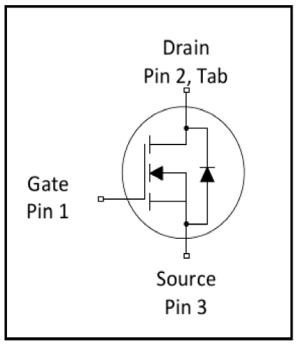
IRFP4332PbF

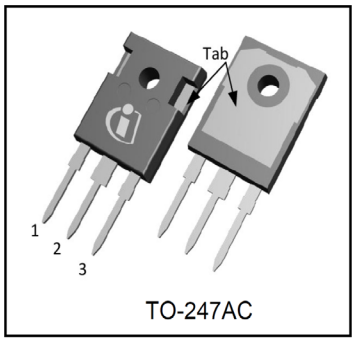
V_{DSS} min	250V
$V_{DS\ (Avalanche)}$ typ.	300V
$R_{DS(on)}$ typ.	29mΩ
I_D	57A

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特性

- 先进工艺技术
- 针对PDP维持、能量回收和传导开关应用而优化的关键参数
- 采用低$E_{脉冲}$额定值，以减少PDP维持、能量回收和传导开关应用中的功耗
- 低QG，响应迅速
- 高重复峰值电流能力，确保可靠运行
- 快速开关的短暂下降与上升时间
- 175°C的工作结温，可提高耐受性
- 重复雪崩处理能力，确保系统稳健性和可靠性





说明

英飞凌这款 HEXFET® 功率 MOSFET 专为等离子显示面板中的维持、能量回收与通断开关应用而设计。该 MOSFET 采用最新的工艺技术，实现了单位硅面积低导通电阻和低 E_{PULSE} 额定值。 该MOSFET的其他特点还包括175°C的工作结温以及高重复峰值电流能力。这些特点相结合，使该MOSFET成为适用于PDP驱动应用的高效、坚固且可靠的器件。

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRFP4332PbF	TO-247AC	Tube	25	IRFP4332PbF

绝对最大额定值

Symbol	Parameter	Max.	Units
V_{GS}	Gate-to-Source Voltage	± 30	V
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	57	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V	40	
I_{DM}	Pulsed Drain Current ①	230	
I_{RP} @ T_C = 100°C	Repetitive Peak Current⑤⑥	120	
P_D @T_C = 25°C	Power Dissipation	360	W
P_D @T_C = 100°C	Power Dissipation	180	
	Linear Derating Factor	2.4	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-40 to + 175	°C
	Soldering Temperature, for 10 seconds (1.6mm from case)	300	
	Mounting torque, 6-32 or M3 screw	10lbf·in (1.1N·m)	

热阻

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case ④	---	0.42	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat Greased Surface	0.24	---	
$R_{\theta JA}$	Junction-to-Ambient	---	40	

本数据手册的原文使用英文撰写。为方便起见，英飞凌提供了译文；由于翻译过程中可能使用了自动化工具，英飞凌不保证译文的准确性。为确认准确性，请务必访问 infineon.com 参考最新的英文版本（控制文档）。

静态温度 @ TJ = 25°C（除非另有说明）

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	250	---	---	V	V_{GS} = 0V, I_D = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	---	170	---	mV/°C	Reference to 25°C, I_D = 1mA①
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	---	29	33	mΩ	V_{GS} = 10V, I_D = 35A ③
$V_{GS(th)}$	Gate Threshold Voltage	3.0	---	5.0	V	V_{DS} = V_{GS}, I_D = 250µA
$\Delta V_{GS(th)}/\Delta T_J$	Gate Threshold Voltage Coefficient	---	-14	---	mV/°C	
I_{DSS}	Drain-to-Source Leakage Current	---	---	20	µA	V_{DS} = 250V, V_{GS} = 0V
		---	---	200		V_{DS} = 250V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage	---	---	100	nA	V_{GS} = 20V
	Gate-to-Source Reverse Leakage	---	---	-100		V_{GS} = -20V
gfs	Forward Transconductance	100	---	---	S	V_{DS} = 25V, I_D = 35A
Q_g	Total Gate Charge	---	99	150	nC	V_{DD} = 125V, I_D = 35A
Q_{gd}	Gate-to-Drain ("Miller") Charge	---	35	---		V_{GS} = 10V ③
t_{st}	Shoot Through Blocking Time	100	---	---	ns	V_{DD} = 200V, V_{GS} = 15V, R_G = 4.7Ω
E_{PULSE}	Energy per Pulse	---	520	---	µJ	L = 220nH,C = 0.3µF, V_{GS} = 15V V_{DD} = 200V, R_G = 5.1Ω , T_J = 25°C
		---	920	---		L = 220nH,C = 0.3µF, V_{GS} = 15V V_{DD} = 200V, R_G = 5.1Ω , T_J = 100°C
C_{iss}	Input Capacitance	---	5860	---	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	---	530	---		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	---	130	---		ƒ = 1.0 MHz
C_{oss} eff.	Effective Output Capacitance	---	360	---		V_{GS} = 0V, V_{DS} = 0V to 200 V
L_D	Internal Drain Inductance	---	5.0	---	nH	Between lead,
L_S	Internal Source Inductance	---	13	---		from package

