

Final datasheet
CoolSiC™ 1200 V Schottky diode G5 : Silicon Carbide Diode with top side cooling and .XT technology

Features

- $V_{RRM} = 1200\text{ V}$
- $I_F = 40\text{ A}$
- No reverse recovery current / no forward recovery
- High surge current capability
- Temperature independent switching behavior
- Low forward voltage
- dv/dt ruggedness
- Pb-free lead plating; RoHS compliant
- .XT interconnection technology for best-in-class thermal performance

Potential applications

- EV Charging
- DIN Rail & Rack Mount (Power Supply)
- Commercial Lighting Fixture

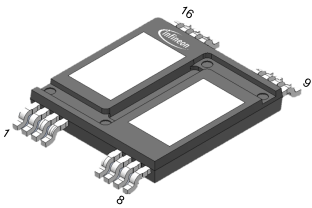
Product validation

- Qualified for industrial applications according to the relevant tests of JEDEC47/20/22

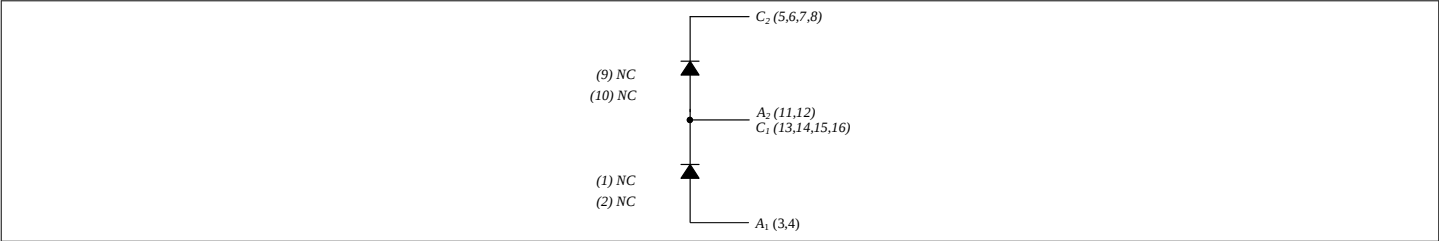
Description

Pin definition:

- 13-16 & Case 1 – Cathode 1 (C_1)
- 1, 2 – not connected (NC)
- 3-4 – Anode 1 (A_1)
- 5-8 & Case 2 – Cathode 2 (C_2)
- 9, 10 – not connected (NC)
- 11-12 – Anode 2 (A_2)



- Lead-free
- Green
- Halogen-free
- RoHS



Type	Package	Marking
IDSQ40G120C5D	PG-HDSOP-16-U03	D4012C5



Table of contents

	Description	1
	Features	1
	Potential applications	1
	Product validation	1
	Table of contents	2
1	Package	3
2	SiC Diode	3
3	Characteristics diagrams	5
4	Package outlines	8
	Revision history	9
	Disclaimer	10

1 Package

Table 1 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Storage temperature	T_{stg}		-55		150	°C
Soldering temperature	T_{sold}	Reflow soldering (MSL2 according to JEDEC J-STD-020)			260	°C
Thermal resistance, junction-ambient	$R_{th(j-a)}$				62	K/W
Diode thermal resistance, junction-case	$R_{th(j-c)}$			0.18	0.23	K/W
Comparative Tracking Index	CTI	IEC 60112 (material group 1 according to IEC 60664-1)	600			V

