英飞凌汽车级 MOSFET

英飞凌OptiMOS™7 功率晶体管

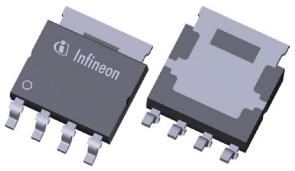
RoHS Infineon Automotive Quality AEC Qualified

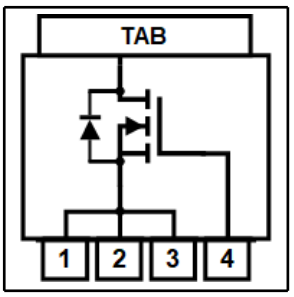
扫码加入myInfineon
获取更多配套资源

特性

- OptiMOS™适用于汽车应用的 MOSFET
- N 沟道 - 增强型 - 标准电平
- 严苛于 AEC-Q101 的扩展认证
- 加强电气测试
- 坚固的设计
- MSL1 回流焊峰值温度高达 260°C
- 工作温度 175°C
- 符合 RoHS 标准
- 100% 雪崩测试

PG-THSOG-4-1





潜在应用

通用汽车应用

产品验证

汽车应用认证。根据 AEC-Q101 进行产品验证。

产品概述

V_{DS}	40	V
$R_{DS(on)}$	1.53	mΩ
I_D (chip limited)	184	A

Type	Package	Marking
IAUCN04S7N015G	PG-THSOG-4-1	7N04N015

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）。

目录

描述 1
最大额定值 3
热特性 4
电气特性 4
电气特性图 6
封装外形 10
修订记录 11
免责声明 12

最大额定值

除非另有规定，否则均为 T_j = 25°C

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	V_{GS} = 10 V, Chip limitation[1,2)]	184	A
		V_{GS} = 10 V, DC current	165	
		T_a = 100°C, V_{GS} = 10 V, R_{thJA} on 2s2p[2,3)]	34	
Pulsed drain current[2)]	$I_{D,pulse}$	T_C = 25°C, t_p = 100 µs	505	
Avalanche energy, single pulse[2)]	E_{AS}	I_D = 50 A	84	mJ
Avalanche current, single pulse	I_{AS}	–	100	A
Gate source voltage	V_{GS}	–	±20	V
Power dissipation	P_{tot}	T_C = 25°C	96	W
Operating temperature	T_j	–	-55 ... +175	°C

热特性[2)]

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction - case	R_{thJC}	–	–	–	1.55	K/W
Thermal resistance, junction - ambient[3)]	R_{thJA}	–	–	29.1	–	

电气特性

除非另有规定，T_j = 25°C

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
静态特性						
Drain-source breakdown voltage	$V_{(Br)DSS}$	V_{GS} = 0 V, I_D = 1 mA	40	–	–	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 35 µA	2.2	2.6	3.0	
Zero gate voltage drain current	I_{DSS}	V_{DS} = 40 V, V_{GS} = 0 V, T_j = 25°C	–	–	1	µA
		V_{DS} = 40 V, V_{GS} = 0 V, T_j = 100°C[2)]	–	–	9	
Gate-source leakage current	I_{GSS}	V_{GS} = 20 V, V_{DS} = 0 V	–	–	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS} = 7 V, I_D = 42 A	–	1.66	1.94	mΩ
		V_{GS} = 10 V, I_D = 83 A	–	1.33	1.53	
Gate resistance[2)]	R_G	–	–	1.4	–	Ω

