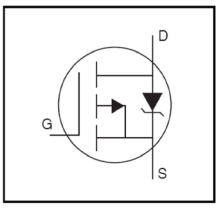
英飞凌HEXFET ®功率MOSFET

- P沟道
- 工作温度 175°C
- 表贴封装 (IRFR6215)
- 直插封装 (IRFR6215)
- 先进工艺技术
- 快速开关
- 雪崩完全额定
- 无铅

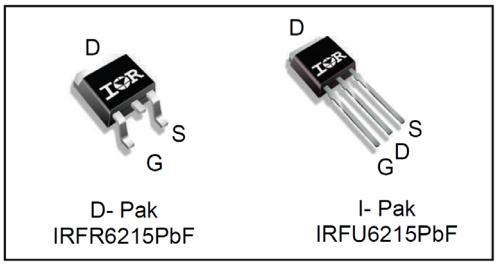


V_{DSS}	-150V
$R_{DS(on)}$	0.295Ω
I_D	-13A

扫码加入myInfineon
获取更多配套资源

说明

英飞凌国际整流器公司（International Rectifier）推出的第五代 HEXFET 采用先进的工艺技术，实现了单位硅面积极低的导通电阻。这一优点与 HEXFET 功率 MOSFET 众所周知的快速开关速度和坚固耐用的器件设计相结合，为设计人员提供了一种可用于各种应用的极为高效的器件。D-PAK 封装专为表贴工艺设计，可兼容气相焊、红外焊或波峰焊工艺。直插封装（IRFU 系列）适用于通孔安装应用。在典型的表贴应用中，功耗最高可达 1.5 瓦。



G	D	S
Gate	Drain	Source

Base part number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRFU6215PbF	I-Pak	Tube	75	IRFU6215PbF
IRFR6215PbF	D-Pak	Tube	75	IRFR6215PbF
		Tape and Reel Left	3000	IRFR6215TRLPbF

绝对最大额定值

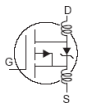
Symbol	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ -10V	-13	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ -10V	-9.0	
I_{DM}	Pulsed Drain Current ①⑥	-44	
P_D @T_C = 25°C	Maximum Power Dissipation	110	W
	Linear Derating Factor	0.71	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy ②⑥	310	mJ
I_{AR}	Avalanche Current ①⑥	-6.6	A
E_{AR}	Repetitive Avalanche Energy ①⑥	11	mJ
dv/dt	Peak Diode Recovery dv/dt③	5.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 175	°C
	Soldering Temperature, for 10 seconds (1.6mm from case)	300	

热阻

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	---	1.4	°C/W
$R_{\theta JA}$	Junction-to-Ambient (PCB Mount) ⑦	---	50	
$R_{\theta JA}$	Junction-to-Ambient	---	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）。

电气特性 @T_J = 25°C（除非另有说明）

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-150	---	---	V	V_{GS} = 0V, I_D = -250μA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	---	-0.20	---	V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	---	---	0.295	Ω	V_{GS} = -10V, I_D = -6.6A ④
		---	---	0.58		V_{GS} = -10V, I_D = -6.6A ④T_J =150°C
$V_{GS(th)}$	Gate Threshold Voltage	-2.0	---	-4.0	V	V_{DS} = V_{GS}, I_D = -250μA
gfs	Forward Trans conductance	3.6	---	---	S	V_{DS} = -50V, I_D = -6.6A⑥
I_{DSS}	Drain-to-Source Leakage Current	---	---	-25	μA	V_{DS} = -150V, V_{GS} = 0V
		---	---	-250		V_{DS} = -120V,V_{GS} = 0V,T_J =150°C
I_{GSS}	Gate-to-Source Forward Leakage	---	---	-100	nA	V_{GS} = -20V
	Gate-to-Source Reverse Leakage	---		100		V_{GS} = 20V
Q_g	Total Gate Charge	---	---	66	nC	I_D = -6.6A V_{DS}
Q_{gs}	Gate-to-Source Charge	---	---	8.1		= -120V
Q_{gd}	Gate-to-Drain Charge	---	---	35		V_{GS} = -10V, See Fig. 6 and 13 ④⑥
$t_{d(on)}$	Turn-On Delay Time	---	14	---	ns	V_{DD} = -75V I_D
t_r	Rise Time	---	36	---		= -6.6A R_G =
$t_{d(off)}$	Turn-Off Delay Time	---	53	---		6.8Ω
t_f	Fall Time	---	37	---		R_D = 12Ω, See Fig. 10 ④⑥
L_D	Internal Drain Inductance	---	4.5	---	nH	Between lead ,6mm (0.25in.) from package and center of die contact⑤ 
L_S	Internal Source Inductance	---	7.5	---		
C_{iss}	Input Capacitance	---	860	---	pF	V_{GS} = 0V V_{DS} =
C_{oss}	Output Capacitance	---	220	---		-25V
C_{rss}	Reverse Transfer Capacitance	---	130	---		f = 1.0MHz,See Fig. 5 ⑥

源极-漏极额定值与特性

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	---	---	-13	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①⑥	---	---	-44		
V_{SD}	Diode Forward Voltage	---	---	-1.6	V	T_J = 25°C,I_S = -6.6A,V_{GS} = 0V ④
t_{rr}	Reverse Recovery Time	---	160	240	ns	T_J = 25°C ,I_F = -6.6A
Q_{rr}	Reverse Recovery Charge	---	1.2	1.7	μC	di/dt = 100A/μs ④⑥
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

注:

① 重复额定值；脉冲宽度受最高结温限制。（见图11）

② 初始 T_J = 25°C，L = 14mH，R_G= 25Ω，I_{AS} = -6.6A（见图 12）

③ I_{SD} ≤ -6.6A, di/dt ≤ -620A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 175°C.