2 SiC Diode

Table 2 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}	$T_{vj} \geq 25\text{ °C}$		1200	V
Continuous forward current for $R_{th(j-c,max)}$	I_F		$T_c = 25\text{ °C}$	136	A
			$T_c = 135\text{ °C}$	64	
			$T_c = 157\text{ °C}$	40	
Surge repetitive forward current, sine halfwave ¹⁾	$I_{F,RM}$	$t_p = 10\text{ ms}$	$T_c = 25\text{ °C}$	160	A
			$T_c = 100\text{ °C}$	120	
Surge non-repetitive forward current, sine halfwave	$I_{F,SM}$	$t_p = 10\text{ ms}$	$T_c = 25\text{ °C}$	239	A
			$T_c = 150\text{ °C}$	195	
Non-repetitive peak forward current	$I_{F,max}$	$T_c = 25\text{ °C}, t_p = 10\text{ }\mu\text{s}$		1250	A
I^2t -value	$\int I^2 t$	$t_p = 10\text{ ms}$ ²⁾	$T_c = 25\text{ °C}$	286	A ² s
			$T_c = 150\text{ °C}$	190	
Diode dv/dt ruggedness	dv/dt	$V_R = 0\ldots 960\text{ V}$		150	V/ns
Avalanche energy, single pulse	E_{AS}	$I_D = 40\text{ A}, L = 0.2\text{ mH}$		165	mJ
Power dissipation for $R_{th(j-c,max)}$	P_{tot}		$T_c = 25\text{ °C}$	652	W
			$T_c = 100\text{ °C}$	326	

1) Not subject to production test. The test was performed with 20k pulses (half-wave rectified sine with 10 ms period).

2) sine halfwave

Table 3 **Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	$I_R = 500 \mu A$		1200			V
Diode forward voltage	V_F	$I_F = 40 A$	$T_{vj} = 25^\circ C$		1.45	1.8	V
			$T_{vj} = 125^\circ C$		1.69		
			$T_{vj} = 150^\circ C$		1.8		
Reverse current	I_R	$V_R = 1200 V$	$T_{vj} = 25^\circ C$		20	320	μA
			$T_{vj} = 150^\circ C$		105		
Total capacitive charge	Q_C	$V_R = 800 V, T_{vj} = 25^\circ C \text{ \& } 150^\circ C,$ $Q_C = \int_0^{V_R} C(V) dV$			182		nC
Total capacitance	C	$f = 100 \text{ kHz}$	$V_R = 1 V$		2350		pF
			$V_R = 400 V$		166		
			$V_R = 800 V$		131		
Virtual junction temperature	T_{vj}			-55		175	$^\circ C$

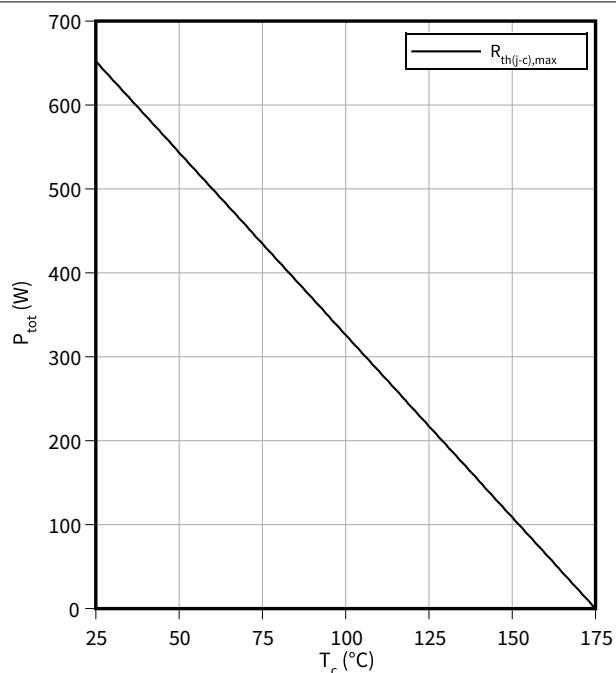
Note: *For optimum lifetime and reliability, Infineon recommends operating conditions that do not exceed 80% of the maximum ratings stated in this datasheet.*
Characteristic at $T_{vj} = 25^\circ C$, unless otherwise specified.