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
动态特性[2)]						
Input capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 20 V, f = 1 MHz	–	2643	3436	pF
Output capacitance	C_{oss}		–	1372	1784	
Reverse transfer capacitance	C_{rss}		–	45	68	
Turn-on delay time	$t_{d(on)}$	V_{DD} = 20 V, V_{GS} = 10 V, I_D = 83 A, R_G = 3.5 Ω	–	9.1	–	ns
Rise time	t_r		–	23.1	–	
Turn-off delay time	$t_{d(off)}$		–	22.4	–	
Fall time	t_f		–	27.2	–	
栅极电荷[2)]						
Gate to source charge	Q_{gs}	V_{DD} = 20 V, I_D = 83 A, V_{GS} = 0 to 10 V	–	11.6	15.1	nC
Gate to drain charge	Q_{gd}		–	8.1	12.2	
Gate charge total	Q_g		–	41.0	53.3	
Gate plateau voltage	$V_{plateau}$		–	4.4	–	V
反向二极管						
Diode continuous forward current[2)]	I_S	T_C = 25°C	–	–	165	A
Diode pulse current[2)]	$I_{S,pulse}$	T_C = 25°C, t_p = 100 µs	–	–	505	
Diode forward voltage	V_{SD}	V_{GS} = 0 V, I_F = 83 A, T_j = 25°C	–	0.85	1	V
Reverse recovery time[2)]	t_{rr}	V_R = 20 V, I_F = 50 A, di_F/dt = 100 A/µs	–	29	44	ns
Reverse recovery charge[2)]	Q_{rr}		–	12	24	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。