④ 脉冲宽度 ≤ 300μs; 占空比 ≤ 2%。

⑥ 这适用于 I-PAK，D-PAK 的 LS 在引线和模具接触中心之间测量。

⑤ 使用 IRF6215 数据和测试条件。

⑦安装在 1 英寸方形PCB （FR-4 或 G-10 材料）上时。关于推荐的封装和焊接技术，请参阅应用笔记 #AN-994。

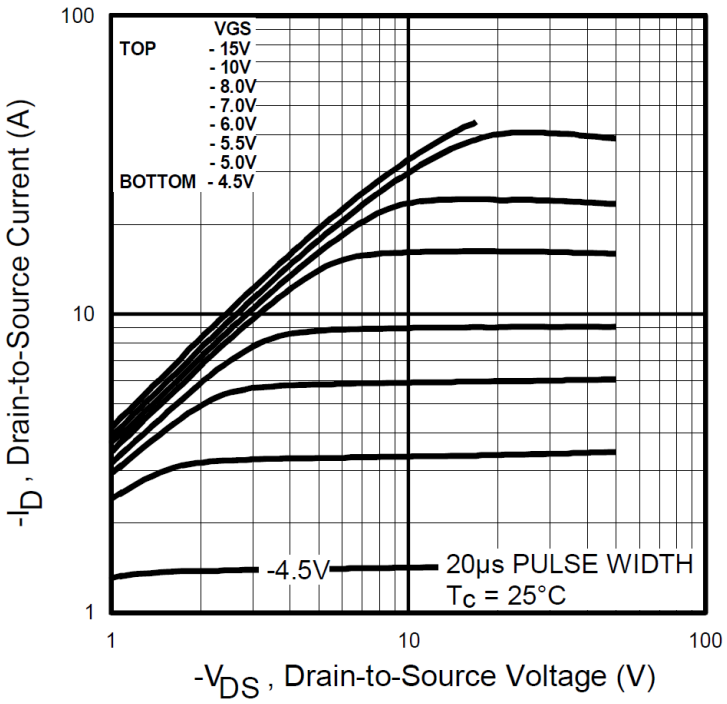


Fig. 1 Typical Output Characteristics

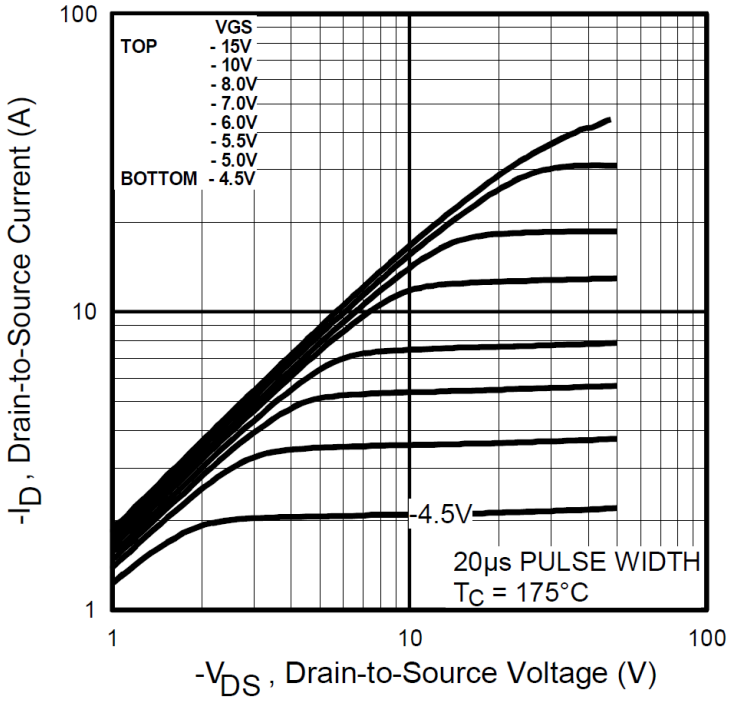


Fig. 2 Typical Output Characteristics

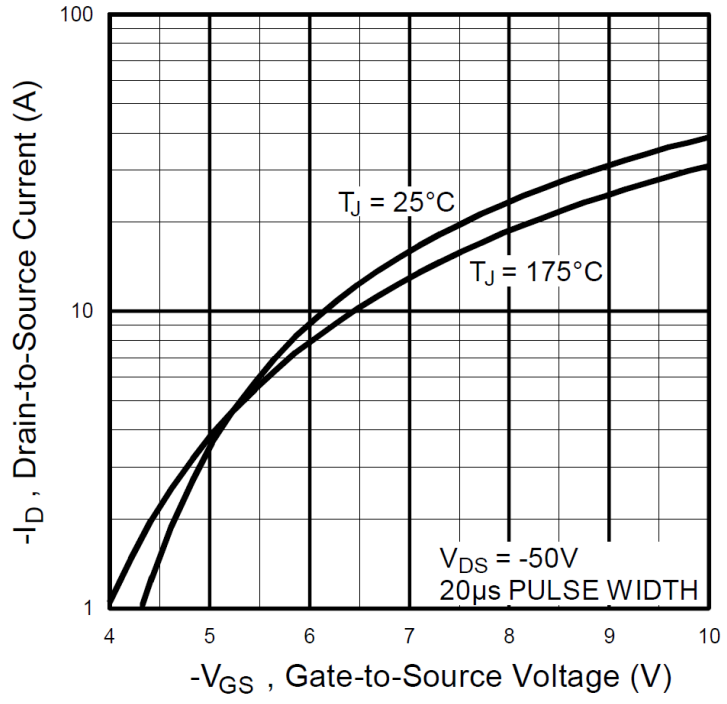


Fig. 3 Typical Transfer Characteristics

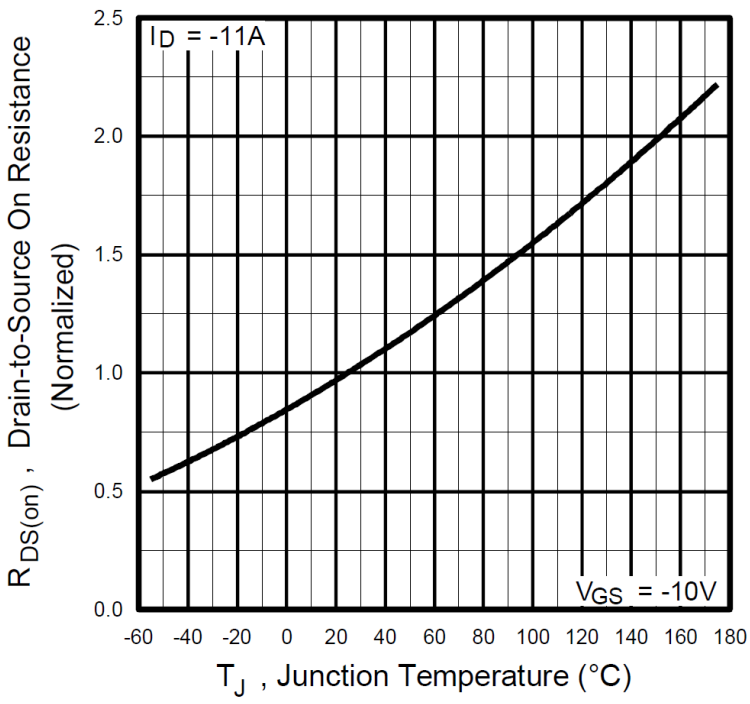


Fig. 4 Normalized On-Resistance vs. Temperature

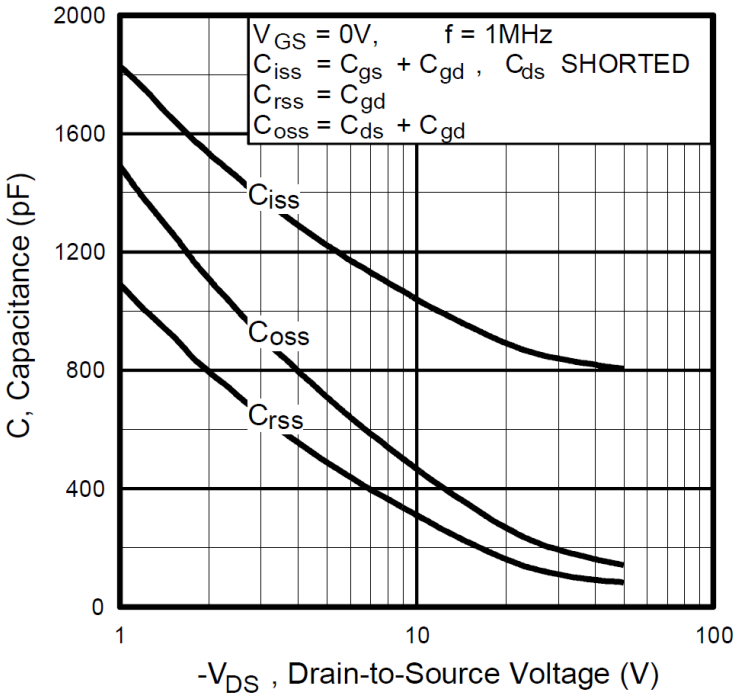


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

