International
IOR Rectifier

英飞凌数字音频MOSFET

PD - 95386A

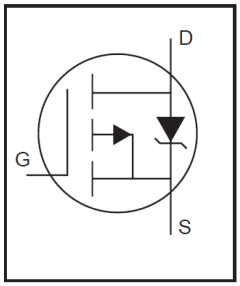
IRLR9343PbF
IRLU9343PbF
IRLU9343-701PbF

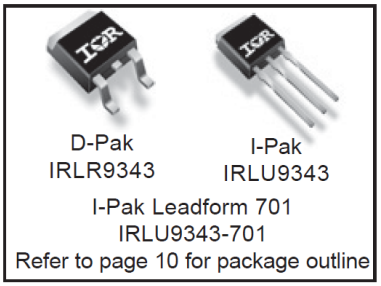
扫码加入myInfineon
获取更多配套资源

特性

- 先进工艺技术
- 针对D类音频放大器应用进行优化的关键参数
- 低R_{DSON}，提升效率
- 较低的Q_g和Q_{sw}值，可降低总谐波失真并提高效率
- 较低的Q_{rr}值可改善总谐波失真（THD）并降低电磁干扰（EMI）
- 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
- 多种封装方案
- 无铅

Key Parameters		
V_{DS}	-55	V
$R_{DS(ON)}$ typ. @ V_{GS} = -10V	93	m
$R_{DS(ON)}$ typ. @ V_{GS} = -4.5V	150	m
Q_g typ.	31	nC
T_J max	175	°C





描述

英飞凌这款数字音频HEXFET®专为D类音频放大器应用而设计。该MOSFET采用最新的工艺技术，实现了单位硅面积的低导通电阻。此外，栅极电荷、体二极管反向恢复电流和内部栅极电阻均经过优化，以提升D类音频放大器的关键性能指标，如效率、总谐波失真（THD）和电磁干扰（EMI）。该MOSFET的其他特点还包括175°C的工作结温和重复雪崩能力。这些特点相结合，使该MOSFET成为适用于D类音频放大器的高效、坚固且可靠的器件应用。

绝对最大额定值

	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	-55	V
V_{GS}	Gate-to-Source Voltage	±20	
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ -10V	-20	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V	-14	
I_{DM}	Pulsed Drain Current ①	-60	
P_D @T_C = 25°C	Power Dissipation	79	W
P_D @T_C = 100°C	Power Dissipation	39	
	Linear Derating Factor	0.53	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-40 to + 175	°C
	Clamping Pressure ⑥	---	N

热阻

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case ⑤	---	1.9	°C/W
$R_{\theta JA}$	Junction-to-Ambient (PCB Mounted) ⑤⑧	---	50	
$R_{\theta JA}$	Junction-to-Ambient (free air) ⑤	---	110	

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）。

注释 ①至 ⑨ 见第 10 页

电气特性 @T_J = 25°C（除非另有说明）

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	-55	---	---	V	V_{GS} = 0V, I_D = -250μA
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	---	-52	---	mV/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	---	93	105	mΩ	V_{GS} = -10V, I_D = -3.4A ③
		---	150	170		V_{GS} = -4.5V, I_D = -2.7A ③
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	---	---	V	V_{DS} = V_{GS}, I_D = -250μA
$\Delta V_{GS(th)}/\Delta T_J$	Gate Threshold Voltage Coefficient	---	-3.7	---	mV/°C	
I_{DSS}	Drain-to-Source Leakage Current	---	---	-2.0	μA	V_{DS} = -55V, V_{GS} = 0V
		---	---	-25		V_{DS} = -55V, 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
g_{fs}	Forward Transconductance	5.3	---	---	S	V_{DS} = -25V, I_D = -14A
Q_g	Total Gate Charge	---	31	47		V_{DS} = -44V
Q_{gs}	Gate-to-Source Charge	---	7.1	---		V_{GS} = -10V
Q_{gd}	Gate-to-Drain Charge	---	8.5	---		I_D = -14A
Q_{godr}	Gate Charge Overdrive	---	15	---		See Fig. 6 and 19
$t_{d(on)}$	Turn-On Delay Time	---	9.5	---		V_{DD} = -28V, V_{GS} = -10V ③
t_r	Rise Time	---	24	---		I_D = -14A
$t_{d(off)}$	Turn-Off Delay Time	---	21	---	ns	
t_f	Fall Time	---	9.5	---		R_G = 2.5Ω
C_{iss}	Input Capacitance	---	660	---		V_{GS} = 0V V_{DS}
C_{oss}	Output Capacitance	---	160	---	pF	= -50V
C_{rss}	Reverse Transfer Capacitance	---	72	---		ƒ = 1.0MHz, See Fig.5
C_{oss}	Effective Output Capacitance	---	280	---		V_{GS} = 0V, V_{DS} = 0V to -44V
L_D	Internal Drain Inductance	---	4.5	---		Between lead,
					nH	6mm (0.25in.)
L_S	Internal Source Inductance	---	7.5	---		from package
						and center of die contact ④

雪崩特性

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy②	---	120	mJ
I_{AR}	Avalanche Current ⑦	See Fig. 14, 15, 17a, 17b		A
E_{AR}	Repetitive Avalanche Energy ⑦			mJ

二极管特性

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S @ T_C = 25°C	Continuous Source Current (Body Diode)	---	---	-20	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	---	---	-60		
V_{SD}	Diode Forward Voltage	---	---	-1.2	V	T_J = 25°C, I_S = -14A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	---	57	86	ns	T_J = 25°C, I_F = -14A
Q_{rr}	Reverse Recovery Charge	---	120	180	nC	di/dt = 100A/μs ③

