IAUC60N04S6N050H

英飞凌汽车级40V 175°C N沟道

增强型OptiMOS ™ 6 功率晶体管

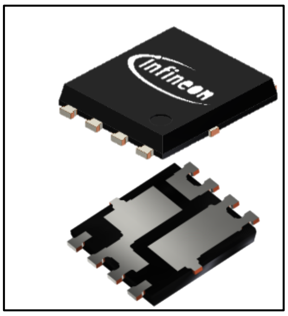
产品概述

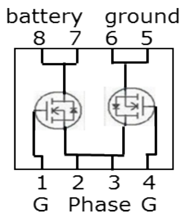
V_{DS}	40	V
$R_{DS(on),max}$	5.0	mΩ
I_D	60	A

特点

- 适用于汽车应用的功率MOSFET
- N 沟道 - 增强型 - 标准电平
- 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

PG-TDSON-8-57





Type	Package	Marking
IAUC60N04S6N050H	PG-TDSON-8-57	6N04N050

除非另有规定， T_j =25 °C 时每个通道的最大额定值

Parameter	**Symbol**	**Conditions**	**Value**	**Unit**
Drain current	I_D	V_{GS}=10V, Chip Limitation[1,2]	74	A
		V_{GS}=10V, DC current[3]	60	
		T_a=85°C, V_{GS}=10V, R_{thJA} on 2s2p[2,4]	16	
Pulsed drain current[2]	$I_{D,pulse}$	T_C=25°C, t_p=100µs	171	
Avalanche energy, single pulse[2]	E_{AS}	I_D=12A, $R_{g,min}$=25Ω	53	mJ
Avalanche current, single pulse	I_{AS}	$R_{g,min}$=25Ω	12	A
Gate source voltage	V_{GS}	-	±20	V
Power dissipation	P_{tot}	T_C=25°C	52	W
Operating and storage temperature	T_j, T_{stg}	-	-55 ... +175	°C

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Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
热特性[2)]						
Thermal resistance, junction - case	R_{thJC}	-	-	-	2.9	K/W
Thermal resistance, junction - ambient[4)]	R_{thJA}	-	-	35	-	

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

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D= 1mA	40	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=13µA	2.2	2.6	3.0	
Zero gate voltage drain current	I_{DSS}	V_{DS}=40V, V_{GS}=0V, T_j=25°C	-	-	1	µA
		V_{DS}=40V, V_{GS}=0V, T_j=125°C[2)]	-	-	10	
Gate-source leakage current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=7V, I_D=30A	-	4.9	6.5	mΩ
		V_{GS}=10V, I_D=30A	-	4.0	5.0	

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
动态参数特性[2)]						
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	790	1027	pF
Output capacitance	C_{oss}		-	248	322	
Reverse transfer capacitance	C_{rss}		-	17	26	
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V, V_{GS}=10V, I_D=60A, R_G=3.5 Ω	-	3	-	ns
Rise time	t_r		-	1	-	
Turn-off delay time	$t_{d(off)}$		-	6	-	
Fall time	t_f		-	3	-	
栅极电荷特性[2)]						
Gate to source charge	Q_{gs}	V_{DD}=32V, I_D=60A, V_{GS}=0 to 10V	-	3.7	4.9	nC
Gate to drain charge	Q_{gd}		-	2.8	4.2	
Gate charge total	Q_g		-	13	17	
Gate plateau voltage	$V_{plateau}$		-	4.7	-	V
反向二极管						
Diode continous forward current[2)]	I_S	T_C=25°C	-	-	50	A
Diode pulse current[2)]	$I_{S,pulse}$	T_C=25°C, t_p=100µs	-	-	210	
Diode forward voltage	V_{SD}	V_{GS}=0V, I_F=30A, T_j=25°C	-	0.8	1.1	V
Reverse recovery time[2)]	t_{rr}	V_R=20V, I_F=50A, di_F/dt=100A/µs	-	20	-	ns
Reverse recovery charge[2)]	Q_{rr}		-	8	-	nC