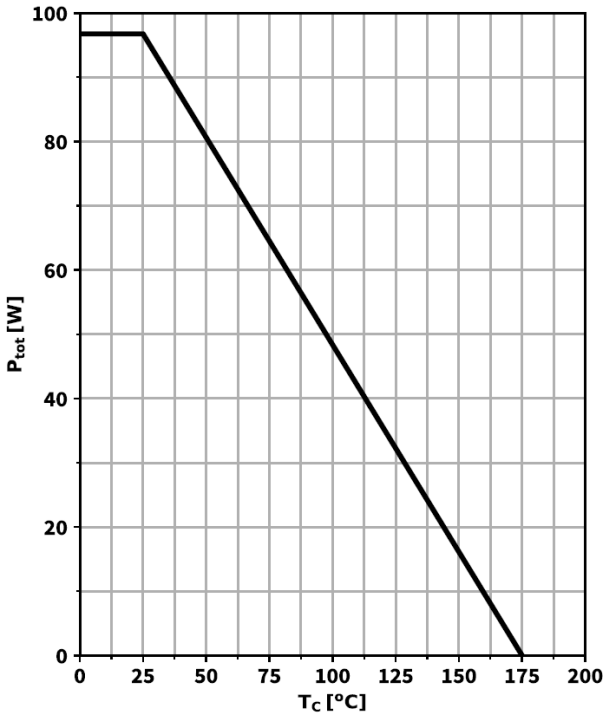
[2)] 该参数不受制于生产测试 – 由设计标定。

[3)] 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。

电气特性图

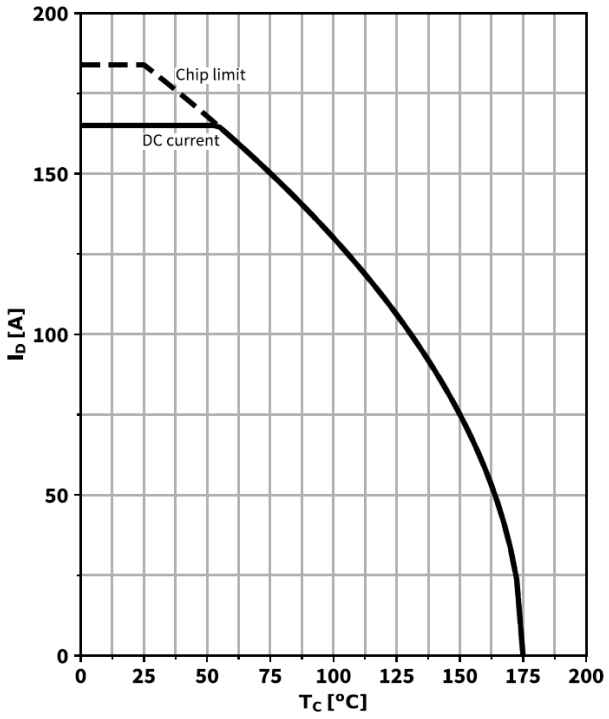
1 Power dissipation

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



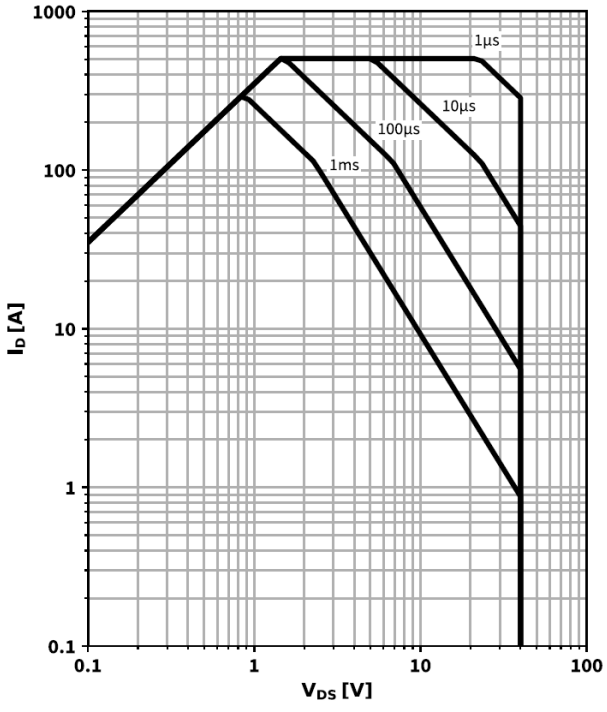
2 Drain current

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



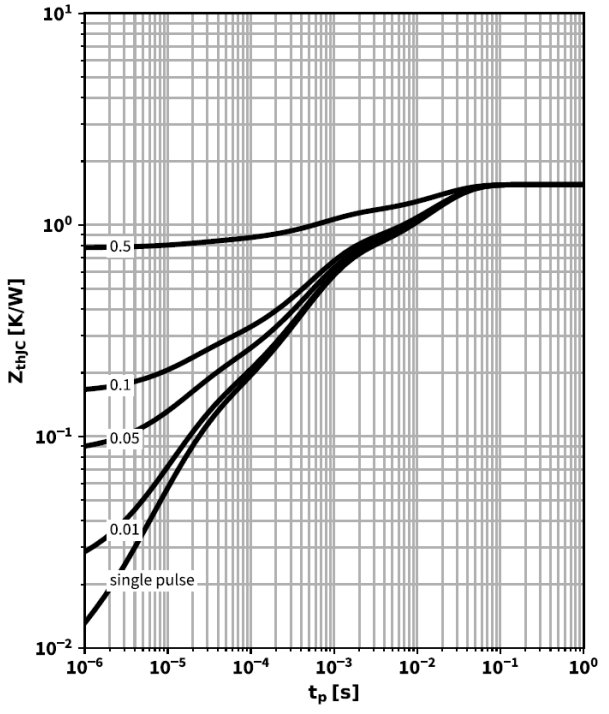
3 Safe operating area

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



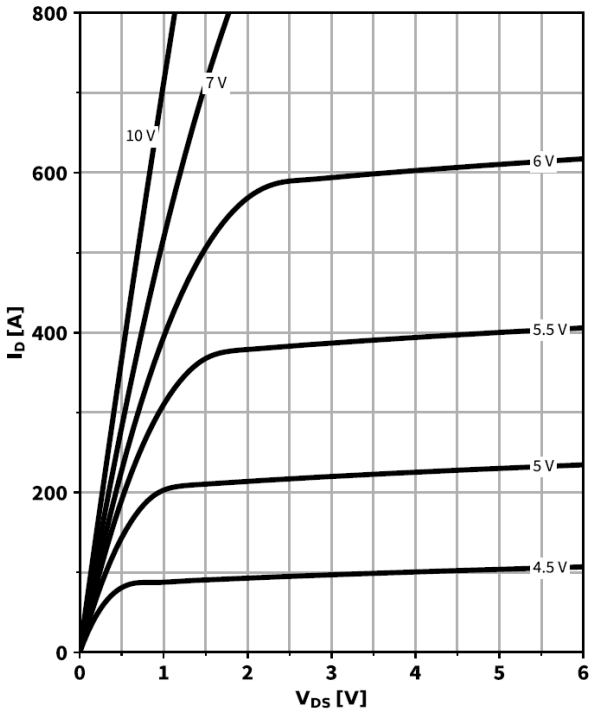
4 Max. transient thermal impedance