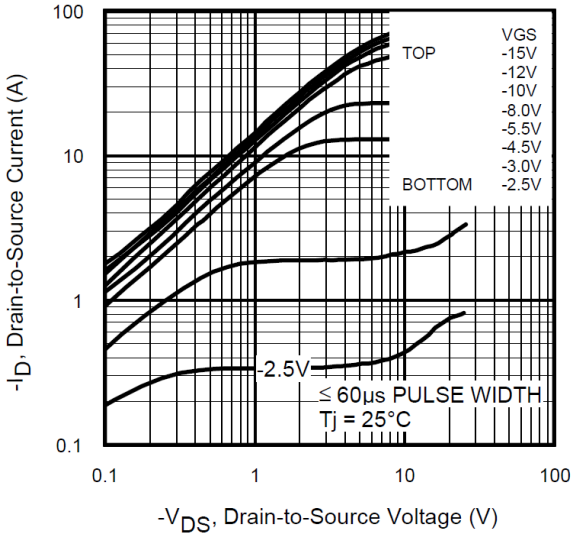


Fig 1. Typical Output Characteristics

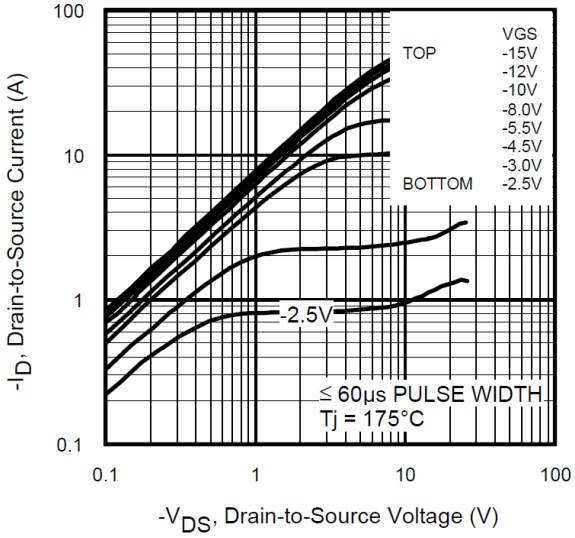


Fig 2. Typical Output Characteristics

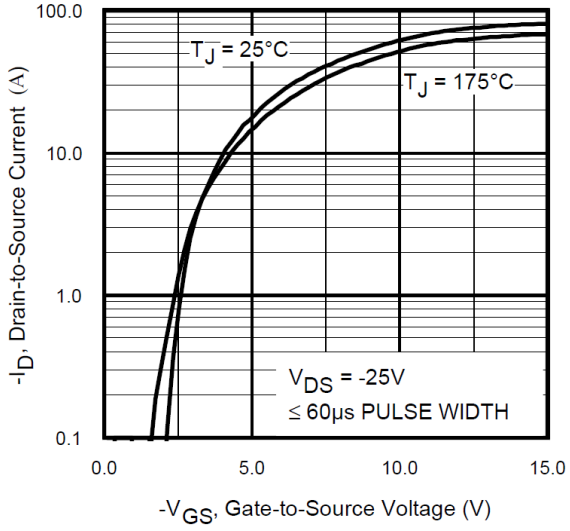


Fig 3. Typical Transfer Characteristics

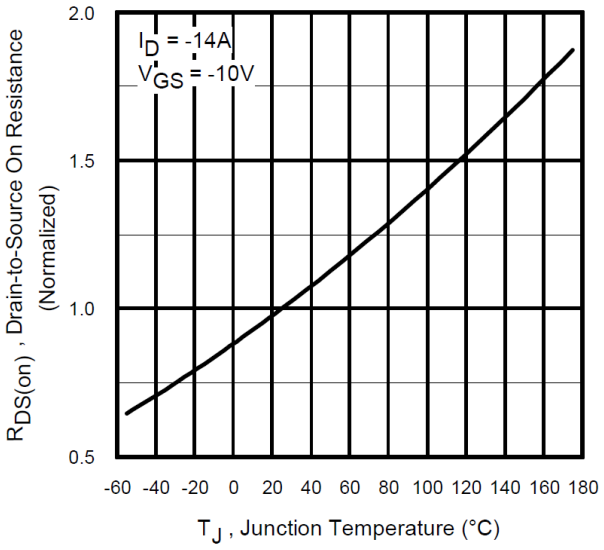


Fig 4. Normalized On-Resistance vs. Temperature

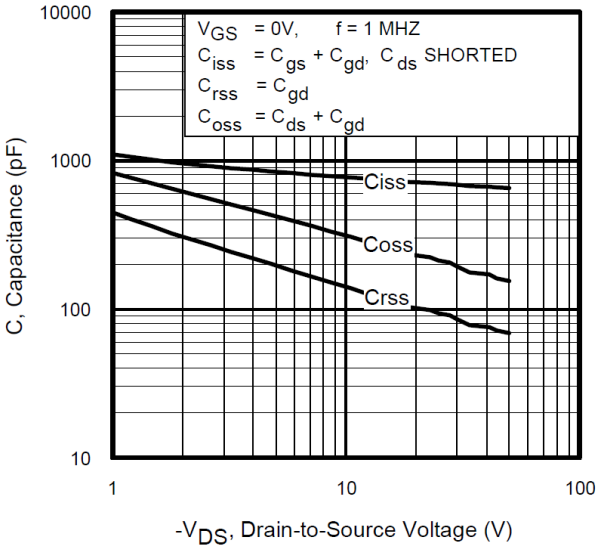


Fig 5. Typical Capacitance vs.Drain-to-Source Voltage

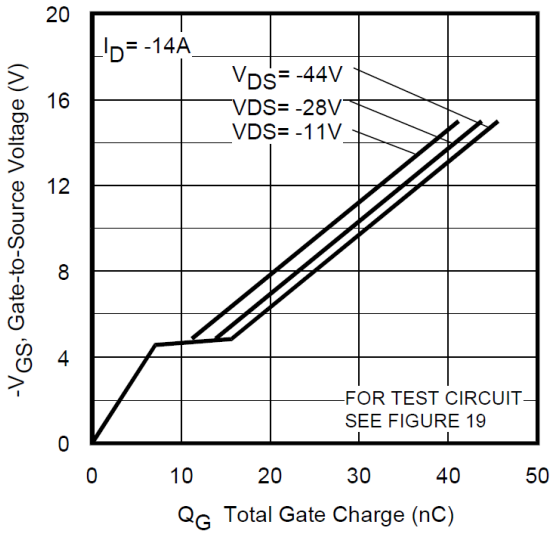


Fig 6. Typical Gate Charge vs.Gate-to-Source Voltage

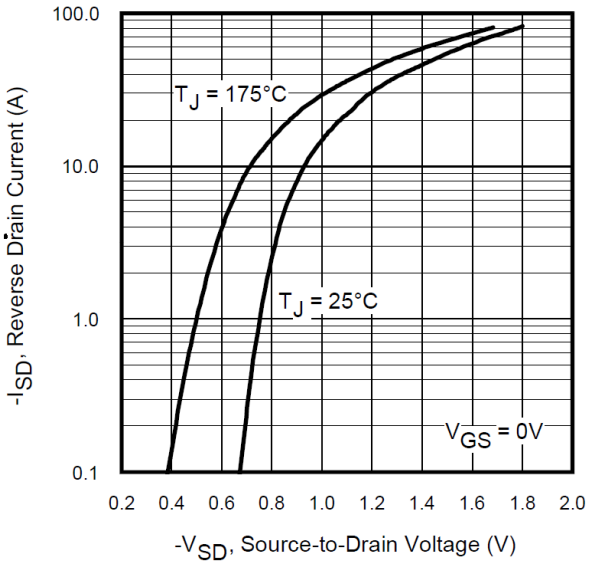


Fig 7. Typical Source-Drain Diode Forward Voltage