[1)] 实际上，电流能力受到包括客户特定的印刷电路板在内的整体系统设计的限制。

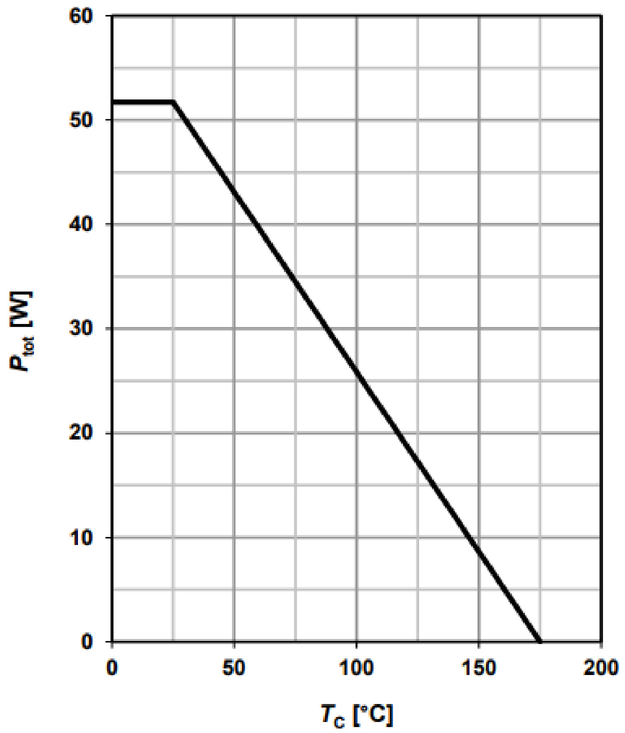
[2)]该参数不受制于生产测试 – 由设计标定。

[3)]根据最佳实践，产品可在指定电流下运行，以最大程度地减少焊点处的电迁移。对于罕见事件和浪涌电流，可能会超过该值。

[4)]器件放置于根据JEDEC标准 (JESD51-5, -7) 定义的 2s2p FR4 印刷电路板上。印刷电路板垂直放置在静止空气中。

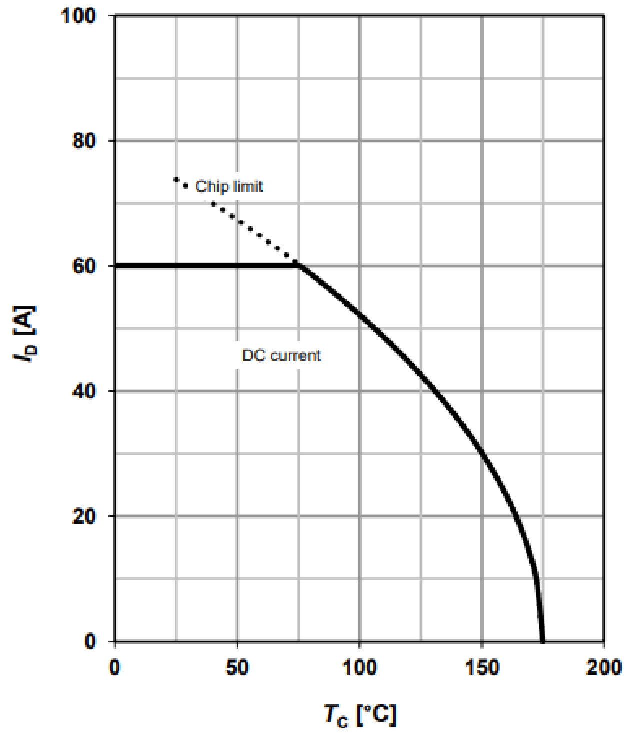
1 功率耗散

$P_{tot} = f(T_C)$; $V_{GS} = 10$ V