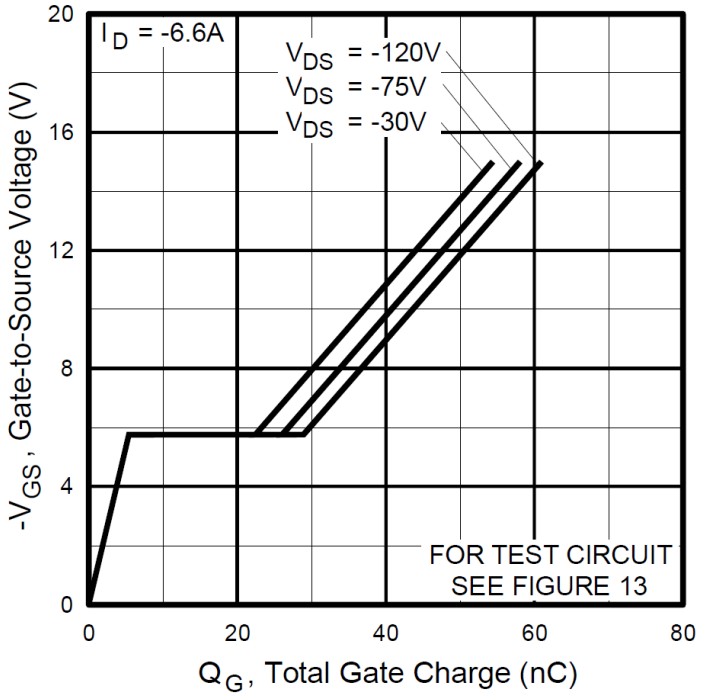


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

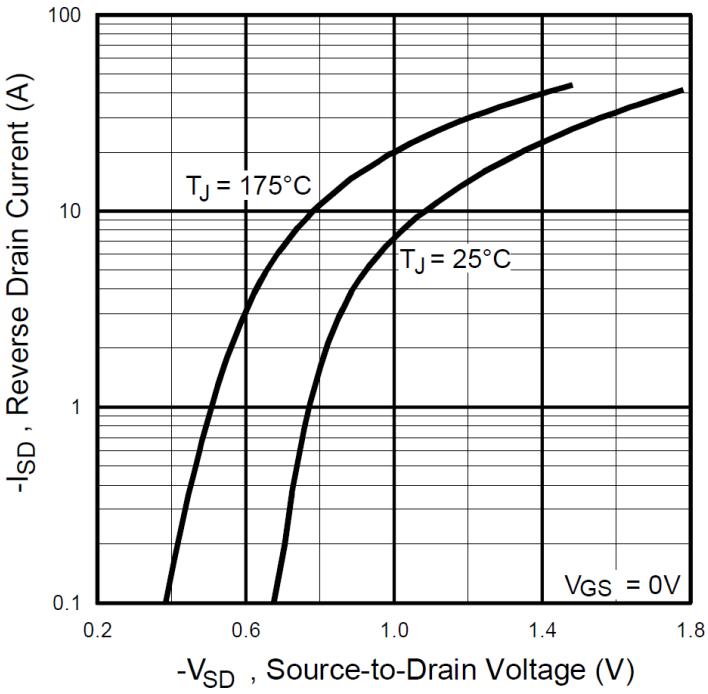


Fig. 7 Typical Source-to-Drain Diode Forward Voltage

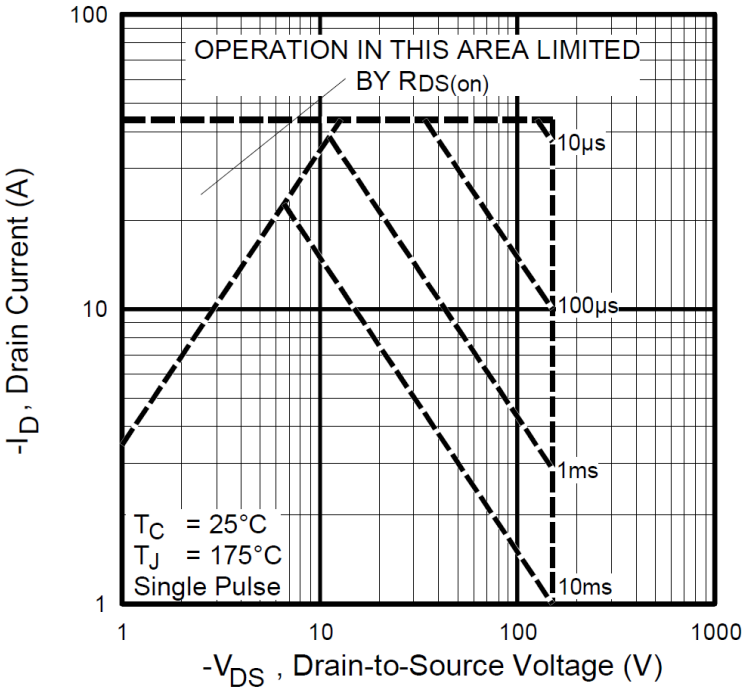


Fig 8. Maximum Safe Operating Area

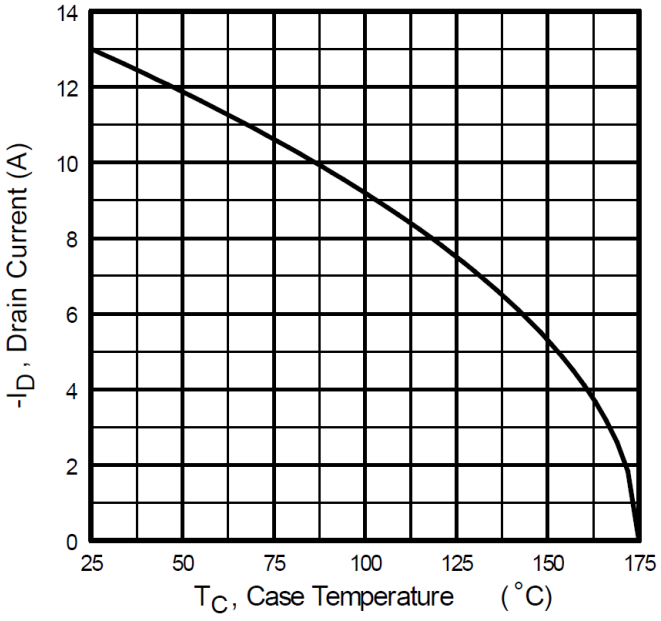


Fig 9. Maximum Drain Current vs. Case Temperature

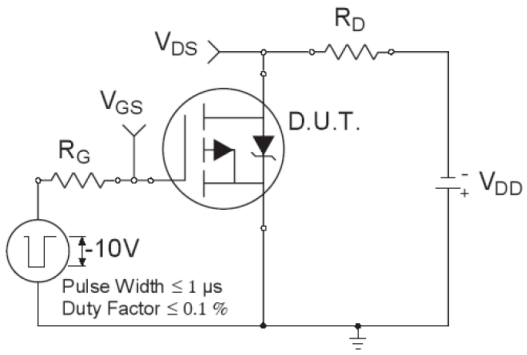


Fig 10a. Switching Time Test Circuit

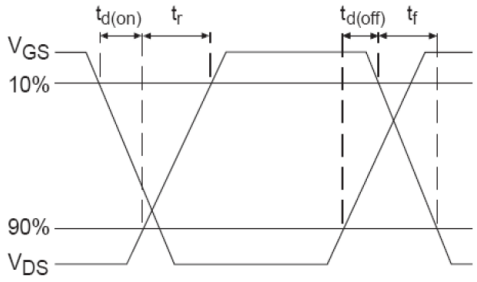


Fig 10b. Switching Time Waveforms

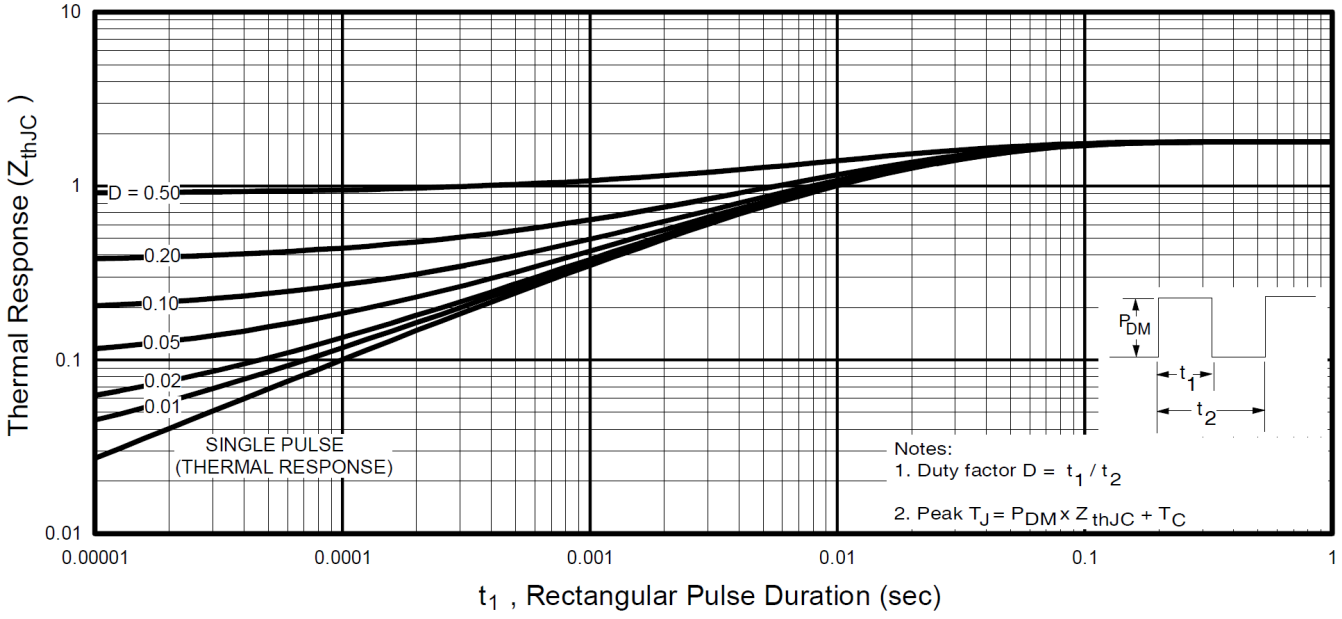