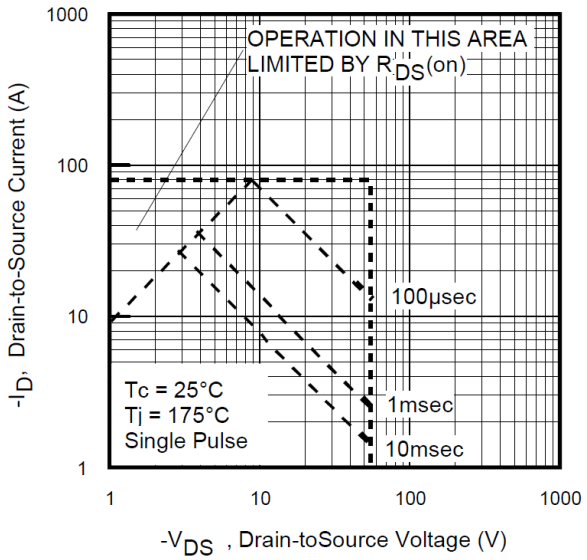


Fig 8. Maximum Safe Operating Area

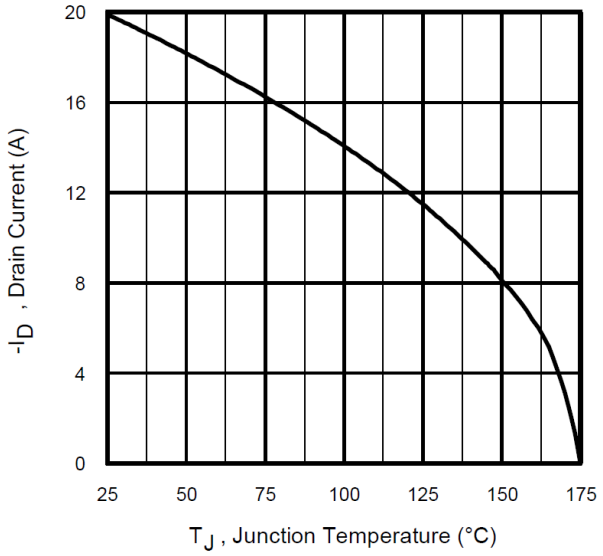


Fig 9. Maximum Drain Current vs. Case Temperature

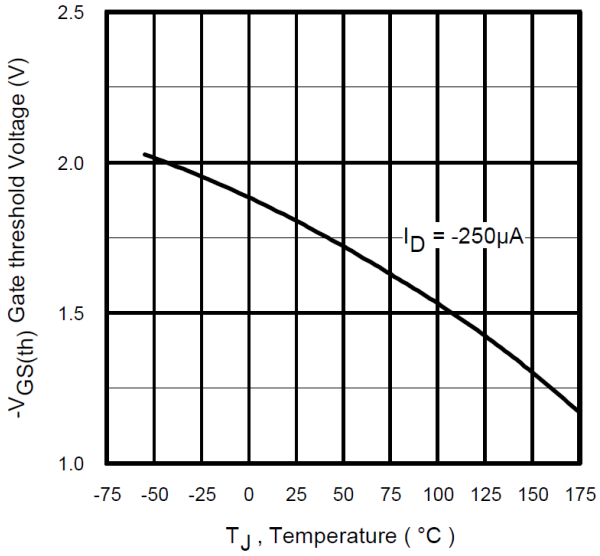


Fig 10. Threshold Voltage vs. Temperature

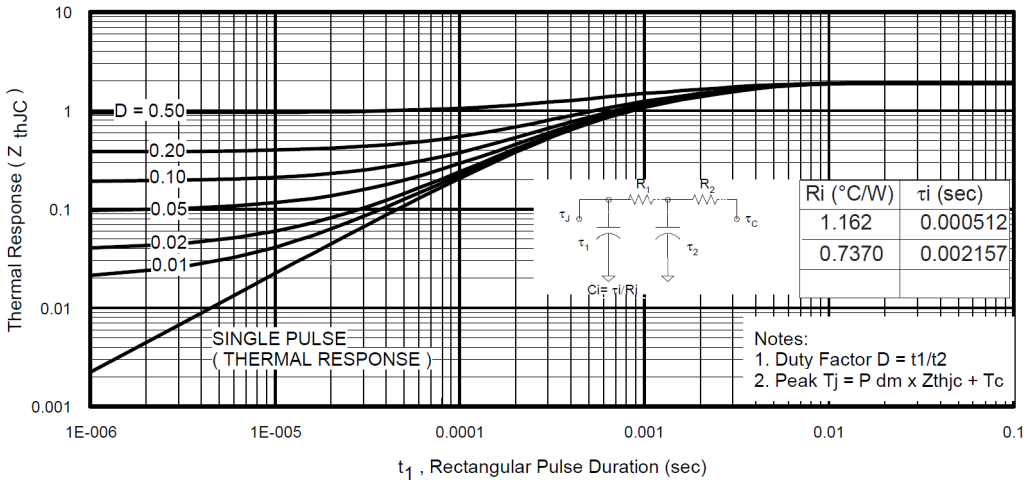


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

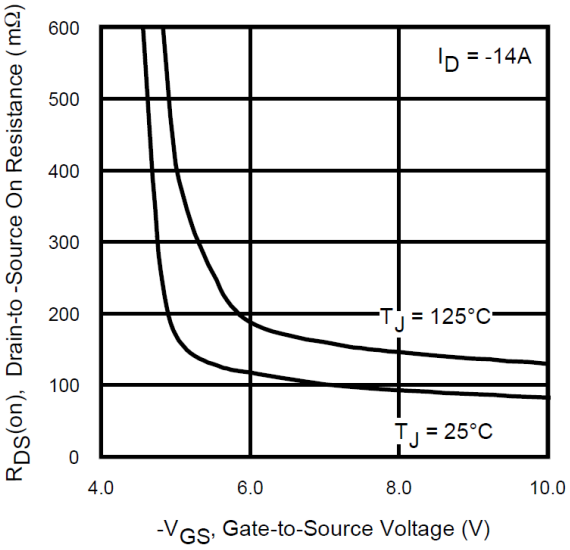


Fig 12. On-Resistance Vs. Gate Voltage

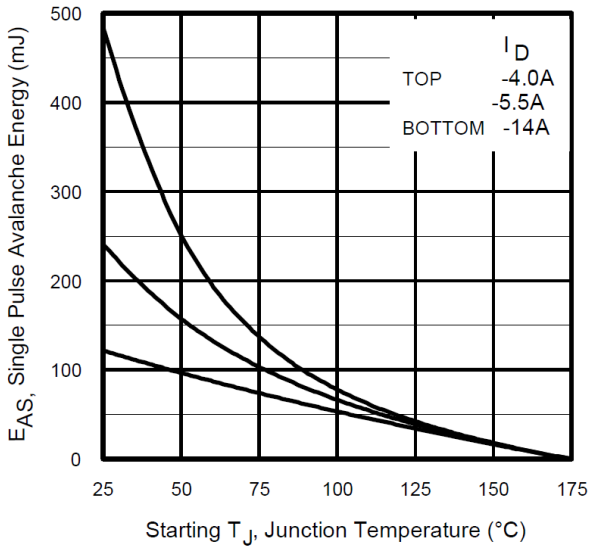


Fig 13. Maximum Avalanche Energy Vs. Drain Current

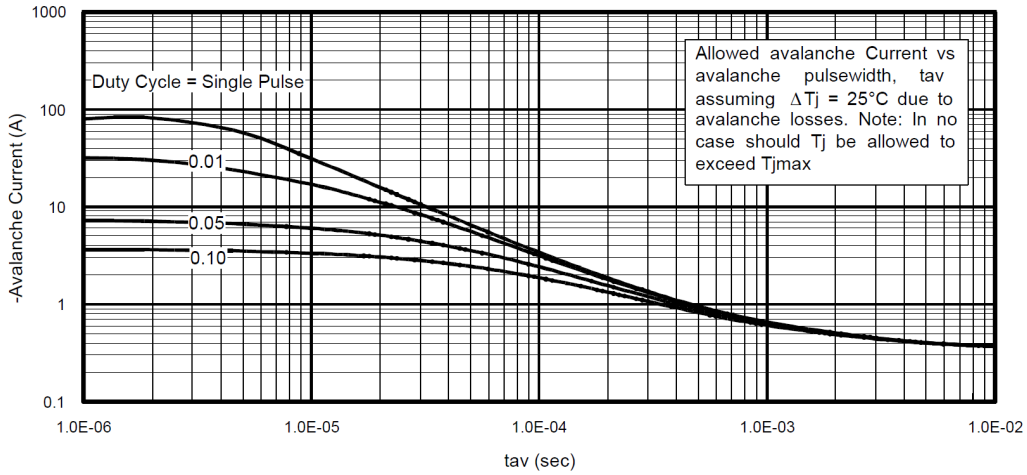


Fig 14. Typical Avalanche Current Vs.Pulsewidth

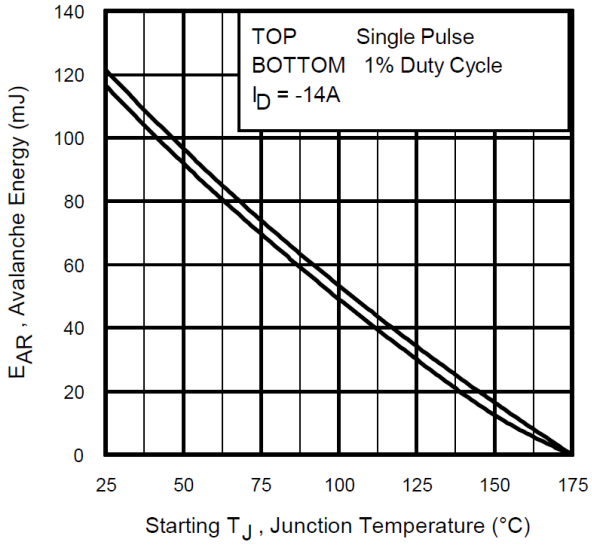