2 漏极电流

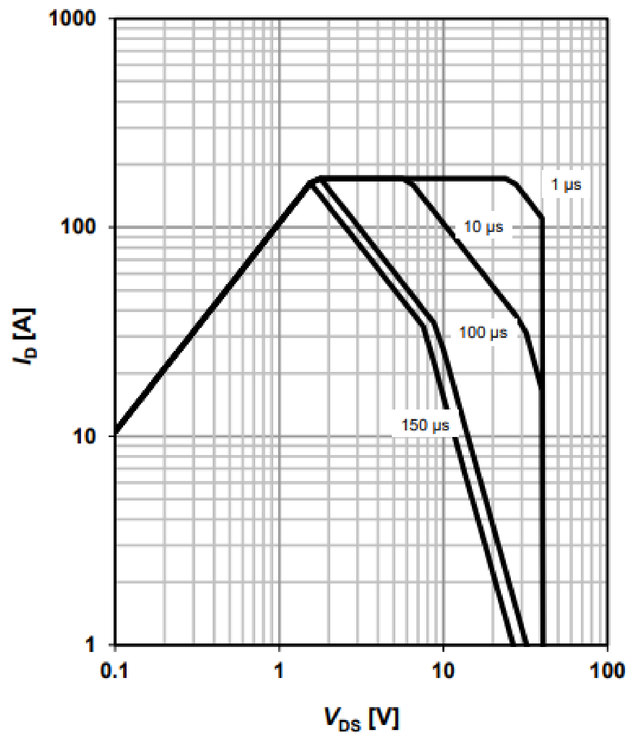
$I_D = f(T_C)$; $V_{GS} = 10$ V



3 安全工作区

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

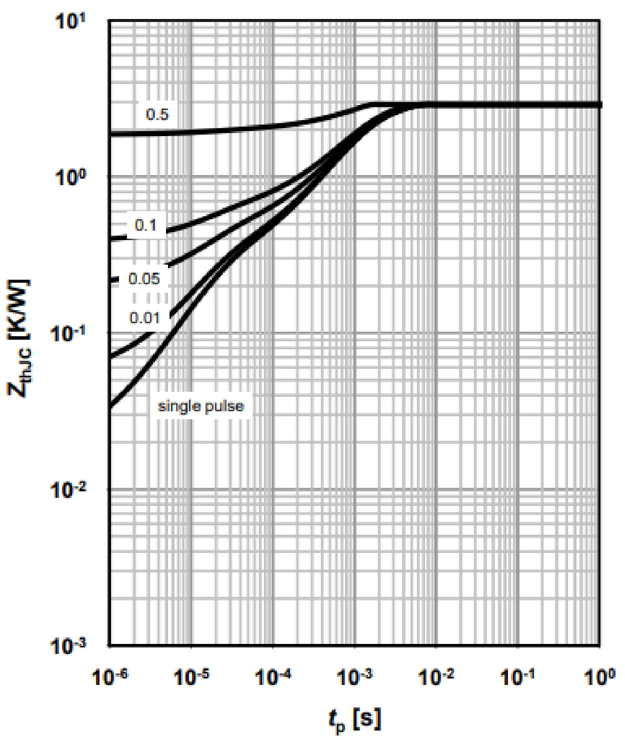
parameter: t_p



4 最大瞬态热阻抗

$Z_{thJC} = f(t_p)$

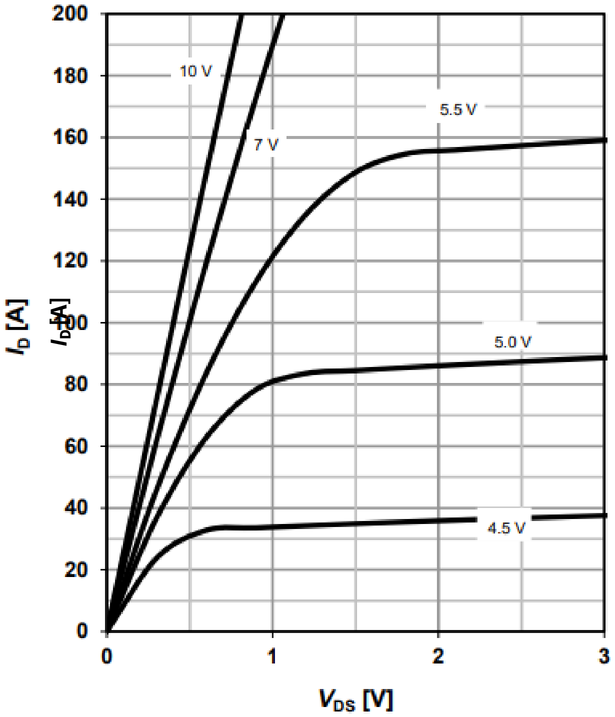
parameter: $D = t_p/T$