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

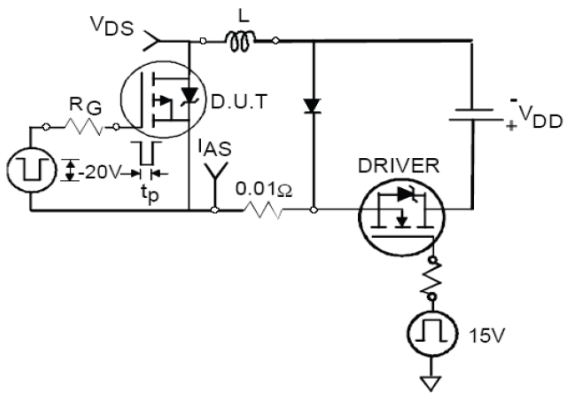


Fig 12a. Unclamped Inductive Test Circuit

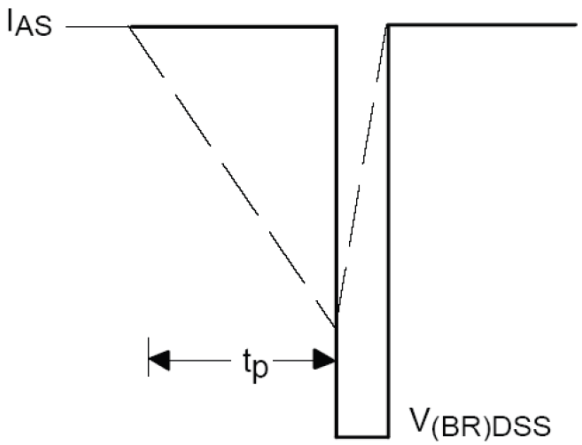


Fig 12b. Unclamped Inductive Waveforms

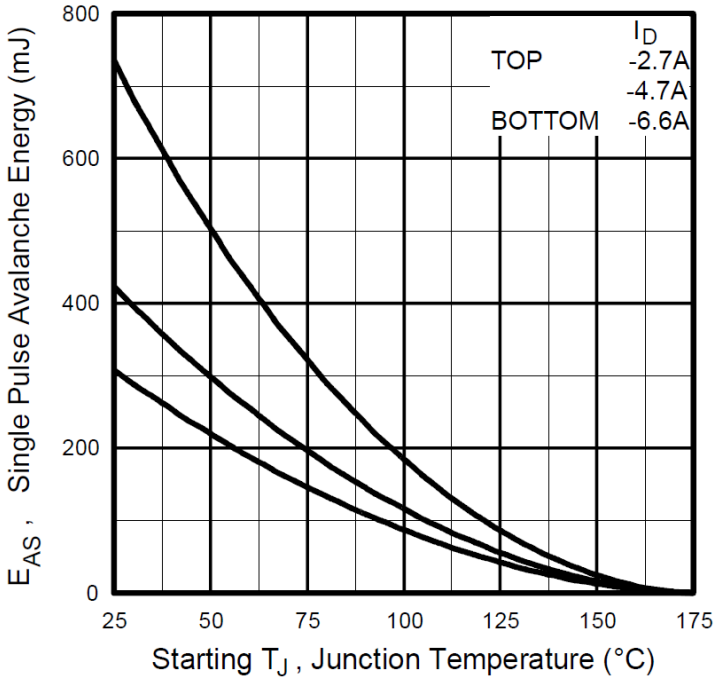


Fig 12c. Maximum Avalanche Energy vs. Drain Current

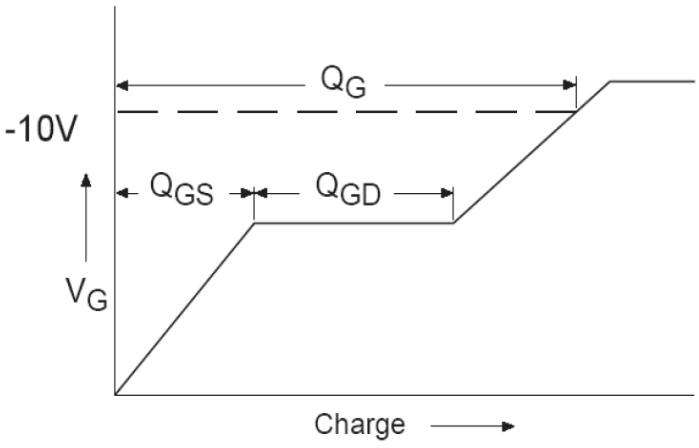


Fig 13a. Gate Charge Waveform

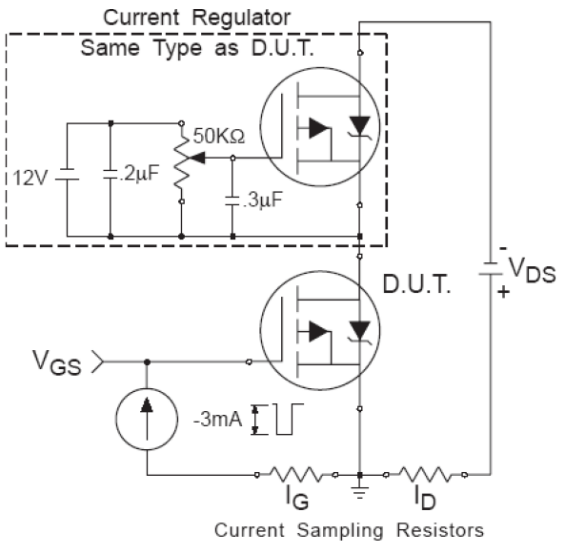


Fig 13b. Gate Charge Test Circuit

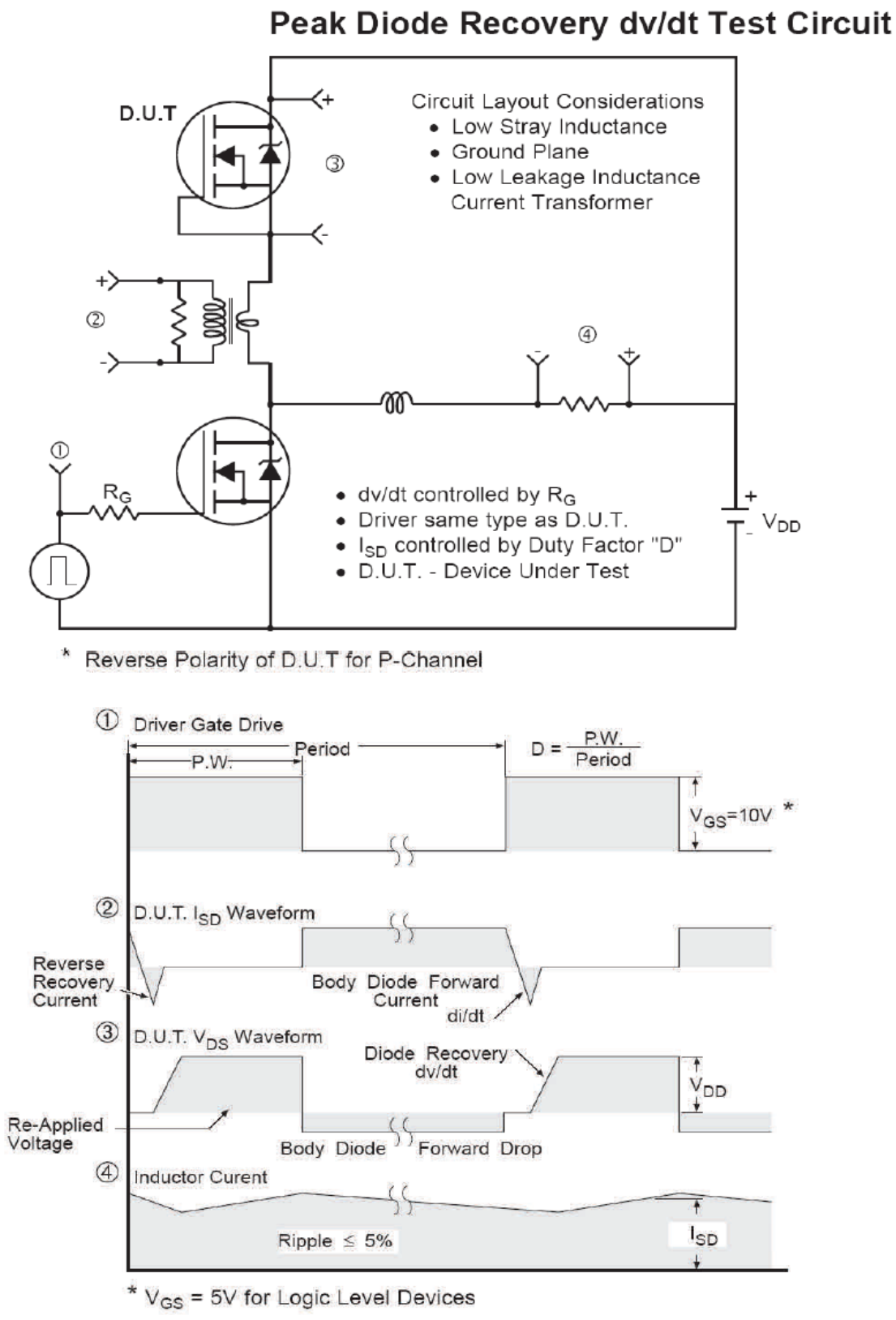
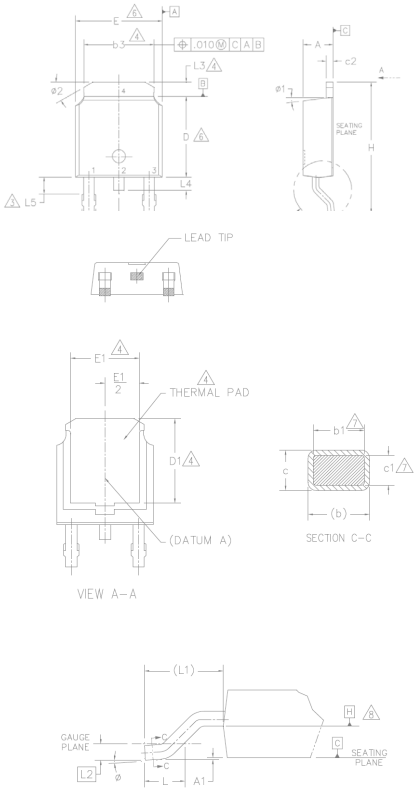