Fig 15. Maximum Avalanche Energy Vs. Temperature

关于重复的雪崩曲线的注释，图 14、15：（有关详细信息，请参阅www.irf.com 上的 AN-1005）

1. 雪崩失效假设：
   纯粹的热现象和失效发生在结温远超 T_{jmax}的情况下。这对每种零件类型都是有效的。
2. 只要不超过 T_{jmax}，就可以在雪崩中安全运行。
3. 如下公式基于图 17a、17b 所示的电路和波形。
4. $P_{D\,(ave)}$ = 每个雪崩脉冲的平均功率耗散。
5. BV = 额定击穿电压（1.3 倍系数，考虑雪崩期间的电压增加）。
6. I_{av} = 可允许的雪崩电流。
7. ΔT = 可允许的结温上升，不得超过 T_{jmax}（图 14、15 中假设为 25°C）。
   t_{av} = 雪崩的平均时间。
   D = 雪崩占空比 = t_{av} f
   Z_{thJC} (D, t_{av}) = 瞬态热阻抗，见图 11)

$$P_{D\,(ave)} = 1/2\ (1.3 \cdot BV \cdot I_{av}) = \Delta T / Z_{thJC}$$
$$I_{av} = 2\Delta T / [1.3 \cdot BV \cdot Z_{th}]$$
$$E_{AS\,(AR)} = P_{D\,(ave)} \cdot t_{av}$$