雪崩特性

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②	---	210	mJ
E_{AR}	Repetitive Avalanche Energy ①	---	36	
$V_{DS(Avalanche)}$	Repetitive Avalanche Voltage ①	300	---	V
I_{AS}	Avalanche Current ②	---	35	A

二极管特性

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	---	---	57	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	---	---	230	A	
V_{SD}	Diode Forward Voltage	---	---	1.3	V	T_J = 25°C, I_S = 35A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	---	190	290	ns	T_J = 25°C,I_F = 35A,V_{DD} = 50V
Q_{rr}	Reverse Recovery Charge	---	820	1230	nC	di/dt = 100A/µs ③

注：

① 重复额定值；脉冲宽度受最高结温限制。
② Starting T_J = 25°C, L = 0.35mH, R_G = 25Ω, I_{AS} = 35A.
③ 脉冲宽度 ≤ 400µs; 占空比 ≤ 2%。
④ R_θ 在 T_J 约 90°C 时测得。
⑤ 占空比为 0.25、上升时间（ton）为 1 微秒的半正弦波。
⑥ 适用于可持续能源和能源回收领域。

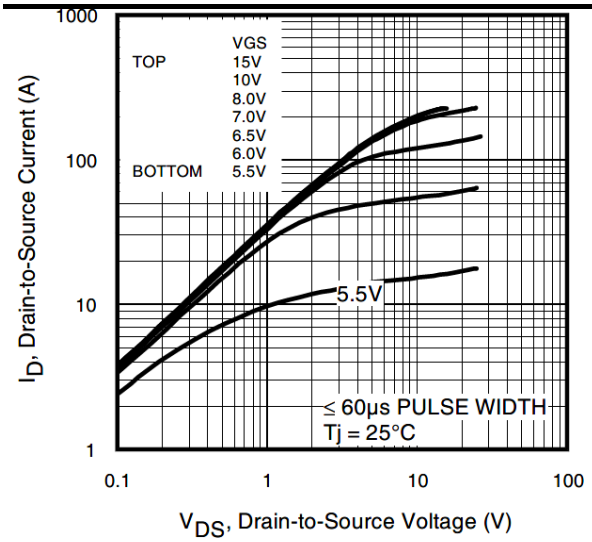


图 1.典型输出特性

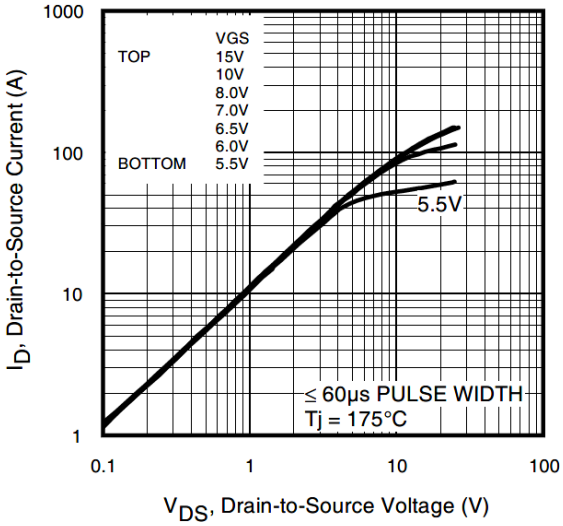


图 2.典型输出特性

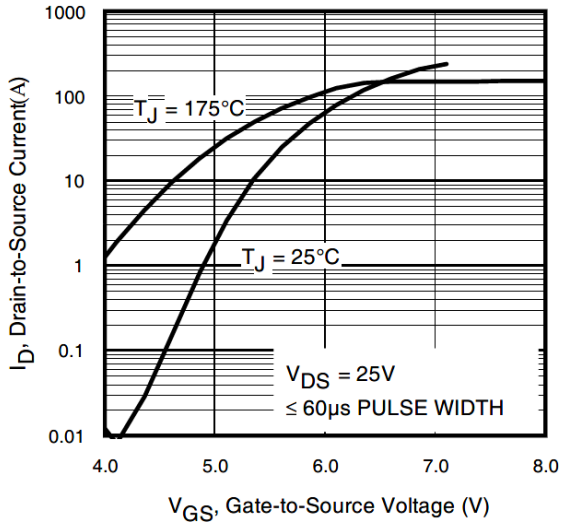


图3.典型转移特性

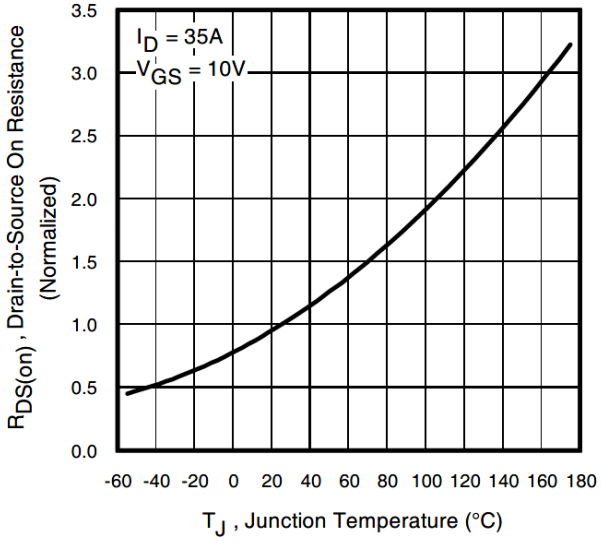


图 4.归一化导通电阻与温度的关系曲线

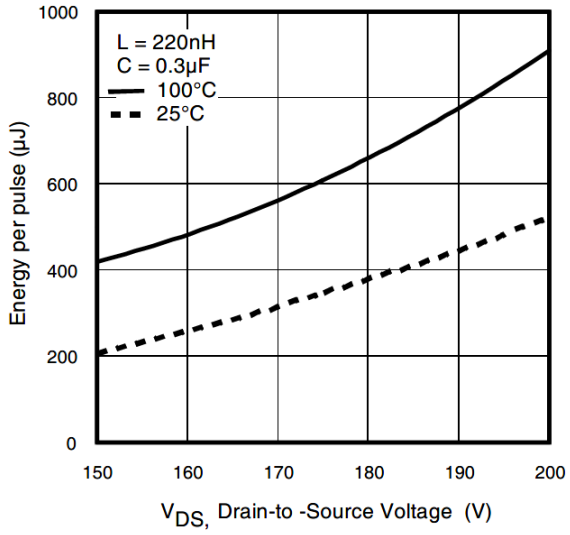