5 典型输出特性

$I_D = f(V_{DS})$; $T_j = 25\ °C$

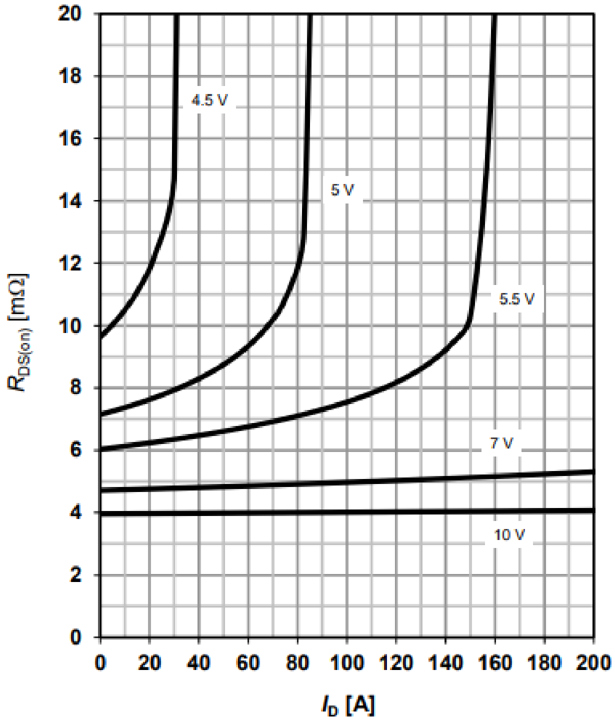
parameter: V_{GS}



6 典型漏源导通电阻

$R_{DS(on)} = f(I_D)$; $T_j = 25\ °C$

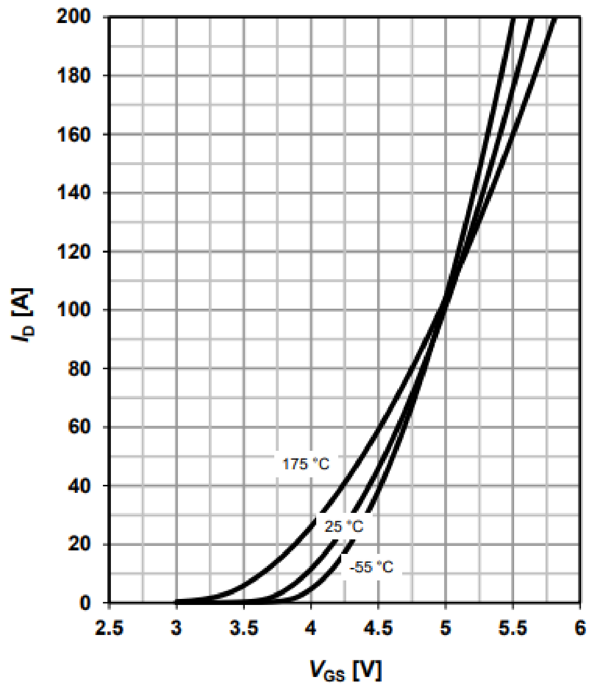
parameter: V_{GS}



7 典型转移特性

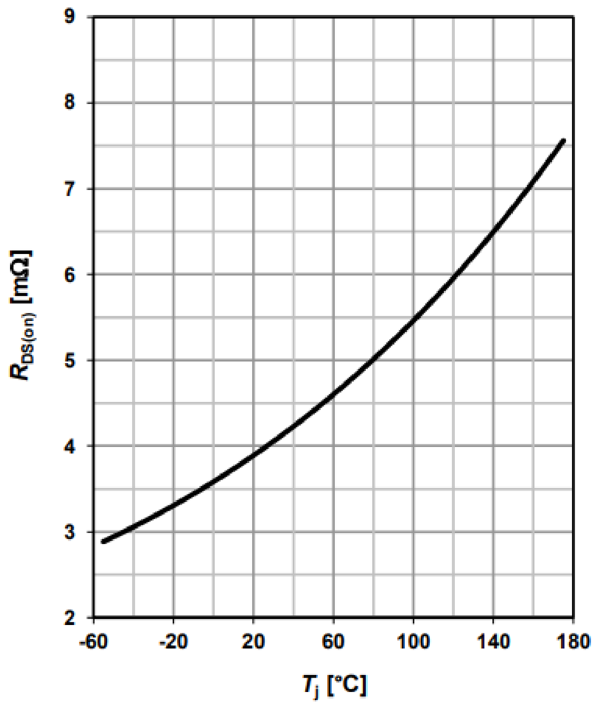
$I_D = f(V_{GS})$; $V_{DS} = 6V$

parameter: T_j