$Z_{thJC} = f(t_p)$; parameter: $D = t_p/T$



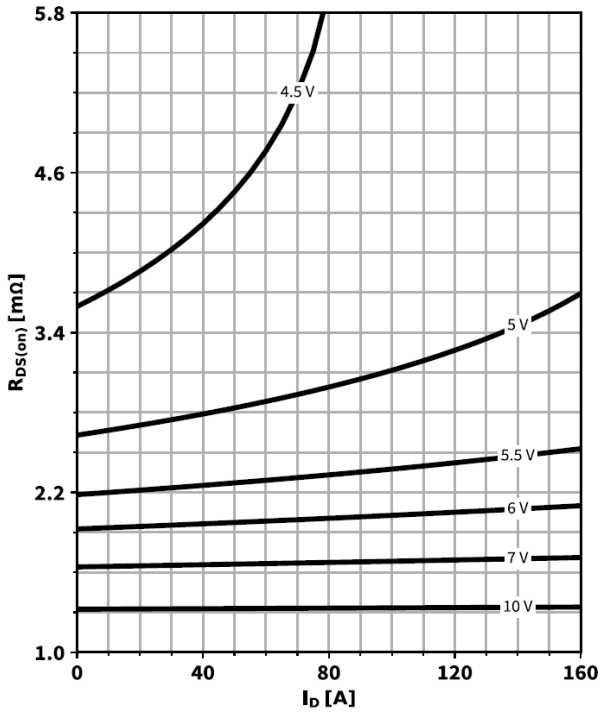
5 Typ. output characteristics

$I_D = f(V_{DS})$; $T_j = 25$ °C; parameter: V_{GS}



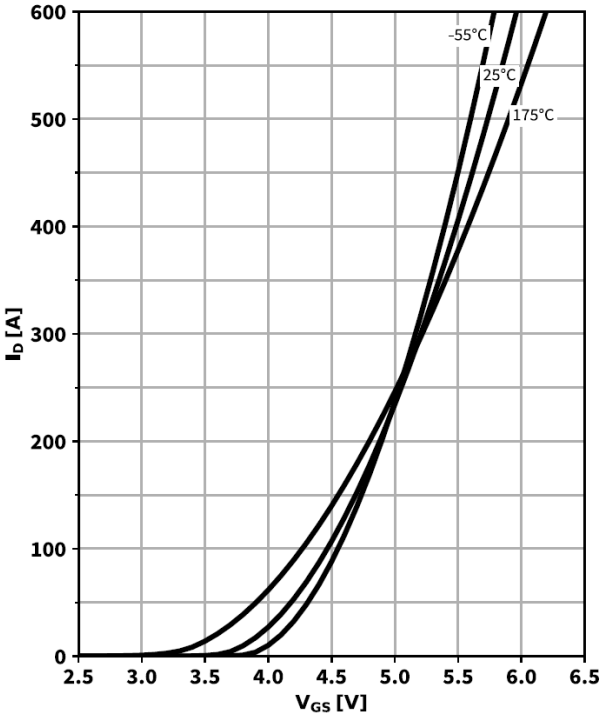
6 Typ. drain-source on-state resistance

$R_{DS(on)} = f(I_D)$; $T_j = 25$ °C; parameter: V_{GS}



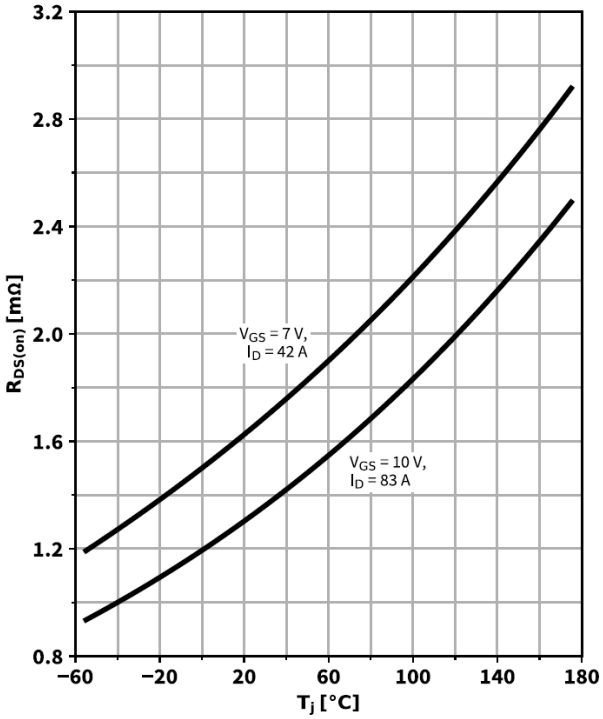
7 Typ. transfer characteristics

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



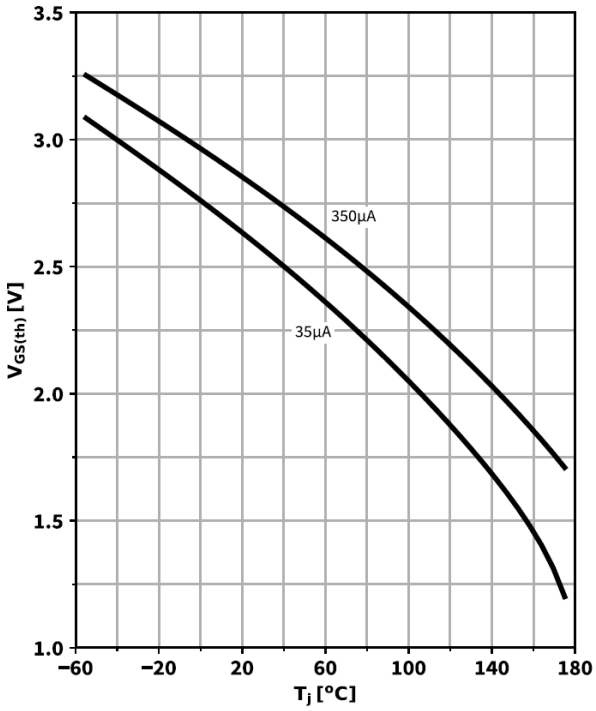
8 Typ. drain-source on-state resistance