图5. 典型的E_{PULSE}与漏源电压关系图

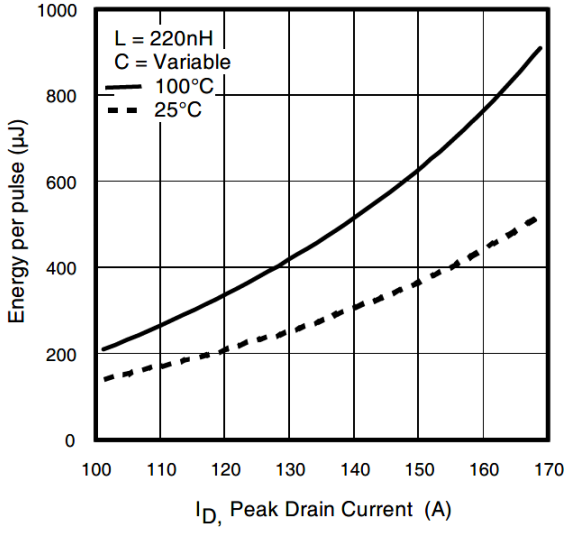


图6. 典型的$E_{脉冲}$与漏极电流的关系图

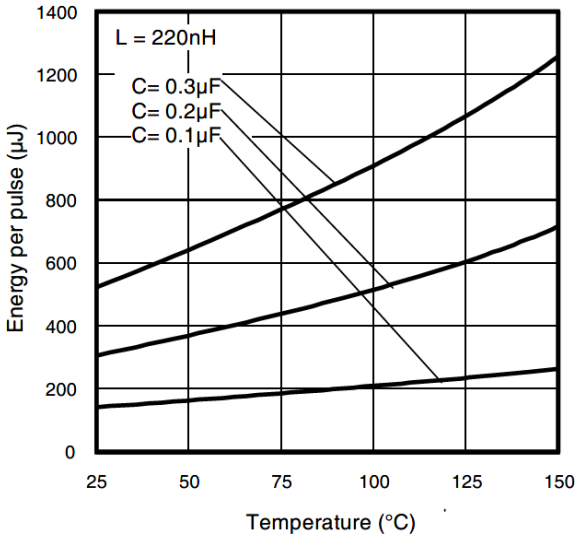


图7. 典型$E_{脉冲}$与温度的关系

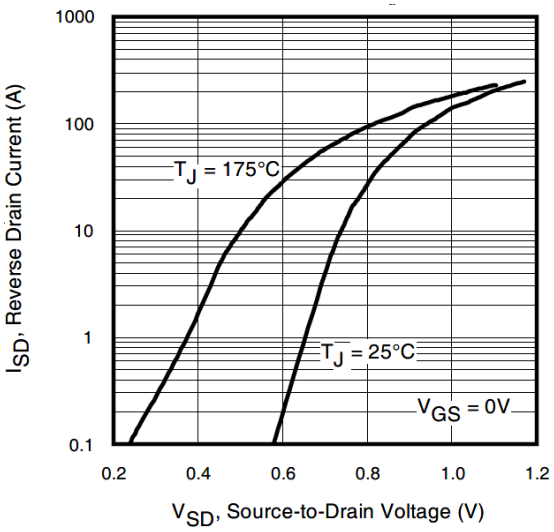


图 8典型源漏二极管正向电压

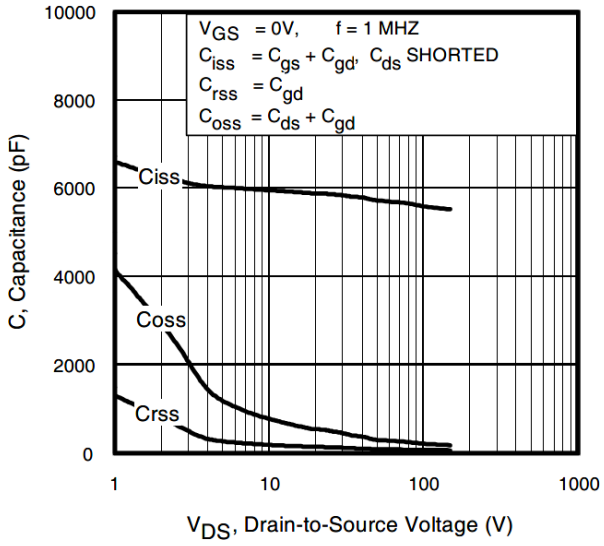


图 9.典型电容值与漏源电压的关系

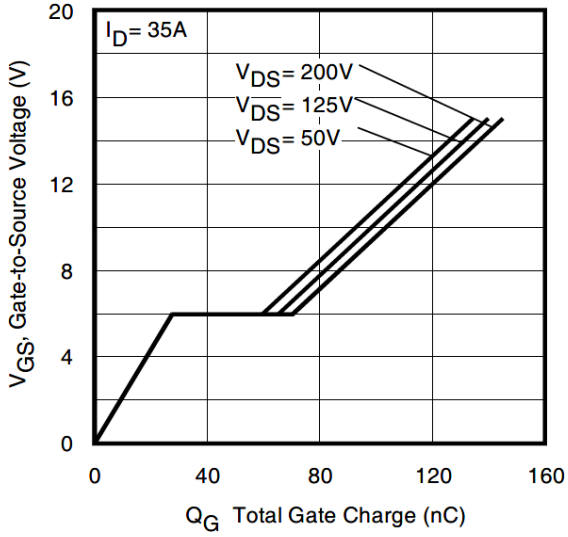


图 10.典型栅极电荷与栅源电压的关系

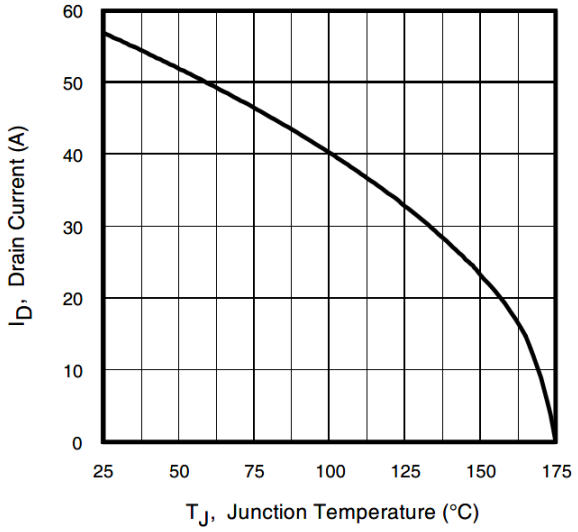


图 11.最大漏极电流与壳温的关系曲线

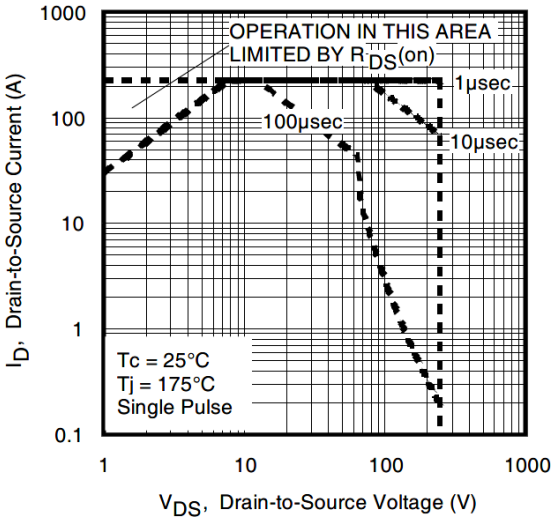


图 12.最大安全工作区

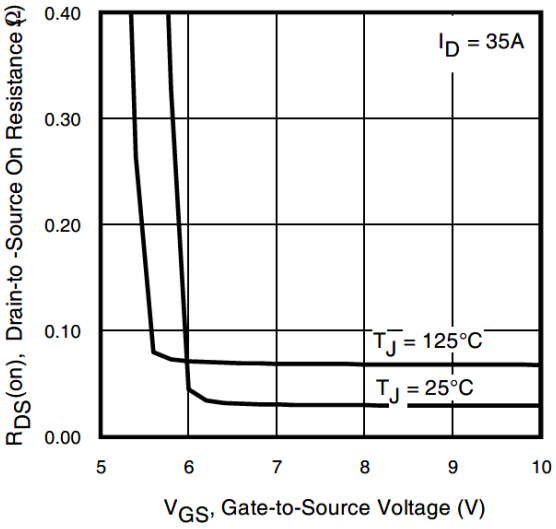