3 Characteristics diagrams

Power dissipation as function of case temperature

$$P_{\text{tot}} = f(T_c)$$

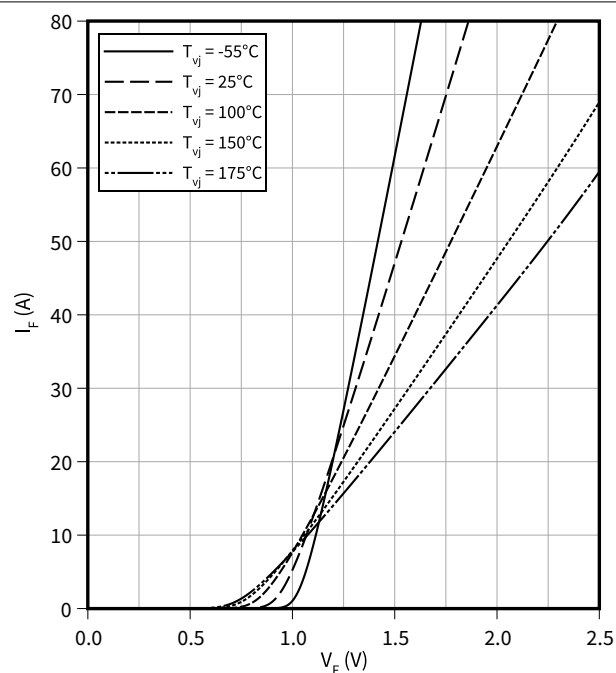
$$T_{vj} \leq 175^\circ\text{C}$$



Typical forward characteristics

$$I_F = f(V_F)$$

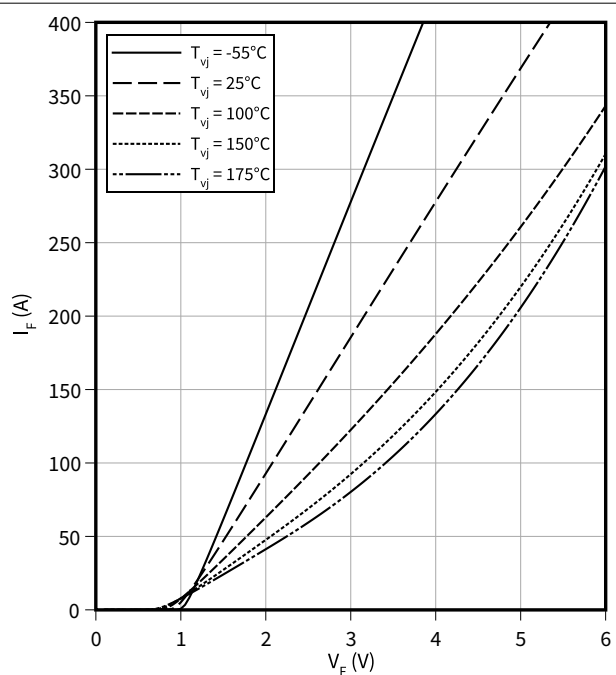
$$t_p = 10 \mu\text{s}$$



Typical forward characteristics in surge current