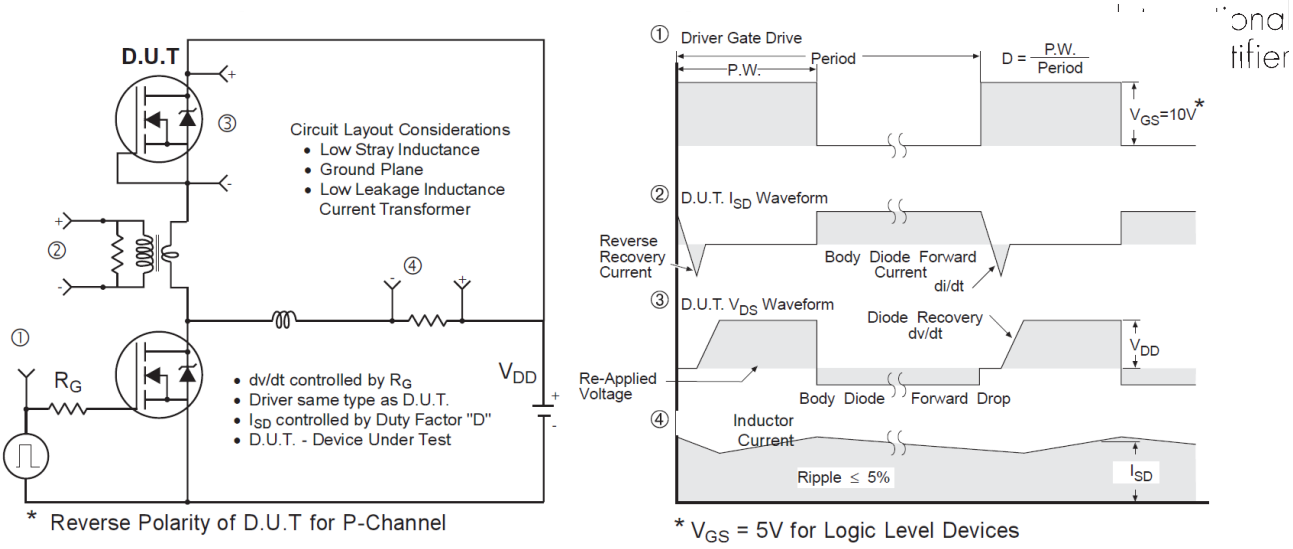


Fig 16. Peak Diode Recovery dv/dt Test Circuit for P-Channel HEXFET® Power MOSFETs

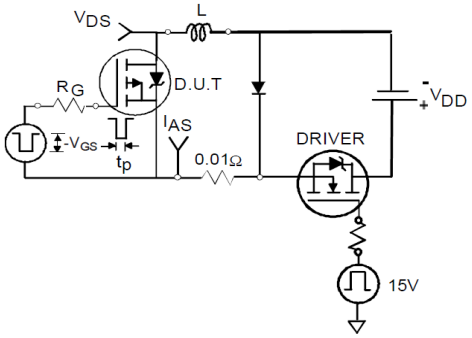


Fig 17a. Unclamped Inductive Test Circuit

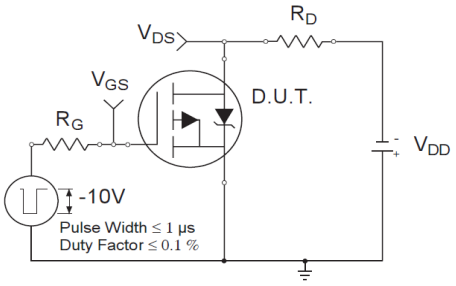


Fig 18a. Switching Time Test Circuit

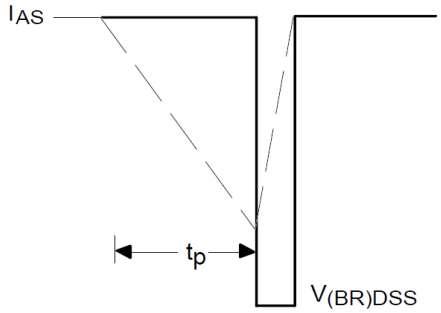


Fig 17b. Unclamped Inductive Waveforms

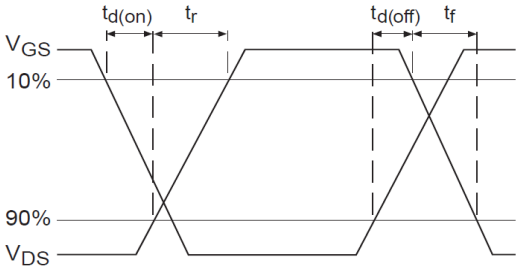


Fig 18b. Switching Time Waveforms

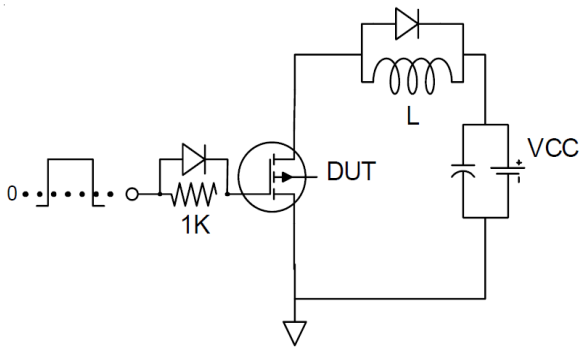


Fig 19a. Gate Charge Test Circuit

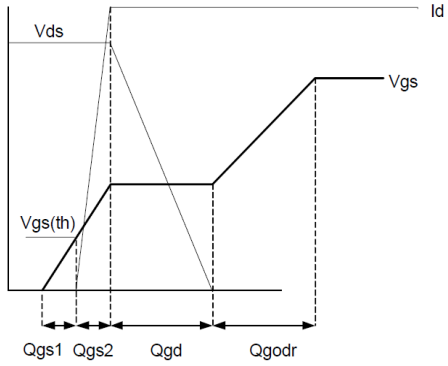
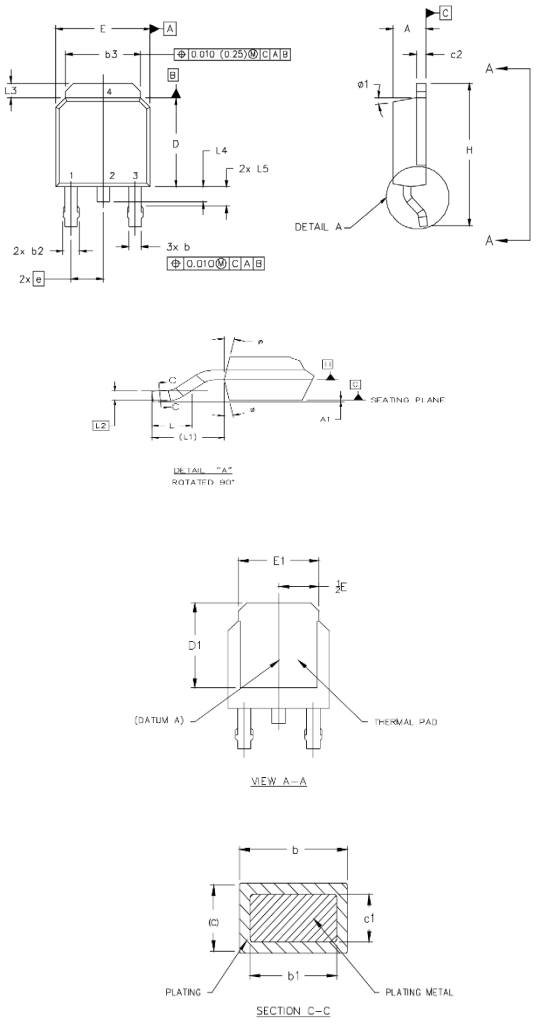