Fig 14. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET® Power MOSFETs

D-Pak (TO-252AA) 封装外形（尺寸以毫米（英寸）为单位）



NOTES:
1.– DIMENSIONING AND TOLERANCING PER ASME Y14.5M–1994
2.– DIMENSION ARE SHOWN IN INCHES [MILLIMETERS].
3– LEAD DIMENSION UNCONTROLLED IN L5.
4– DIMENSION D1, E1, L3 & b3 ESTABLISH A MINIMUM MOUNTING SURFACE FOR THERMAL PAD.
5.– SECTION C–C DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN .005 AND 0.10 [0.13 AND 0.25] FROM THE LEAD TIP.
6– DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .006 [0.15] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY.
7– DIMENSION b1 & c1 APPLIED TO BASE METAL ONLY.
8– DATUM A & B TO BE DETERMINED AT DATUM PLANE H.
9.– 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	
b1	0.64	0.79	.025	.031	7
b2	0.76	1.14	.030	.045	
b3	4.95	5.46	.195	.215	4
c	0.46	0.61	.018	.024	
c1	0.41	0.56	.016	.022	7
c2	0.46	0.89	.018	.035	
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 BSC		.090 BSC		
H	9.40	10.41	.370	.410	
L	1.40	1.78	.055	.070	
L1	2.74 BSC		.108 REF.		
L2	0.51 BSC		.020 BSC		
L3	0.89	1.27	.035	.050	4
L4	–	1.02	–	.040	
L5	1.14	1.52	.045	.060	3
ø	0°	10°	0°	10°	
ø1	0°	15°	0°	15°	
ø2	25°	35°	25°	35°	