$R_{DS(on)} = f(T_j)$; parameter: I_D, V_{GS}



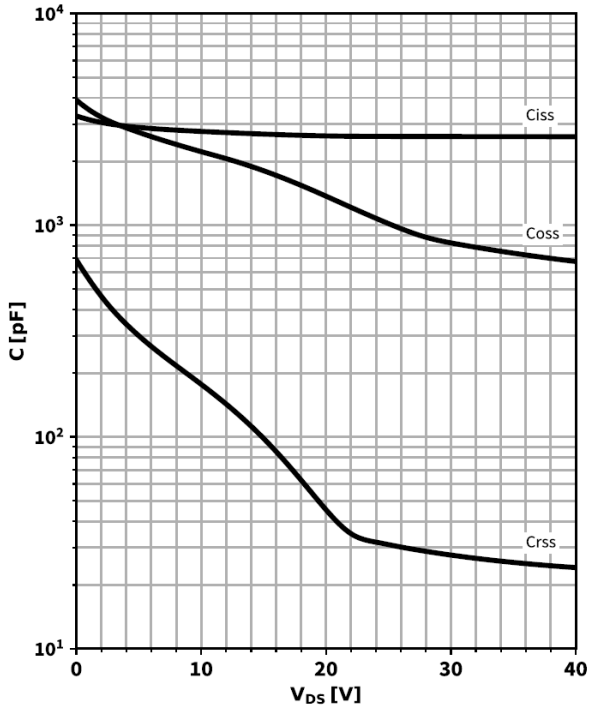
9 Typ. gate threshold voltage

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



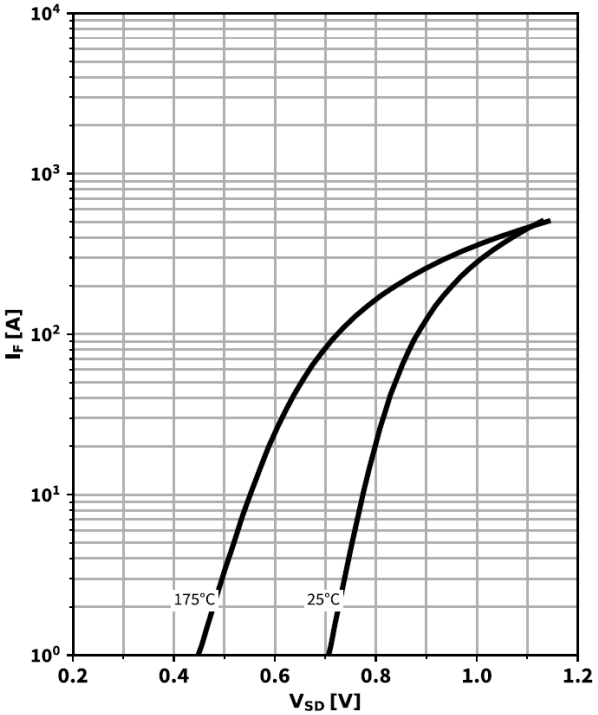
10 Typ. capacitances

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



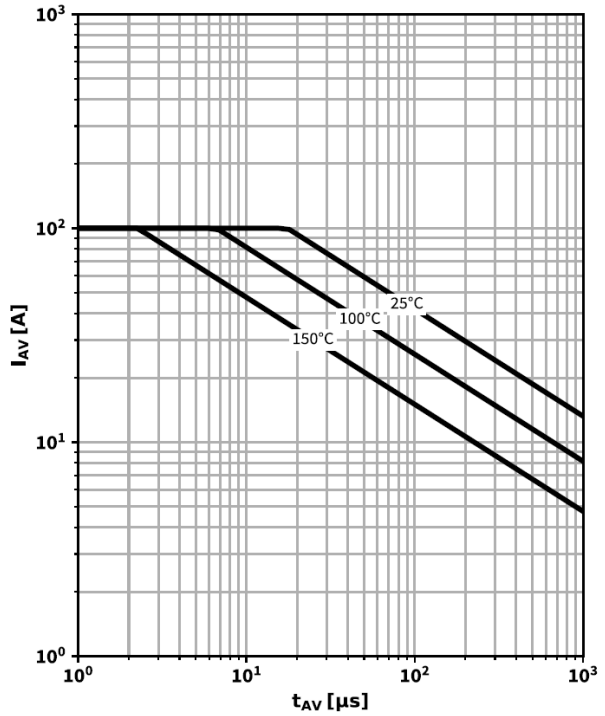
11 Typ. forward diode characteristics

$I_F = f(V_{SD})$; parameter: T_j



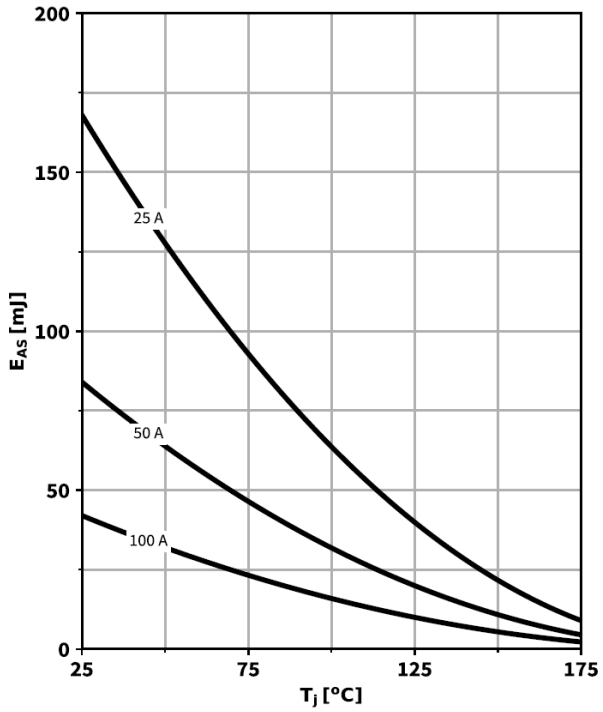
12 Typ. avalanche characteristics

$I_{AS} = f(t_{AV})$; parameter: $T_{j(start)}$



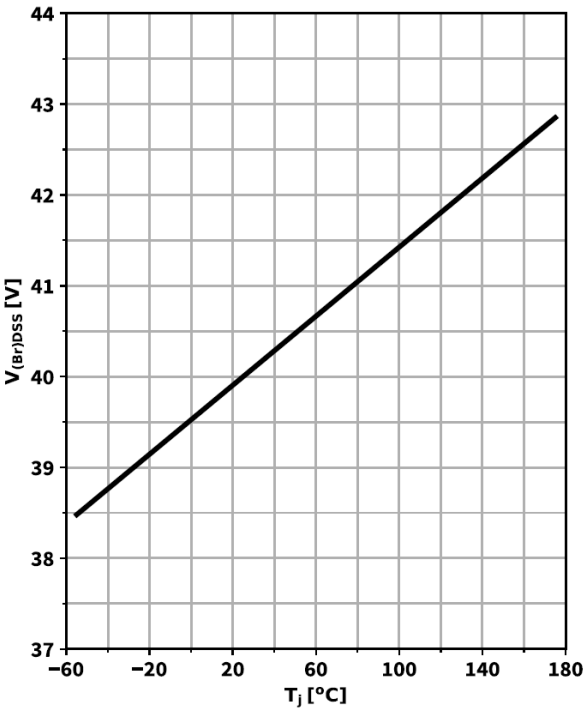