$$I_F = f(V_F)$$

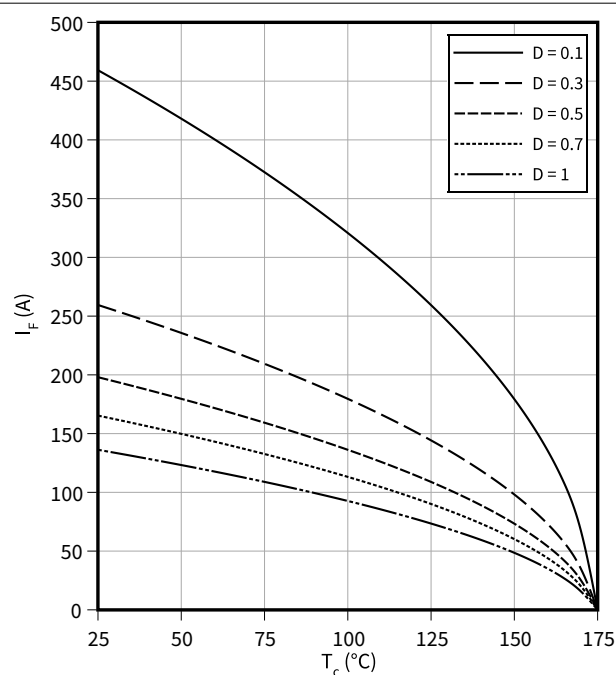
$$t_p = 10 \mu\text{s}$$



Diode forward current as function of temperature

$$I_F = f(T_c)$$

$$T_{vj} \leq 175^\circ\text{C}$$

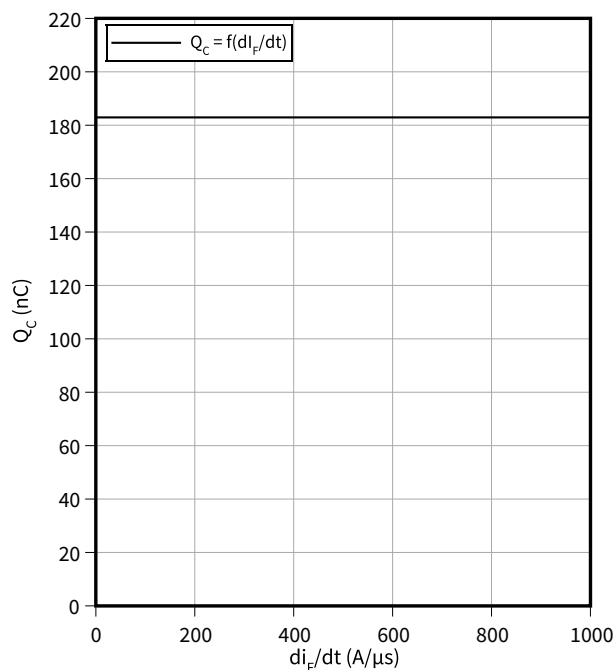


3 Characteristics diagrams

Typical capacitive charge as function of current slope

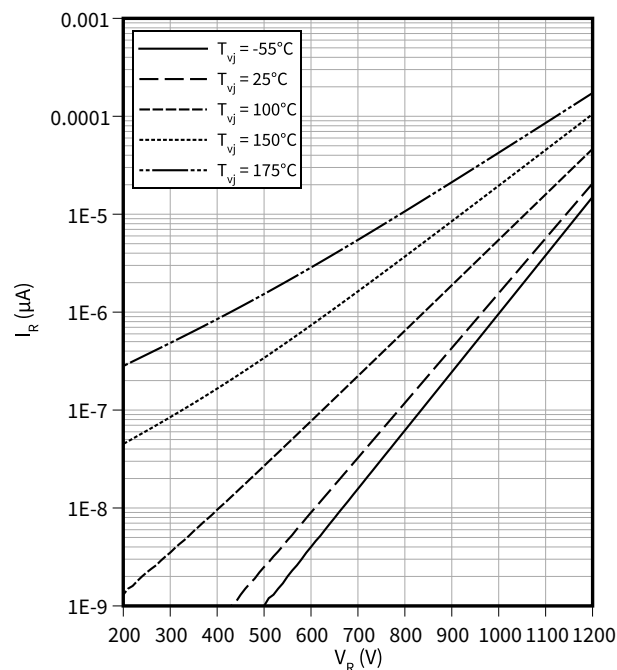