8 典型漏源导通电阻

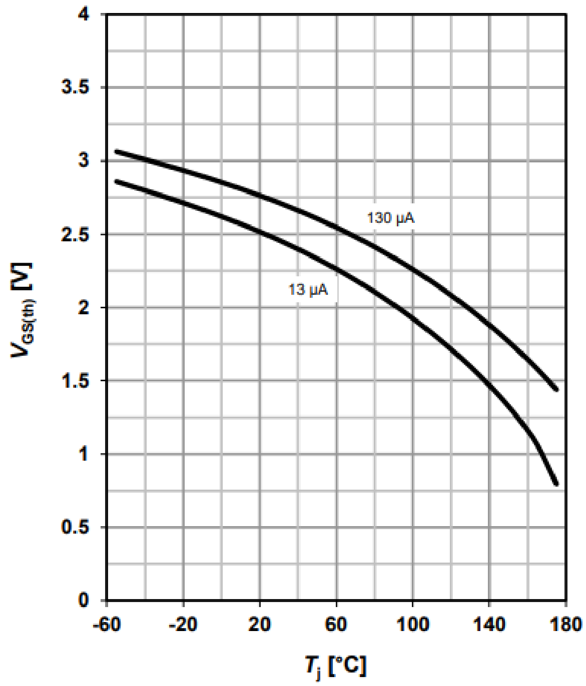
$R_{DS(on)} = f(T_j)$; $I_D = 30\ A$; $V_{GS} = 10\ V$



9 典型栅极阈值电压

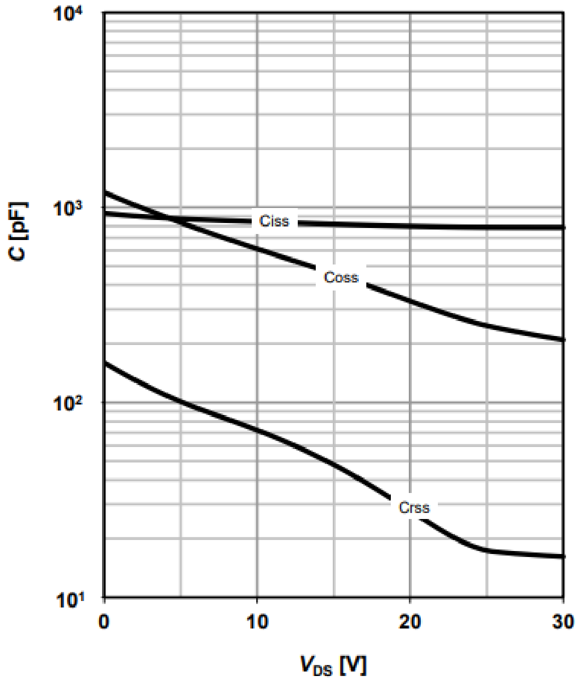
$V_{GS(th)} = f(T_j)$; $V_{GS} = V_{DS}$

parameter: I_D



10 典型电容值

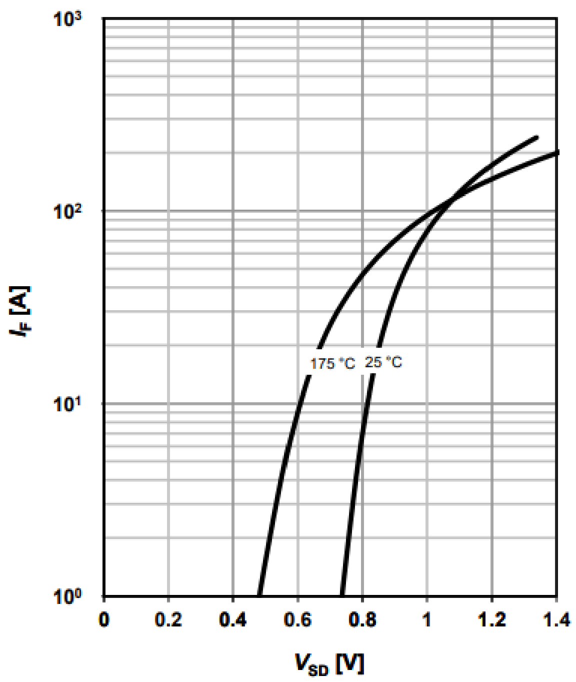
$C = f(V_{DS})$; $V_{GS} = 0$ V; $f = 1$ MHz