图 13.典型导通电阻与栅极电压的关系

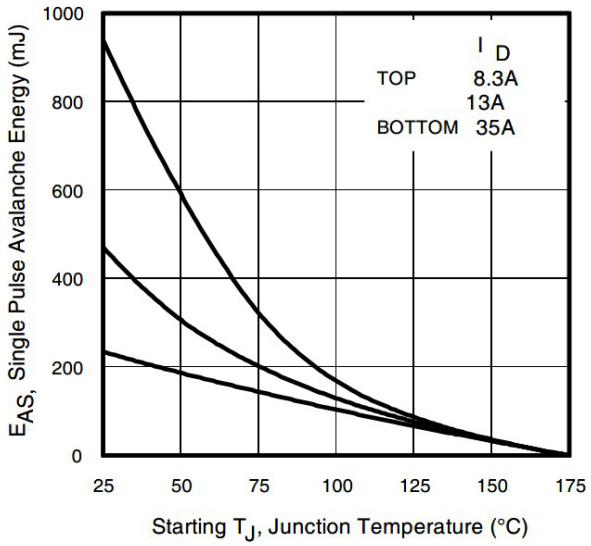


图 14.最大雪崩能量与温度的关系曲线

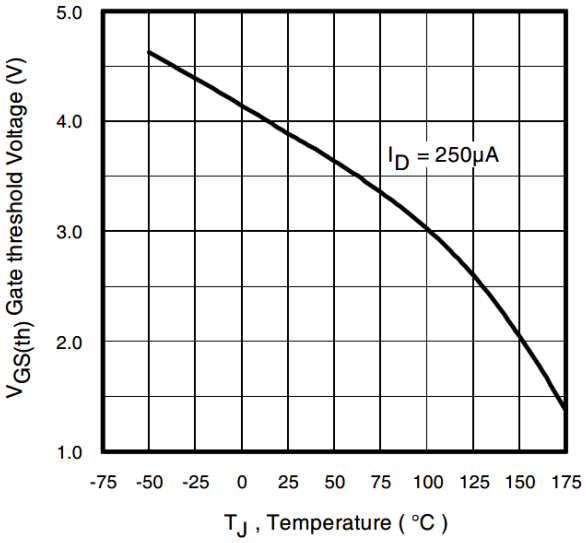


图 15. 阈值电压与温度的关系

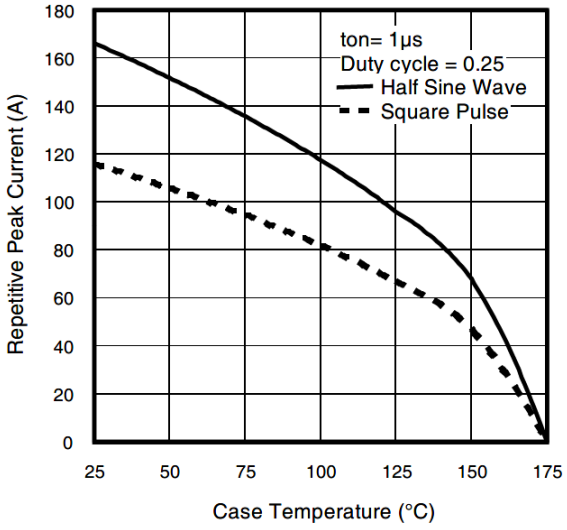


图 **16.** 典型重复峰值电流与机箱温度

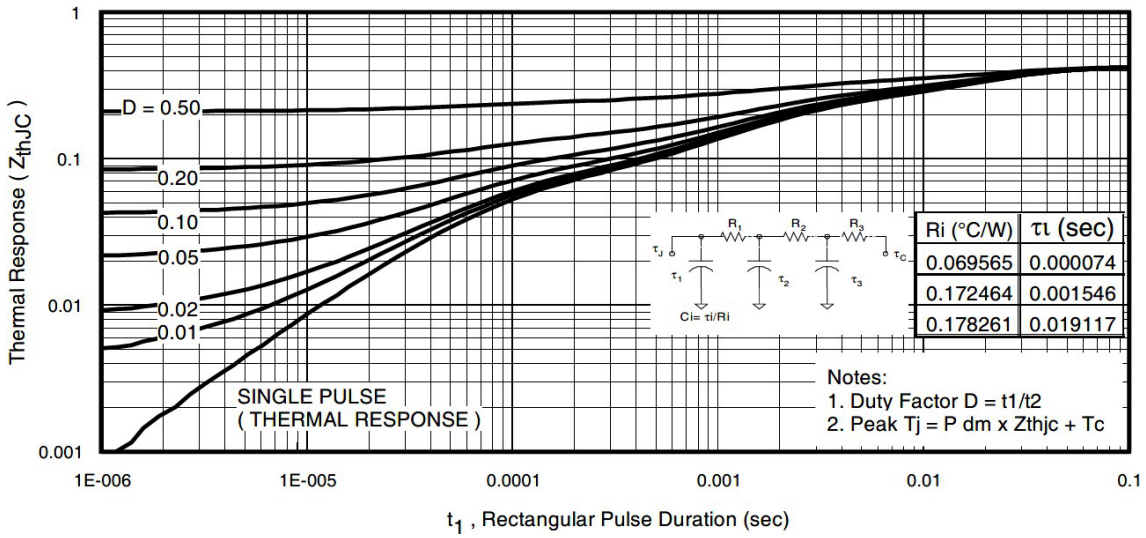


图 17.最大有效瞬态热阻，结到壳

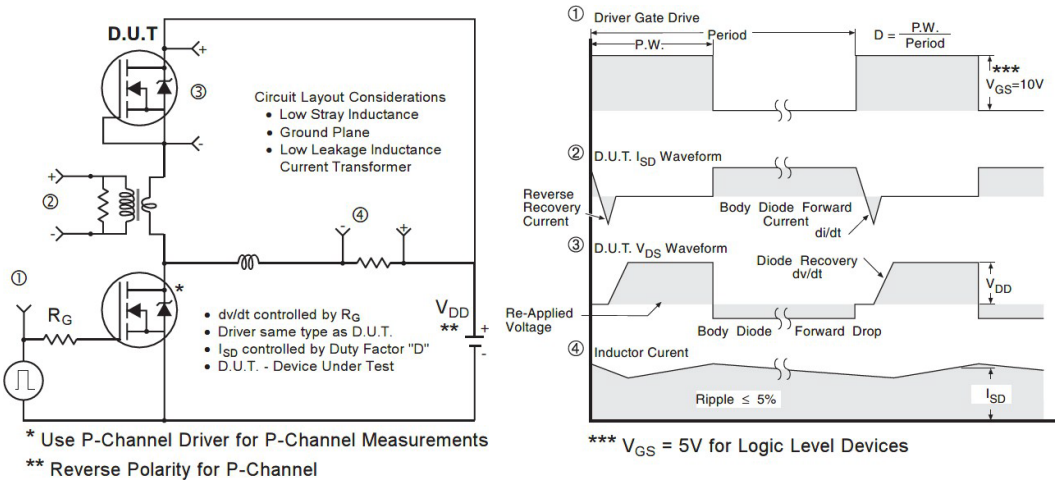


图 18. N 沟道 HEXFET® 功率 MOSFET 二极管峰值恢复 dv/dt 测试电路

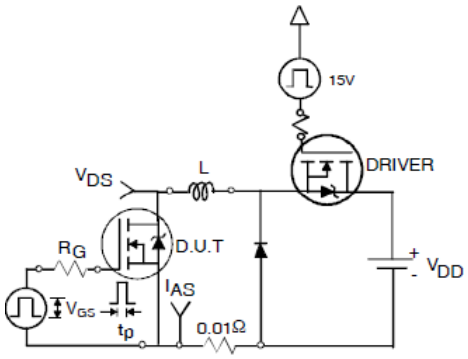


图19a. 非钳位电感测试电路

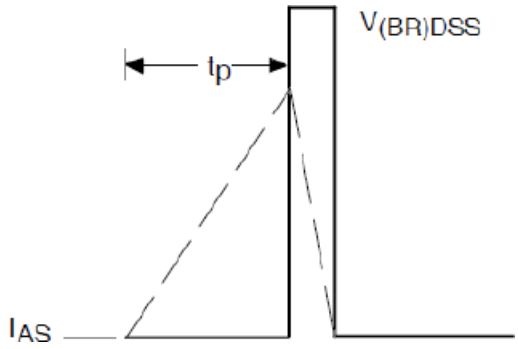


图 19b.未钳位电感波形