$$Q_C = f(di_F/dt)$$

$T_{vj} = 25^\circ\text{C}$, $V_R = 800\text{ V}$



Typical reverse characteristics

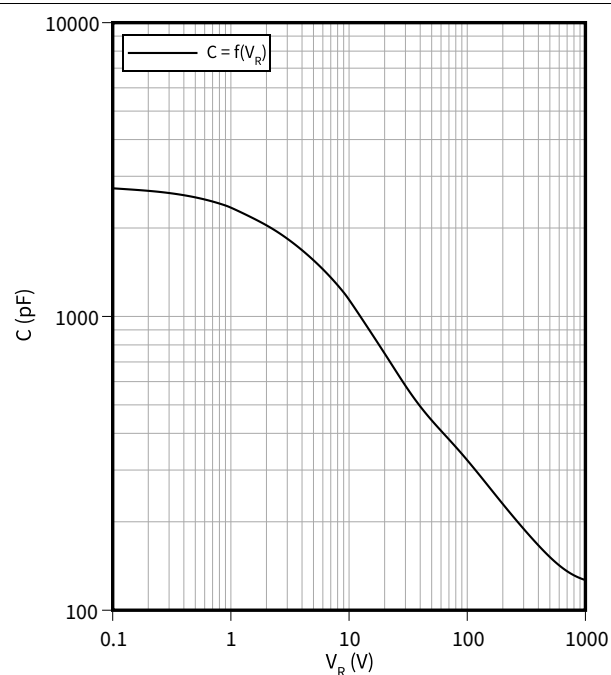
$$I_R = f(V_R)$$



Typical capacitance as function of reverse voltage

$$C = f(V_R)$$

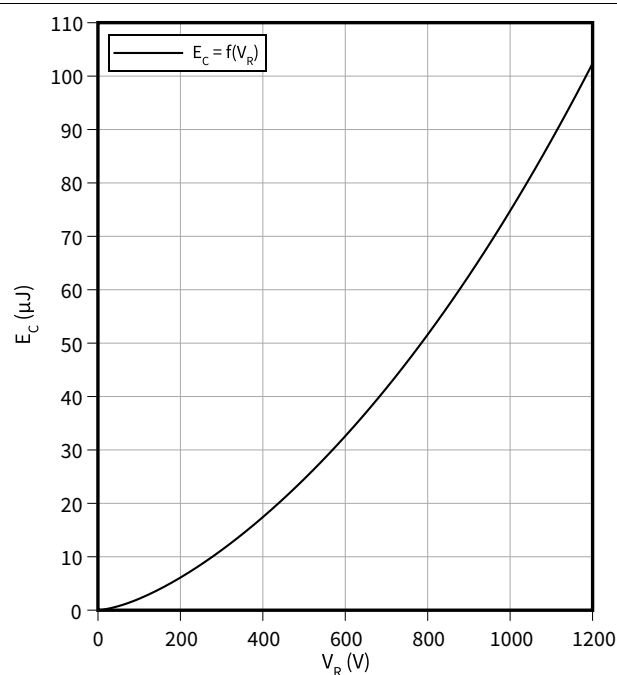
$T_{vj} = 25^\circ\text{C}$, $f = 100\text{ kHz}$