11 典型二极管正向导通特性

IF = $f(V_{SD})$

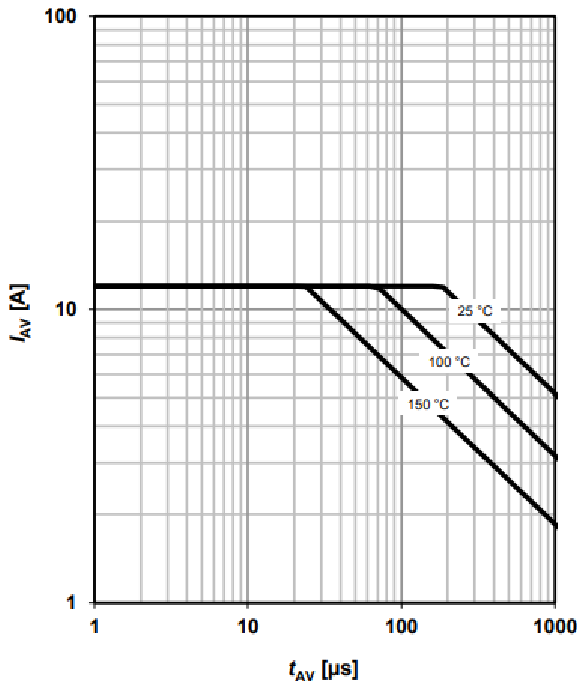
parameter: T_j



12 典型雪崩特性

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

parameter: $T_{j(start)}$



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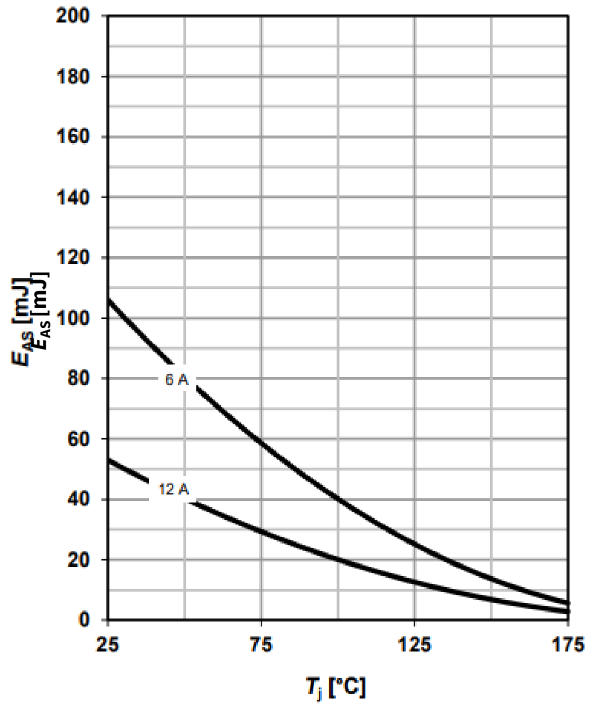
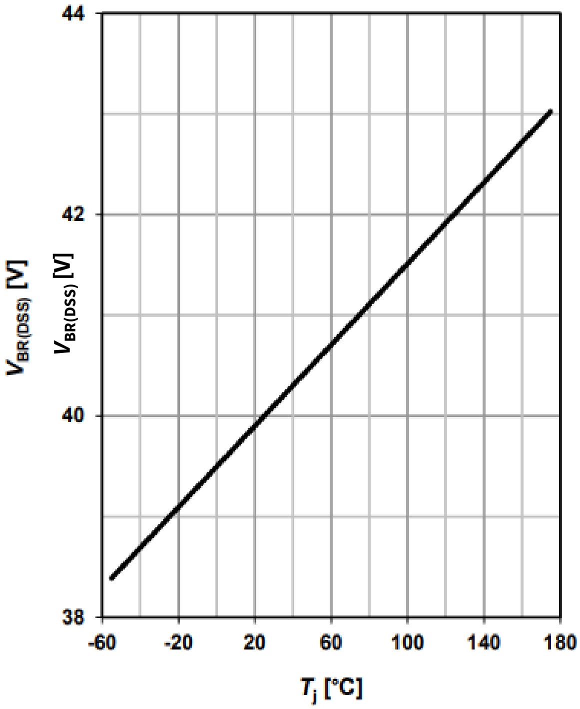
13 典型雪崩能量