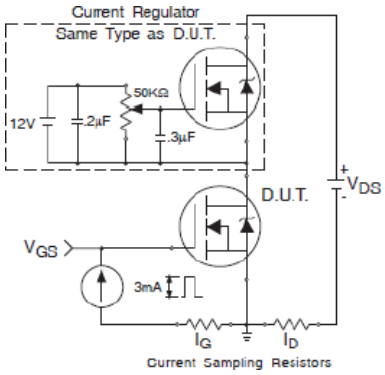


图 20a.栅极电荷测试电路

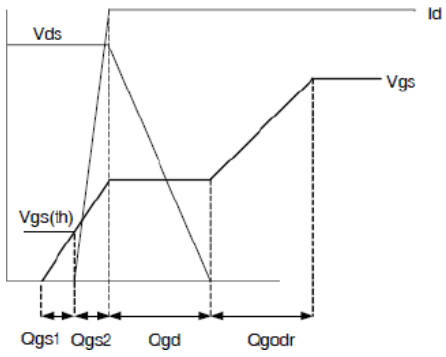


图 20b.栅极电荷波形

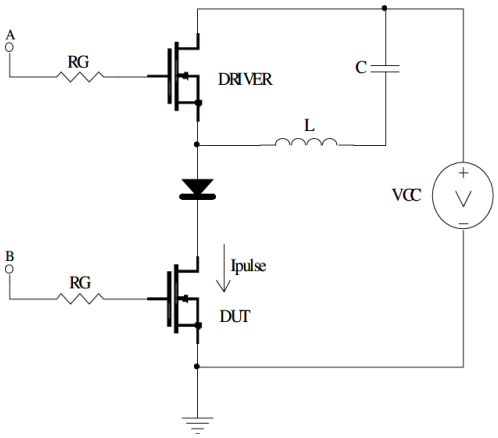


图 21a. tst和 E_{PULSE} 测试电路

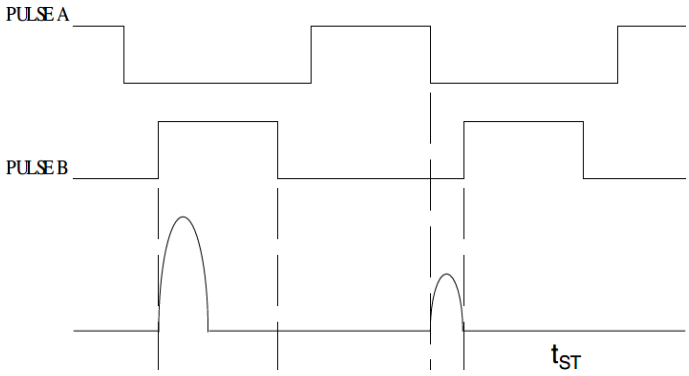


图 21b. tst 测试波形

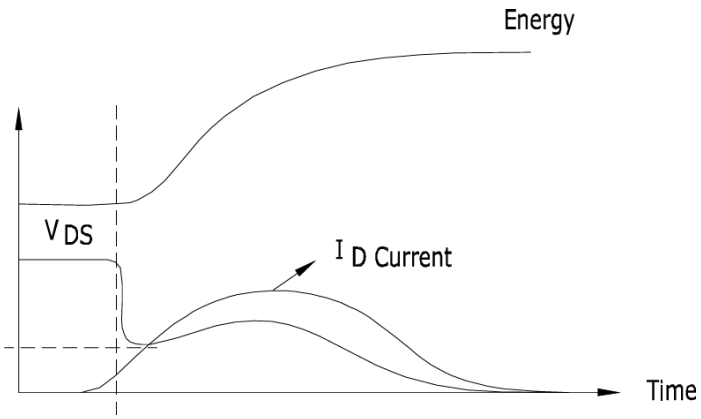
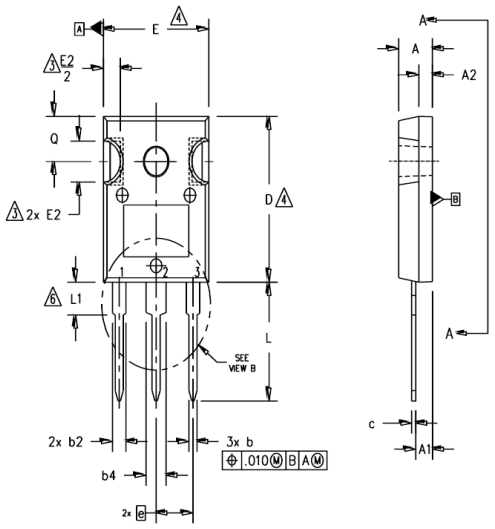


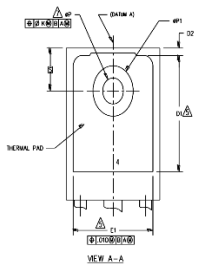
图 21c. E_{PULSE} 测试波形

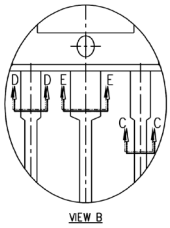
TO-247AC 封装外形（尺寸以毫米（英寸）为单位）

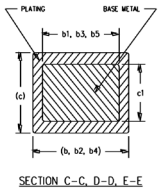


NOTES:

1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M 1994.
2. DIMENSIONS ARE SHOWN IN INCHES.
3. CONTOUR OF SLOT OPTIONAL.
4. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .005" (0.127) PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
5. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS D1 & E1.
6. LEAD FINISH UNCONTROLLED IN L1.
7. øP TO HAVE A MAXIMUM DRAFT ANGLE OF 1.5 ° TO THE TOP OF THE PART WITH A MAXIMUM HOLE DIAMETER OF .154 INCH.
8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-247AC .