Fig 19b Gate Charge Waveform

D-Pak (T0-252AA) 封装外形

尺寸以毫米（英寸）为单位



NOTES:

1.0 DIMENSIONING AND TOLERANCING PER ASME Y14.5 M– 1994.
2.0 DIMENSIONS ARE SHOWN IN INCHES [MILLIMETERS].
3.0 LEAD DIMENSION UNCONTROLLED IN L5
4.0 DIMENSION D1 AND E1 ESTABLISH A MINIMUM MOUNTING SURFACE FOR THERMAL PAD.
5.0 SECTION C–C DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN .005 [0.127] AND .010 [0.2540 FROM THE LEAD TIP.
6.0 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.
7.0 OUTLINE CONFORMS TO JEDEC OUTLINE TO–252AA.

SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	2.18	2.39	.086	.094	
A1		0.13		.005	
b	0.64	0.89	.025	.035	5
b1	0.64	0.79	.025	0.031	5
b2	0.76	1.14	.030	.045	
b3	4.95	5.46	.195	.215	
c	0.46	0.61	.018	.024	5
c1	0.41	0.56	.016	.022	5
c2	.046	0.89	.018	.035	5
D	5.97	6.22	.235	.245	6
D1	5.21	–	.205	–	4
E	6.35	6.73	.250	.265	6
E1	4.32	–	.170		4
e	2.29		.090 BSC		
H	9.40	10.41	.370	.410	
L	1.40	1.78	.055	.070	
L1	2.74 REF.		.108 REF.		
L2	0.051 BSC		.020 BSC		
L3	0.89	1.27	.035	.050	
L4		1.02		.040	
L5	1.14	1.52	.045	.060	3
ø	0°	10°	0°	10°	
ø1	0°	15°	0°	15°	

LEAD ASSIGNMENTS

HEXFET

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

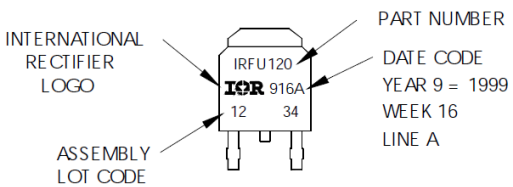
IGBTs, CoPACK

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

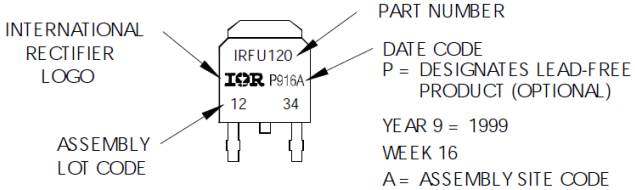
I-Pak (T0-252AA) 零件信息标识

EXAMPLE: THIS IS AN IRFR120
WITH ASSEMBLY
LOT CODE 1234
ASSEMBLED ON WW 16, 1999
IN THE ASSEMBLY LINE "A"

Note: "P" in assembly line position
indicates "Lead-Free"

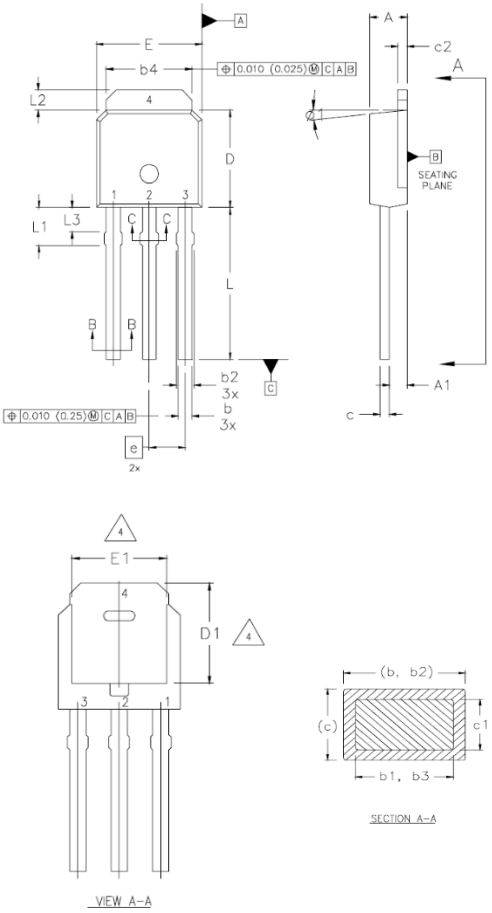


OR



I-Pak (T0-251AA) 封装大纲

尺寸以毫米（英寸）为单位



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5 M- 1994.
2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.005" (0.127) PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
4. THERMAL PAD CONTOUR OPTION WITHIN DIMENSION b4, L2, E1 & D1.
5. LEAD DIMENSION UNCONTROLLED IN L3.
6. DIMENSION b1, b3 APPLY TO BASE METAL ONLY.
7. OUTLINE CONFORMS TO JEDEC OUTLINE TO-251AA.
8. CONTROLLING DIMENSION : INCHES.

SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	2.18	2.39	0.086	.094	
A1	0.89	1.14	0.035	0.045	
b	0.64	0.89	0.025	0.035	
b1	0.64	0.79	0.025	0.031	4
b2	0.76	1.14	0.030	0.045	
b3	0.76	1.04	0.030	0.041	
b4	5.00	5.46	0.195	0.215	4
c	0.46	0.61	0.018	0.024	
c1	0.41	0.56	0.016	0.022	
c2	.046	0.86	0.018	0.035	
D	5.97	6.22	0.235	0.245	3, 4
D1	5.21	-	0.205	-	4
E	6.35	6.73	0.250	0.265	3, 4
E1	4.32	-	0.170	-	4
e	2.29		0.090 BSC		
L	8.89	9.60	0.350	0.380	
L1	1.91	2.29	0.075	0.090	
L2	0.89	1.27	0.035	0.050	4
L3	1.14	1.52	0.045	0.060	5
ø1	0°	15°	0°	15°	

LEAD ASSIGNMENTS

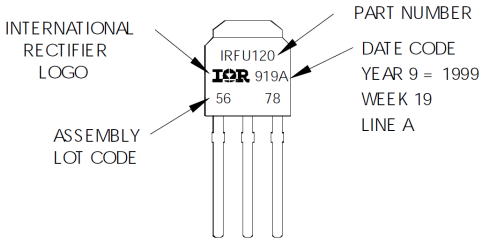
HEXFET

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

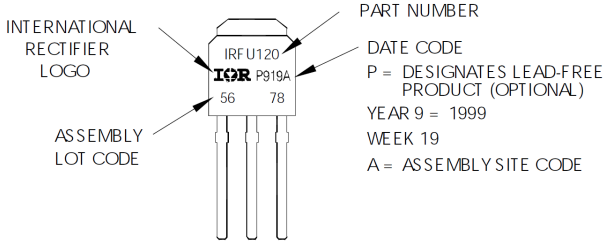
I-Pak (T0-251AA) 零件信息标识

EXAMPLE: THIS IS AN IRFU120
WITH ASSEMBLY
LOT CODE 5678
ASSEMBLED ON WW 19, 1999
IN THE ASSEMBLY LINE "A"

Note: "P" in assembly line position indicates "Lead-Free"

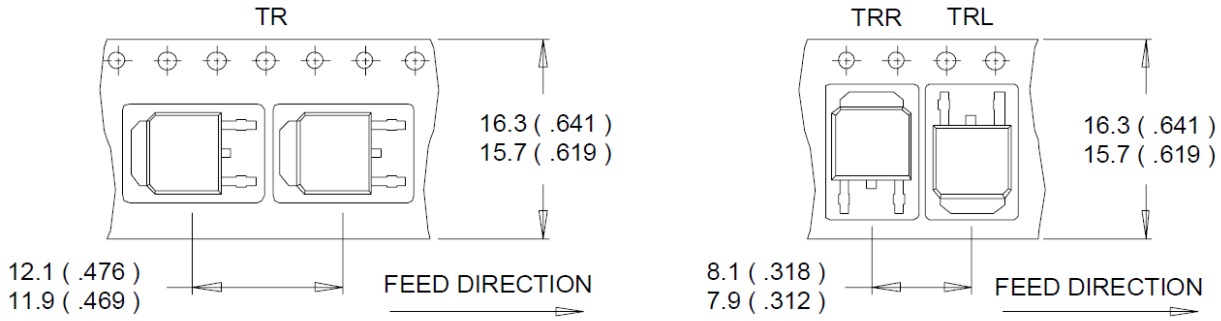


OR

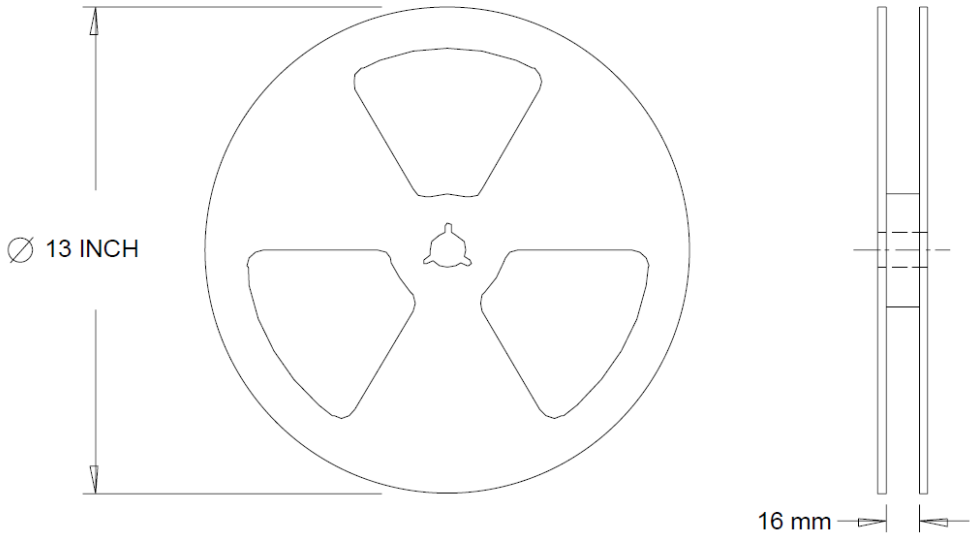


D-Pak (T0-252AA) 卷带信息

尺寸以毫米（英寸）为单位



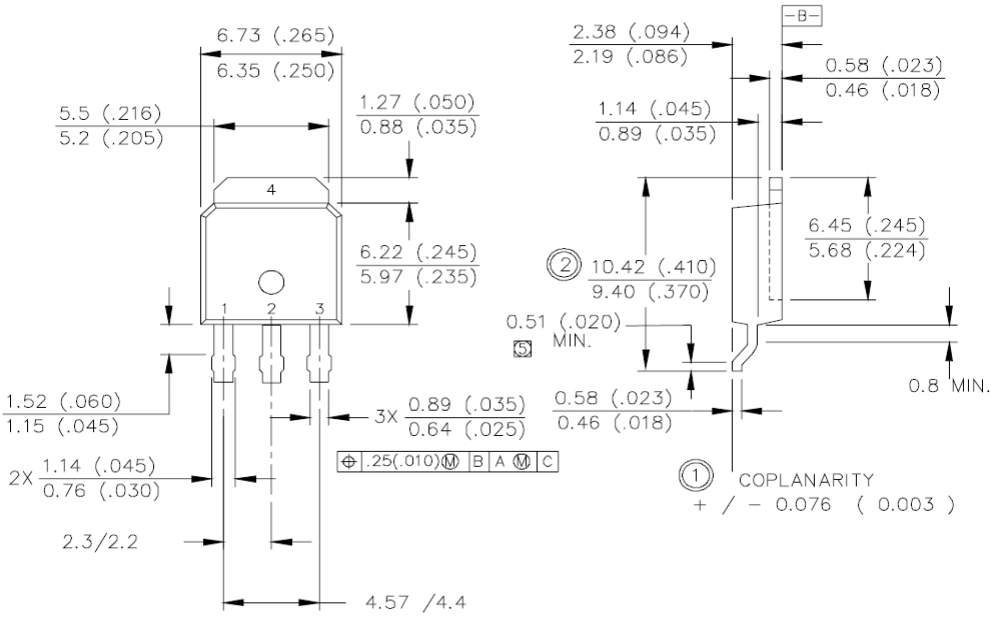
NOTES :
1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



NOTES :
1. OUTLINE CONFORMS TO EIA-481.