LEAD ASSIGNMENTS

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

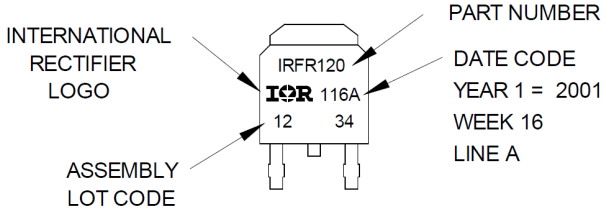
IGBT & CoPAK
1.– GATE
2.– COLLECTOR
3.– EMITTER
4.– COLLECTOR

D-Pak (TO-252AA) 零件标识信息

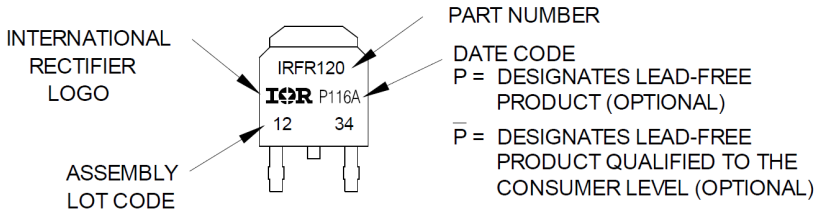
EXAMPLE: THIS IS AN IRFR120
WITH ASSEMBLY
LOT CODE 1234
ASSEMBLED ON WW 16, 2001
IN THE ASSEMBLY LINE "A"

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

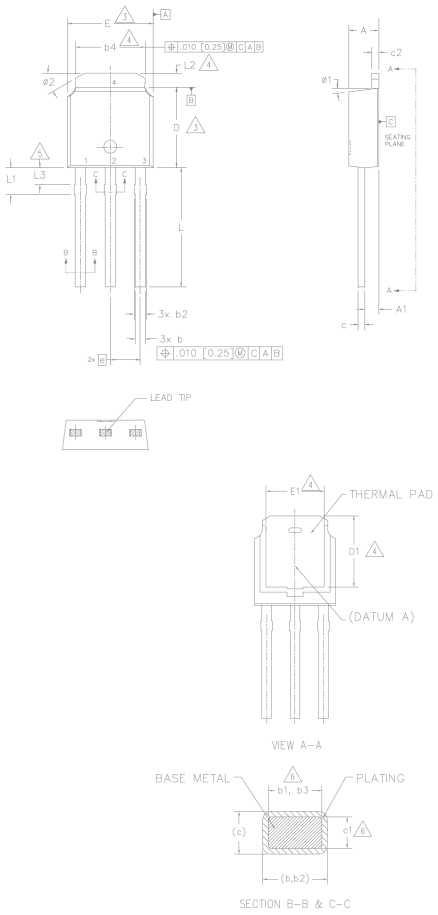
"P" in assembly line position indicates "Lead-Free" qualification to the consumer-level



OR



I-Pak (TO-251AA) 封装外形（尺寸以毫米（英寸）为单位）



NOTES:

1.– DIMENSIONING AND TOLERANCING PER ASME Y14.5M–1994

2.– DIMENSION ARE SHOWN IN INCHES [MILLIMETERS].

3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .005 [0.13] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST 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 & c1 APPLY TO BASE METAL ONLY.

7.– OUTLINE CONFORMS TO JEDEC OUTLINE TO–251AA (Date 06/02).

8.– CONTROLLING DIMENSION : INCHES.

SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	2.18	2.39	.086	.094	
A1	0.89	1.14	.035	.045	
b	0.64	0.89	.025	.035	
b1	0.65	0.79	.025	.031	6
b2	0.76	1.14	.030	.045	
b3	0.76	1.04	.030	.041	6
b4	4.95	5.46	.195	.215	4
c	0.46	0.61	.018	.024	
c1	0.41	0.56	.016	.022	6
c2	0.46	0.89	.018	.035	
D	5.97	6.22	.235	.245	3
D1	5.21	–	.205	–	4
E	6.35	6.73	.250	.265	3
E1	4.32	–	.170	–	4
e	2.29 BSC		.090 BSC		
L	8.89	9.65	.350	.380	
L1	1.91	2.29	.045	.090	
L2	0.89	1.27	.035	.050	4
L3	0.89	1.52	.035	.060	5
ø1	0°	15°	0°	15°	
ø2	25°	35°	25°	35°	

LEAD ASSIGNMENTS

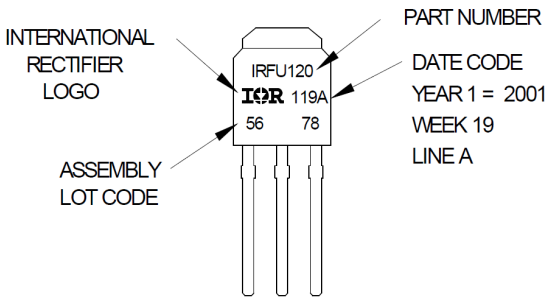
HEXFET

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

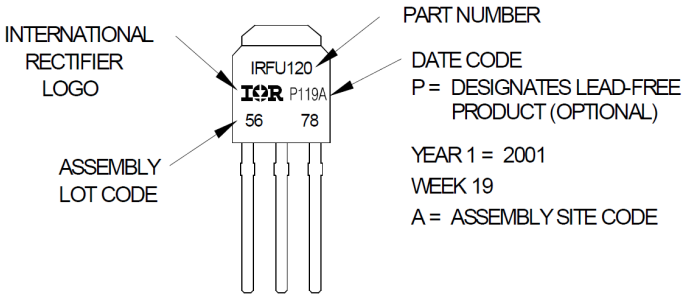
I-Pak (TO-251AA) 零件标识信息

EXAMPLE: THIS IS AN IRFU120
WITH ASSEMBLY
LOT CODE 5678
ASSEMBLED ON WW 19, 2001
IN THE ASSEMBLY LINE "A"