SYMBOL	DIMENSIONS				NOTES
	INCHES		MILLIMETERS		
	MIN.	MAX.	MIN.	MAX.	
A	.183	.209	4.65	5.31	
A1	.087	.102	2.21	2.59	
A2	.059	.098	1.50	2.49	
b	.039	.055	0.99	1.40	
b1	.039	.053	0.99	1.35	
b2	.065	.094	1.65	2.39	
b3	.065	.092	1.65	2.34	
b4	.102	.135	2.59	3.43	
b5	.102	.133	2.59	3.38	
c	.015	.035	0.38	0.89	
c1	.015	.033	0.38	0.84	
D	.776	.815	19.71	20.70	4
D1	.515	–	13.08	–	5
D2	.020	.053	0.51	1.35	
E	.602	.625	15.29	15.87	4
E1	.530	–	13.46	–	
E2	.178	.216	4.52	5.49	
e	.215 BSC		5.46 BSC		
øk	.010		0.25		
L	.559	.634	14.20	16.10	
L1	.146	.169	3.71	4.29	
øP	.140	.144	3.56	3.66	
øP1	–	.291	–	7.39	
Q	.209	.224	5.31	5.69	
S	.217 BSC		5.51 BSC		

LEAD ASSIGNMENTS

HEXFET

1.- GATE
2.- DRAIN
3.- SOURCE
4.- DRAIN

IGBTs, CoPACK

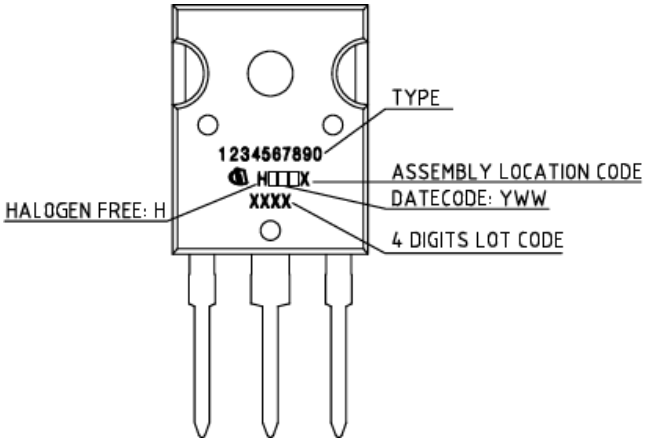
1.- GATE
2.- COLLECTOR
3.- EMITTER
4.- COLLECTOR

DIODES

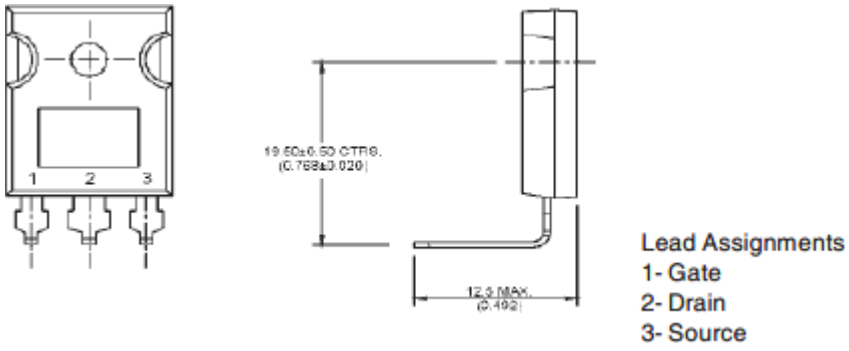
1.- ANODE/OPEN
2.- CATHODE
3.- ANODE

TO-247AC 封装不建议用于表面贴装应用。

TO-247AC 零件标识信息



TO-247AC 引脚选项 - 203（尺寸单位为毫米（英寸））



TO-247AC 封装不建议用于表面贴装应用。

修订记录

Date	Rev.	Comments
09/08/2008	2.1	• Added—IRP spec “IRP max @Tc=100degC –page1
12/15/2009	2.2	• Added Part Marking drawing for Leadform -203 –pg9
11/25/2024	2.3	• Update datasheet to Infineon format • Updated Part marking –page 9 • Added disclaimer on last page.

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