Typical capacitively stored energy as function of reverse voltage

$$E_C = f(V_R)$$

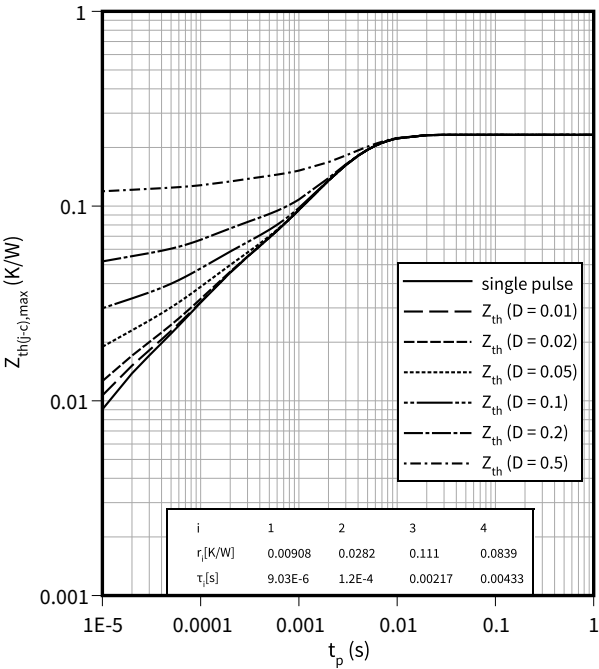
$f = 100\text{ kHz}$



3 Characteristics diagrams

Max. transient thermal impedance

$Z_{th(j-c),max} = f(t_p)$
 $D = t_p/T$



4 Package outlines

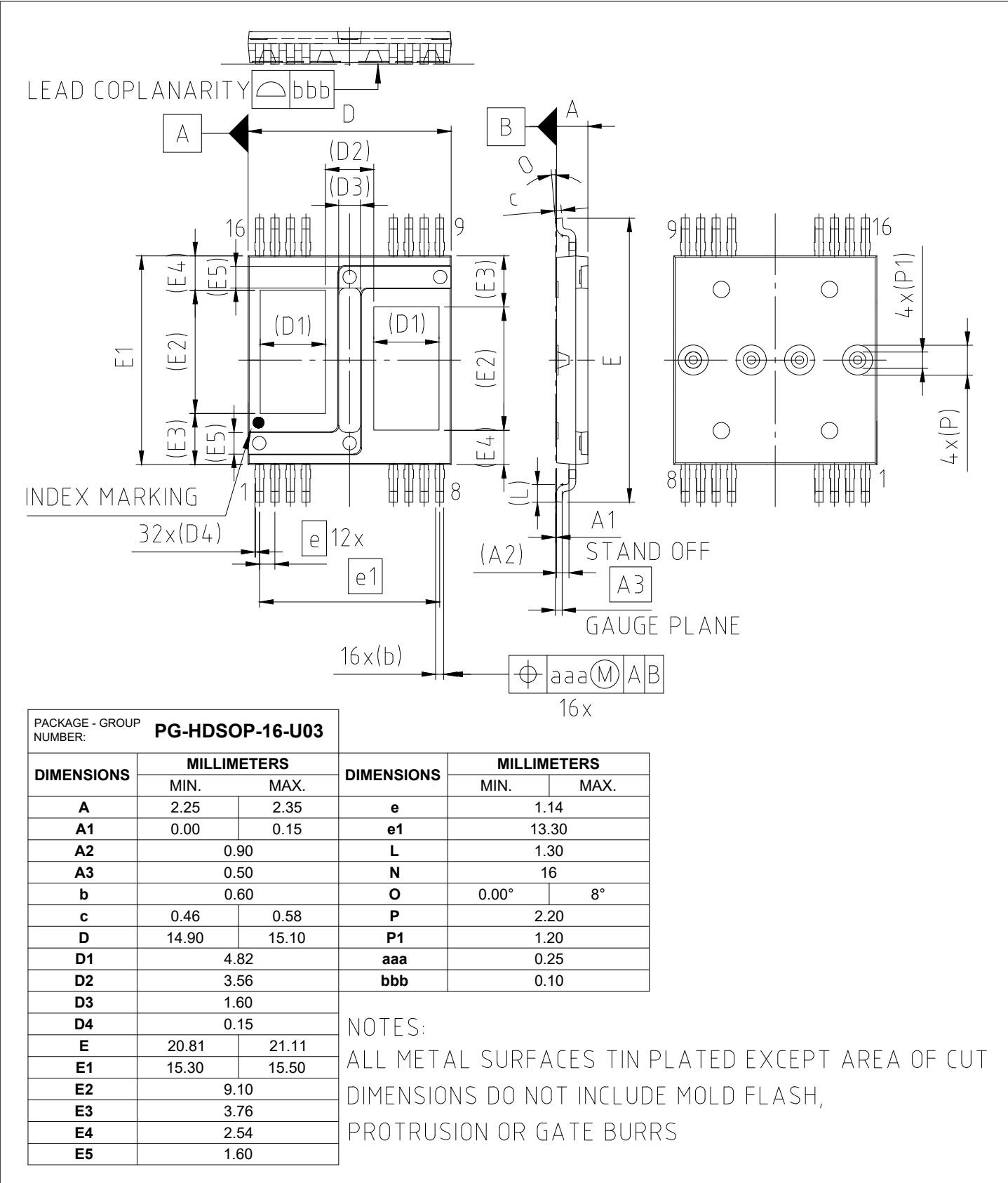


Figure 1



Revision history

Revision history

Document revision	Date of release	Description of changes
0.10	2024-01-24	Target datasheet
0.20	2024-11-14	Updated Avalanche energy, single pulse E_{AS} in Table 2 Editorial changes
0.30	2025-03-31	Preliminary datasheet
1.00	2026-06-25	Final datasheet

Trademarks

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

Edition 2026-06-25

Published by

Infineon Technologies AG

81726 Munich, Germany

© 2026 Infineon Technologies AG

All Rights Reserved.

Do you have a question about any aspect of this document?

Email: erratum@infineon.com

Document reference

IFX-ABI901-004

Important notice

Products which may also include samples and may be comprised of hardware or software or both ("Product(s)") are sold or provided and delivered by Infineon Technologies AG and its affiliates ("Infineon") subject to the terms and conditions of the frame supply contract or other written agreement(s) executed by a customer and Infineon or, in the absence of the foregoing, the applicable Sales Conditions of Infineon. General terms and conditions of a customer or deviations from applicable Sales Conditions of Infineon shall only be binding for Infineon if and to the extent Infineon has given its express written consent.

For the avoidance of doubt, Infineon disclaims all warranties of non-infringement of third-party rights and implied warranties such as warranties of fitness for a specific use/purpose or merchantability. Infineon shall not be responsible for any information with respect to samples, the application or customer's specific use of any Product or for any examples or typical values given in this document.

If this document is marked as 'Preliminary', 'Target', 'Draft' or 'Proposal', Infineon reserves the right to change all information given in this document at any time without notice. Subject to the development and release of a Product for series supply by Infineon, the technical specifications of the Product are set forth in the relevant datasheet provided by Infineon without such marking.