13 Typical avalanche energy

$E_{AS} = f(T_j)$; parameter: I_D



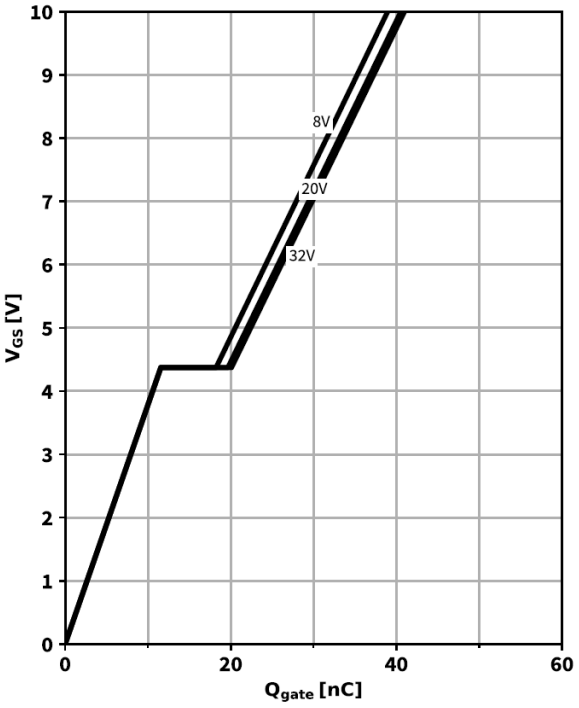
14 Drain-source breakdown voltage

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

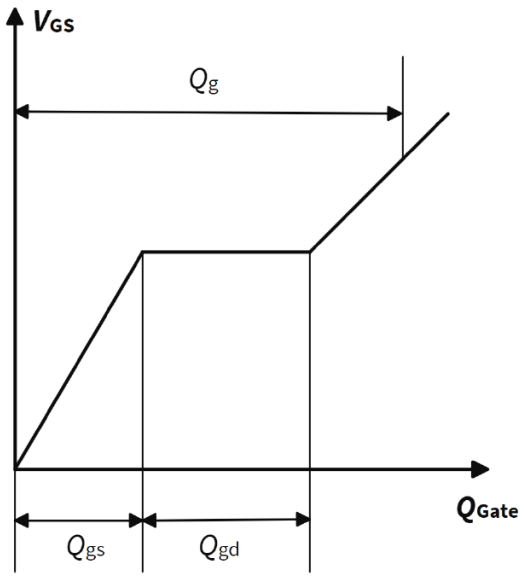


15 Typ. gate charge

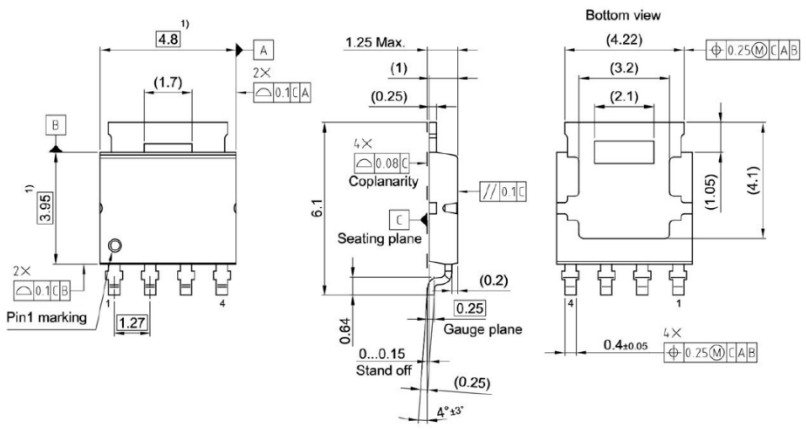
$V_{GS} = f(Q_{gate})$; I_D = 83 A pulsed; parameter: V_{DD}



16 Gate charge waveforms

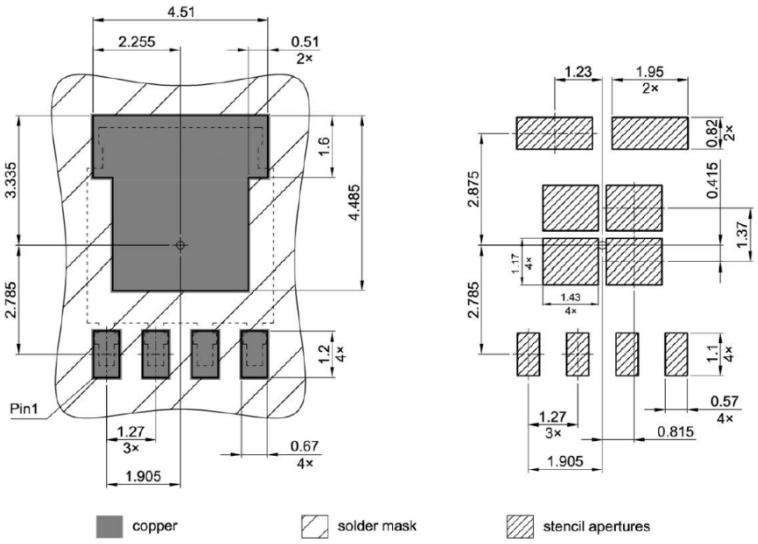


封装外形



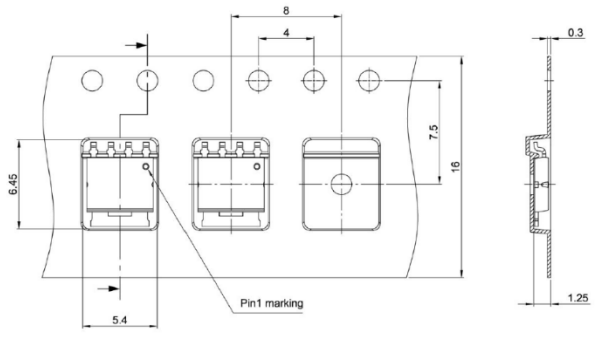
1) Does not include plastic protrusion which shall not exceed 0.15mm max. per side.
2) Dambar protrusion shall be maximum 0.170mm per side.
3) All metal surfaces are plated,except area of cut.
All dimensions are in units mm
The drawing is in compliance with ISO 128-30, Projection Method 1 [⊕]
Drawing according to ISO 8015, general tolerances ±0.1;±1°

焊盘图



All dimensions are in units mm
All pads are solder mask defined

封装



All dimensions are in units mm
The drawing is in compliance with ISO 128-30, Projection Method 1 [⊕]

修订记录

Revision	Date	Changes
Revision 1.0	2025-12-09	Final Data Sheet

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

Edition 2025-12-09

Published by

Infineon Technologies AG

81726 Munich, Germany

© 2025 Infineon Technologies AG

All Rights Reserved.

Do you have any questions about any aspect of this document?

Email: erratum@infineon.com

Document reference
IAUCN04S7N015G-Data-Sheet-10-Infineon

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 technology, delivery terms and conditions and prices, please contact the 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 the 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**。