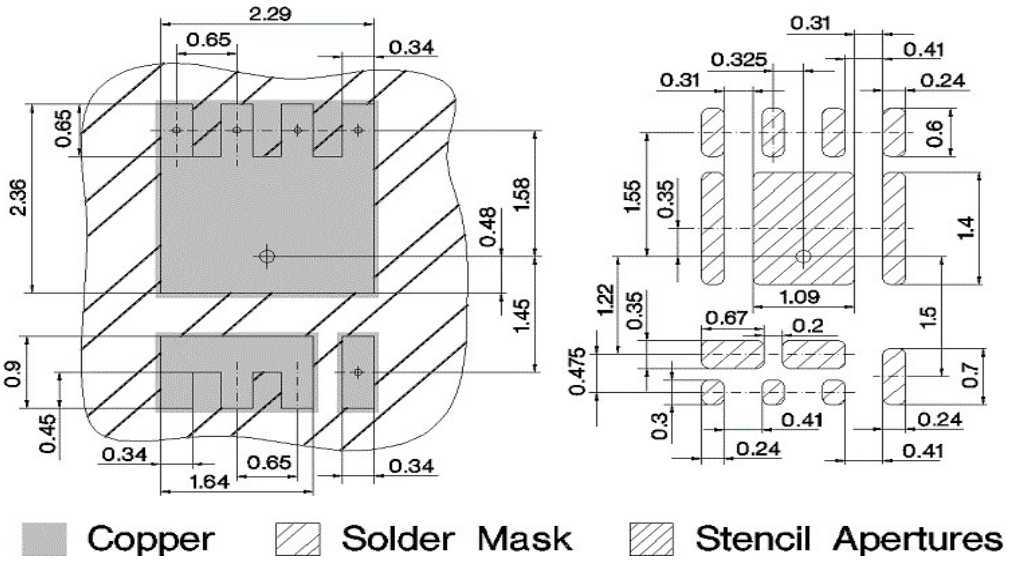
16 栅极充电波形



PG-TSDSON-8：封装外形

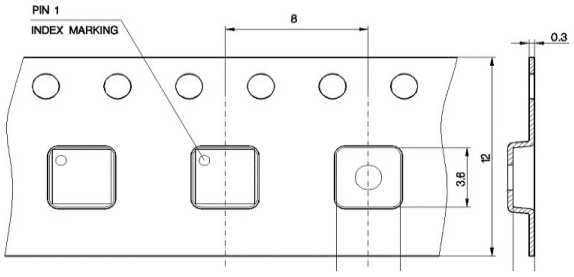


Footprint



尺寸（毫米）

包装信息



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Revision History

Version	Date	Changes
Revision 1.0	23.07.2019	Final Data Sheet

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