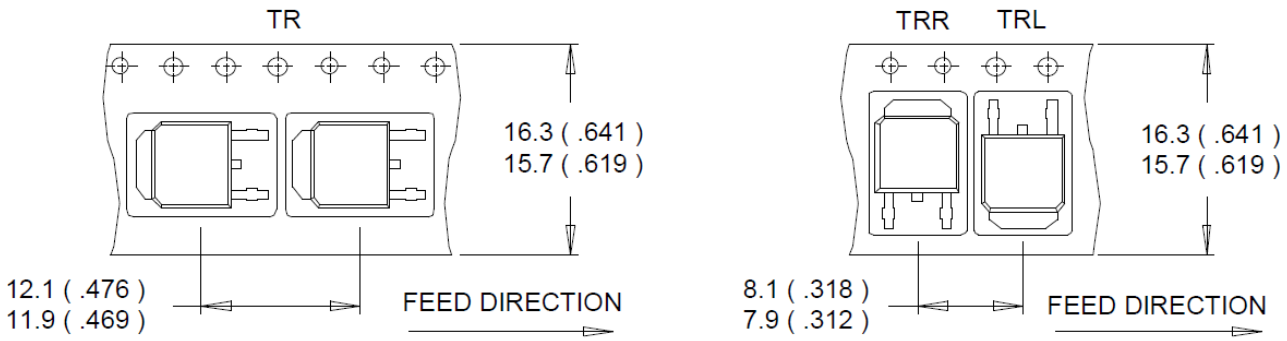
Note: "P" in assembly line position
indicates Lead-Free"



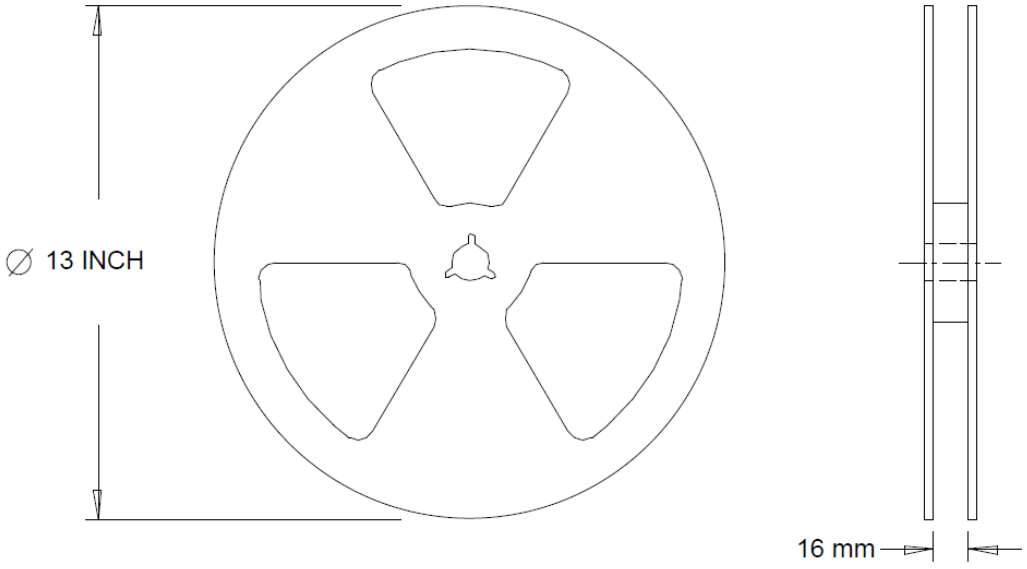
OR



D-Pak (TO-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.

注：有关最新图纸，请参阅英飞凌网站 https://www.infineon.cn/ 及其链接。

资质信息†

Qualification Level	Industrial (per JEDEC JESD47F) ††	
Moisture Sensitivity Level	D-Pak	MSL1 (per JEDEC J-STD-020D) ††
	I-Pak	
RoHS Compliant	Yes	

† Qualification standards can be found at Infineon's web site www.infineon.com

†† 产品发布时的 JEDEC 标准适用版本。

修订记录

Date	Comments
5/31/2016	• Updated datasheet with corporate template. • Added disclaimer on last page.

Trademarks of Infineon Technologies AG
µHVIC™, µIPM™, µPFC™, AU-ConvertIR™, AURIX™, C166™, CanPAK™, CIPOS™, CIPURSE™, CoolDP™, CoolGaN™, COOLiR™, CoolMOS™, CoolSET™, CoolSiC™, DAVE™, DI-POL™, DirectFET™, DrBlade™, EasyPIM™, EconoBRIDGE™, EconoDUAL™, EconoPACK™, EconoPIM™, EiceDRIVER™, eupec™, FCOS™, GaNpowIR™, HEXFET™, HITFET™, HybridPACK™, iMOTION™, IRAM™, ISOFACE™, IsoPACK™, LEDrivIR™, LITIX™, MIPAQ™, ModSTACK™, my-d™, NovalithIC™, OPTIGA™, OptiMOS™, ORIGA™, PowIRaudio™, PowIRStage™, PrimePACK™, PrimeSTACK™, PROFET™, PRO-SIL™, RASIC™, REAL3™, SmartLEWIS™, SOLID FLASH™, SPOC™, StrongIRFET™, SupIRBuck™, TEMPFET™, TRENCHSTOP™, TriCore™, UHVIC™, XHP™, XMC™

Trademarks updated November 2015

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

Edition 2016-04-19
Published by
Infineon Technologies AG
81726 Munich, Germany

© 2016 Infineon Technologies AG. All Rights Reserved.

Do you have a question about this document?
Email: erratum@infineon.com

Document reference
ifx1

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).

Please note that this product is not qualified according to the AEC Q100 or AEC Q101 documents of the Automotive Electronics Council.

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**。