$E_{AS} = f(T_j)$



14 漏源击穿电压

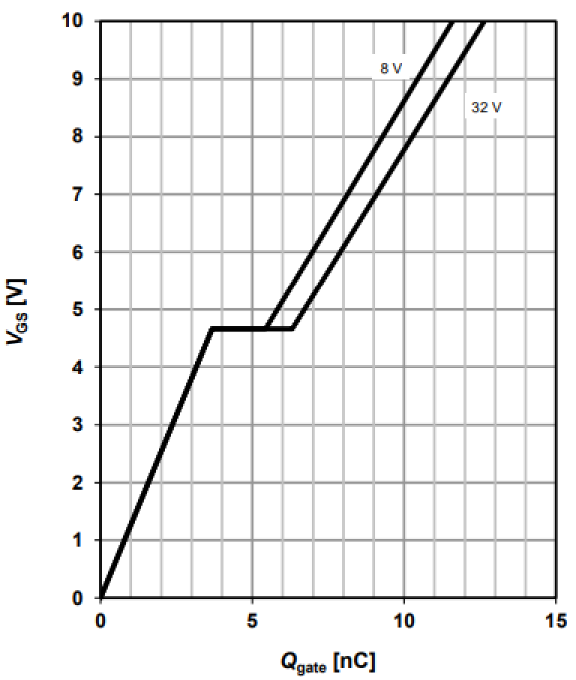
$V_{BR(DSS)} = f(T_j)$; $I_D = 1$ mA



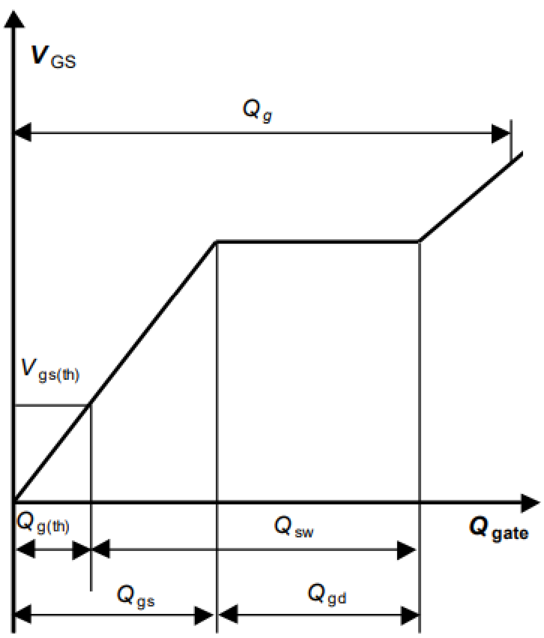
15 典型栅极电荷

$V_{GS} = f(Q_{gate})$; $I_D = 30$ A pulsed

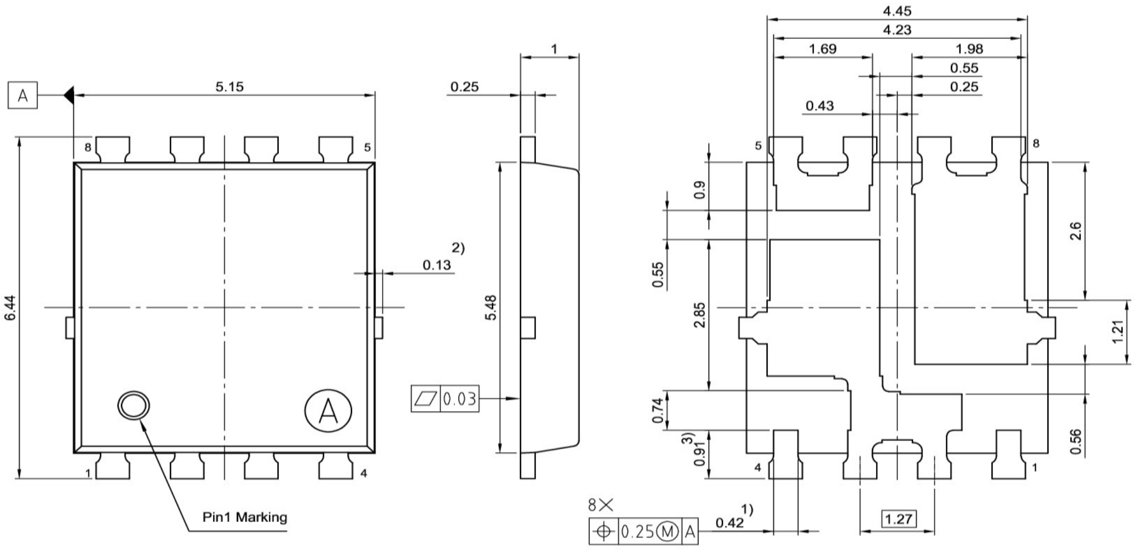
parameter: V_{DD}



16 栅极充电波形

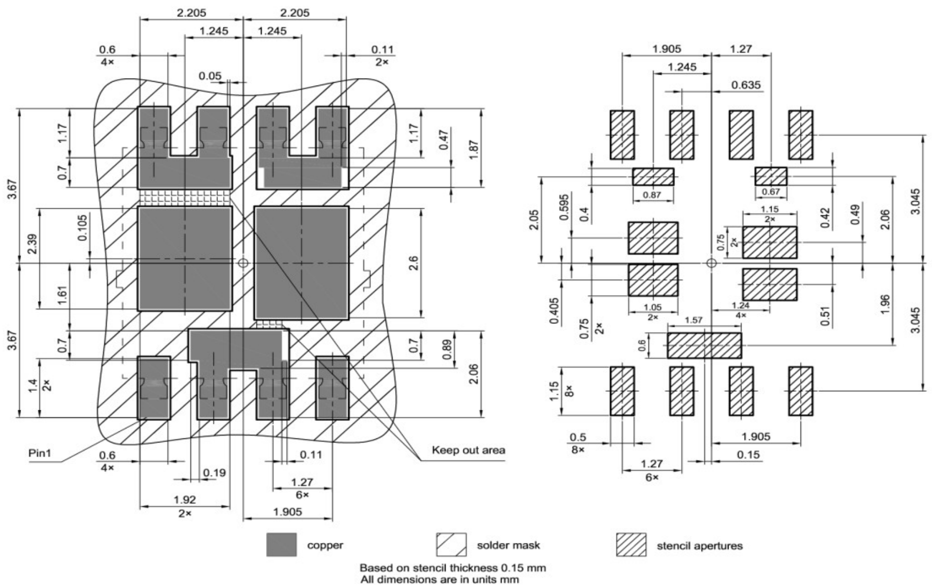


PG-TDSON-8：封装外形



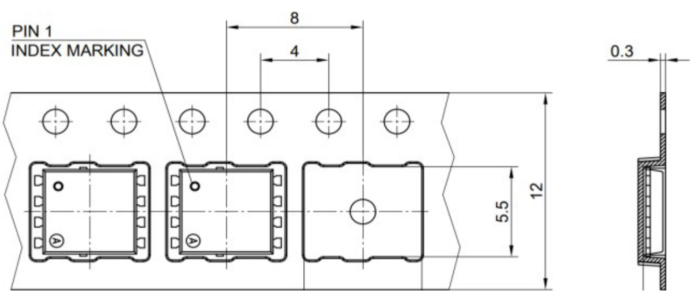
1) Excluded mold flash
2) Removal on mold gate: Intrusion 0.1mm, Protrusion 0.1mm
3) Lead length up to anti flash line
All dimensions are in units mm
The drawing is in compliance with ISO 128-30, Projection Method 1 [ ]

Footprint



尺寸（毫米）

包装信息



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Revision History

Version	Date	Changes
Revision 1.0	22.09.2020	Final Datasheet

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