The data contained in this document is exclusively intended for technically qualified and skilled customer representatives. It is the responsibility of the customer to evaluate the suitability of the Product for the intended application and the customer's specific use and to verify all relevant technical data contained in this document in the intended application and the customer's specific use. The customer is responsible for properly designing, programming, and testing the functionality and safety of the intended application, as well as complying with any legal requirements related to its use.

Unless otherwise explicitly approved by Infineon, Products may not be used in any application where a failure of the Products or any consequences of the use thereof can reasonably be expected to result in personal injury.

However, the foregoing shall not prevent the customer from using any Product in such fields of use that Infineon has explicitly designed and sold it for, provided that the overall responsibility for the application lies with the customer. Infineon expressly reserves the right to use its content for commercial text and data mining (TDM) according to applicable laws, e.g. Section 44b of the German Copyright Act (UrhG). If the Product includes security features:

Because no computing device can be absolutely secure, and despite security measures implemented in the Product, Infineon does not guarantee that the Product will be free from intrusion, data theft or loss, or other breaches ("Security Breaches"), and Infineon shall have no liability arising out of any Security Breaches.

If this document includes or references software:

The software is owned by Infineon under the intellectual property laws and treaties of the United States, Germany, and other countries worldwide. All rights reserved. Therefore, you may use the software only as provided in the software license agreement accompanying the software.

If no software license agreement applies, Infineon hereby grants you a personal, non-exclusive, non-transferable license (without the right to sublicense) under its intellectual property rights in the software (a) for software provided in source code form, to modify and reproduce the software solely for use with Infineon hardware products, only internally within your organization, and (b) to distribute the software in binary code form externally to end users, solely for use on Infineon hardware products. Any other use, reproduction, modification, translation, or compilation of the software is prohibited.

For further information on the Product, technology, delivery terms and conditions, and prices, please contact your nearest Infineon office or visit www.infineon.com.