I-Pak Leadform 701 选项 封装概述 ®

尺寸以毫米（英寸）为单位



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

NOTES:
1.0 CONTROL DIMENSIONS IN INCHES
2.0 PARALLELISM AND ANGULARITY MAX. 0.076 (0.003)
3.0 LEADFORM CRITICAL DIMENSIONS DOUBLE RINGED

注:

① 重复的额定值； 脉冲宽度受最高结温限制

② 起始温度 T_J = 25°C，L = 1.24mH，RG = 25Ω ，I_{AS} = -14A。

③ 脉冲宽度 ≤ 400μs; 占空比 ≤ 2%。

④ 这适用于 I-PAK，D-PAK 的 L_S在引线和模具接触中心之间测量。

⑤ R_θ 在 TJ 约 90°C 时测得。

⑥ 有关安装信息，请联系工厂

⑦ 受 Tjmax 限制。参见图。14、15、17a、17b 有关重复雪崩的信息

⑧ 安装在 1 英寸方形 PCB（FR-4 或 G-10 材料）上时。有关推荐的占位面积和焊接技术，请参阅应用说明 #AN-994

⑨ 有关零件标识、卷带信息，请参阅 D-Pak 封装

Data and specifications subject to change without notice.
This product has been designed for the Industrial market.
Qualification Standards can be found on IR's Web site.

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7903
Visit us at www.irf.com for sales contact information.12/04

注：如需获取最新图纸，请访问英飞凌网站：：

www.infineon.com

IMPORTANT NOTICE

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies office (**www.infineon.com**).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.

免责声明

请注意，本文件的原文使用英文撰写，为方便客户浏览英飞凌提供了中文译文。该中文译文仅供参考，并不可作为任何论点之依据。
由于翻译过程中可能使用了自动化程序，以及语言翻译和转换过程中的差异，最后的中文译文与最新的英文版本原文含义可能存在不尽相同之处。
因此，我们同时提供该中文译文版本的最新英文原文供您阅读，请参见 http://www.infineon.com
英文原文和中文译文版本之间若存有任何歧异，以最新的英文版本为准，并且仅认可英文版本为正式文件。
您如果使用本文件，即表示您同意并理解上述说明。英飞凌不对因翻译过程中可能存在的任何不完整或不准确信息而产生的任何直接或间接损失或损害负责。英飞凌不承担中文译文版本的完整性和准确性责任。如果您不同意上述说明，请不要使用本文件。

Trademarks
All referenced product or service names and trademarks are the property of their respective owners.

版本 **2026-11-04**

Infineon Technologies AG 出版，
德国 **Neubiberg 85579**

版权 © **2026 Infineon Technologies AG**
及其关联公司。
保留所有权利。

Do you have a question about this document?

Email:

erratum@infineon.com

重要通知

Infineon Technologies AG 及其关联公司（以下简称 "英飞凌"）销售或提供和交付的产品（可能也包括样品，且可能由硬件或软件或两者组成）（以下简称 "产品"），应遵守客户与英飞凌签订的框架供应合同或其他书面协议的条款和条件，如无上述合同或其他书面协议，则应遵守适用的英飞凌销售条件。只有在英飞凌明确书面同意的情况下，客户的一般条款和条件或对适用的英飞凌销售条件的偏离才对英飞凌具有约束力。

为避免疑义，英飞凌不承担不侵犯第三方权利的所有保证和默示保证，例如对特定用途/目的的适用性或适销性的保证。

英飞凌对与样品、应用或客户对任何产品的具体使用有关的任何信息或本文档中给出的任何示例或典型值概不负责。

本文件中包含的数据仅供具有技术资格和技能的客户代表使用。客户有责任评估产品对预期应用和客户特定用途的适用性，并在预期应用和客户特定用途中验证本文件中包含的所有相关技术数据。客户有责任正确设计、编程和测试预期应用的功能性和安全性，并遵守与其使用相关的法律要求。

除非英飞凌另行明确批准，否则产品不得用于任何因产品故障或使用产品的任何后果可合理预期会导致人身伤害的应用。但是，上述规定并不妨碍客户在英飞凌明确设计和销售的使用领域中使用任何产品，但是客户对应用负有全部责任。

英飞凌明确保留根据适用法律，如《德国版权法》（UrhG）第 44b 条，将其内容用于商业资料和数据探勘（TDM）的权利。

如果产品包含安全功能：
由于任何计算设备都不可能绝对安全，尽管产品采取了安全措施，但英飞凌不保证产品不会被入侵、数据不会被盗或遗失，或不会发生其他漏洞（以下简称"安全漏洞"），英飞凌对任何安全漏洞不承担任何责任。

如果本文档包含或引用软件：
根据美国、德国和世界其他国家的知识产权法律和条约，该软件归英飞凌所有。英飞凌保留所有权利。因此，您只能按照软件附带的软件授权协议的规定使用本软件。

如果没有适用的软件授权协议，英飞凌特此授予您个人的、非排他性的、不可转让的软件知识产权授权（无权转授权）：(a) 对于以源代码形式提供的软件，仅在贵组织内部修改和复制该软件用于英飞凌硬件产品；及 (b) 对于以二进制代码(binary code)形式对外向终端用户分发该软件，仅得用于英飞凌硬件产品。禁止对本软件进行任何其他使用、复制、修改、翻译或编译。有关产品、技术、交货条款和条件以及价格的详细信息，请联系离您最近的英飞凌办公室或访问 **https://www.infineon.com**。