

MOSFET

600V CoolMOS™ CM8 Power Transistor

Built on Infineon's world-class super-junction MOSFET platform with an integrated fast body diode, making it suitable for a wide range of applications. It enables highest power density at lowest possible system cost with superior reliability. It is enhancing Infineon's WBG offering and the successor of the 600 V CoolMOS™ 7 MOSFET family.

Features

- Best-In-Class SJ Mosfet Performance
- Address broad hard and soft switching applications with outstanding commutation ruggedness
- Integrated fast body diode and ESD protection
- .XT interconnection technology for best-in-class thermal performance

Benefits

- Provides the best price performance ratio with Best-In-Class SJ Mosfet Performance
- Ease of use and shorter design in cycle
- Enable multiple topologies
- 14-42% lower R_{th} for improved thermal performance

Potential applications

- Datacenter, AI server, Telecom Power Supply
- Micro and Residential Hybrid Inverter
- Portable and Residential Energy Storage, UPS
- EV Charging, Light electric vehicles, Electric Forklift
- High Voltage Solid State Power Distribution
- Home & Professional Tools
- Charger, Adapters, TV and Console SMPS

Product validation

Qualified according to relevant JEDEC tests.

Please note: For MOSFET paralleling the use of ferrite beads on the gate or separate totem poles is generally recommended.

Table 1 Key performance parameters

Parameter	Value	Unit
$V_{DS} @ T_{j,max}$	650	V
$R_{DS(on),max}$	120	mΩ
$Q_{g,typ}$	24	nC
$I_{D,pulse}$	68	A
$E_{oss} @ 400 V$	3.4	μJ
Body diode di_F/dt	1300	A/μs
ESD class (HBM)	2	

Part number	Package	Marking	Related links
IPLT60R120CM8	PG-HDSOP-16	60R120C8	see Appendix A

TOLT

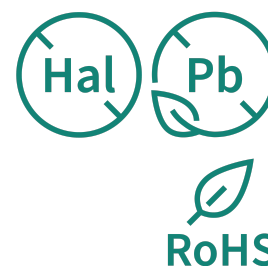
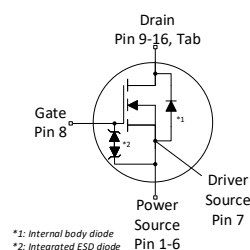
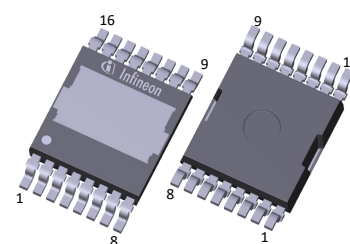




Table of contents

Description 1

Maximum ratings 3

Thermal characteristics 4

Electrical characteristics 5

Electrical characteristics diagrams 7

Test circuits 11

Package outlines 12

Appendix A 15

Revision history 16

Trademarks 17

Disclaimer 17

1 Maximum ratings

at $T_j = 25^\circ\text{C}$, unless otherwise specified

Table 2 Maximum ratings

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Continuous drain current ¹⁾	I_D	-	-	24	A	$T_C = 25^\circ\text{C}$
Continuous drain current	I_D	-	-	15	A	$T_C = 100^\circ\text{C}$
Pulsed drain current ²⁾	$I_{D,pulse}$	-	-	68	A	$T_C = 25^\circ\text{C}$
Avalanche energy, single pulse	E_{AS}	-	-	40	mJ	$I_D = 2.2\text{ A}$; $V_{DD} = 50\text{ V}$; see table 10
Avalanche energy, repetitive	E_{AR}			0.20		
Avalanche current, single pulse	I_{AS}	-	-	2.2	A	-
MOSFET dv/dt ruggedness	dv/dt	-	-	120	V/ns	$V_{DS} = 0 \dots 400\text{ V}$
Gate source voltage (static)	V_{GS}	-20	-	20	V	static;
Gate source voltage (dynamic)	V_{GS}	-30	-	30	V	AC ($f > 1\text{ Hz}$)
Power dissipation	P_{tot}	-	-	154	W	$T_C = 25^\circ\text{C}$
Storage temperature	T_{stg}	-55	-	150	$^\circ\text{C}$	-
Operating junction temperature	T_j					
Extended operating junction temperature	T_j	150	-	175	$^\circ\text{C}$	$\leq 50\text{ h}$ in the application lifetime
Mounting torque	-	-	-	-	Ncm	-
Continuous diode forward current	I_S	-	-	24	A	$T_C = 25^\circ\text{C}$
Diode pulse current ²⁾	$I_{S,pulse}$			68		
Reverse diode dv/dt ³⁾	dv/dt	-	-	70	V/ns	$V_{DS} = 0 \dots 400\text{ V}$, $I_{SD} \leq 24\text{ A}$, $T_j = 25^\circ\text{C}$ see table 8
Maximum diode commutation speed	di _F /dt			1300	A/ μs	
Insulation withstand voltage	V_{ISO}	-	-	n.a.	V	V_{rms} , $T_C = 25^\circ\text{C}$, $t = 1\text{ min}$

¹⁾ Limited by $T_{j,max}$.

²⁾ Pulse width t_p limited by $T_{j,max}$.

³⁾ Identical low side and high side switch with identical R_G .

2 Thermal characteristics

Table 3 Thermal characteristics

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Thermal resistance, junction - case	R_{thJC}	-	-	0.81	K/W	-
Thermal resistance, junction - ambient	R_{thJA}	-	-	62	K/W	device on PCB, minimal footprint
Thermal resistance, junction - ambient for SMD version	R_{thJA}	-	45	55	K/W	Device on 40 mm*40 mm*1.5 mm epoxy PCB FR4 with 6 cm ² (one layer, 70 µm thickness) copper area for drain connection and cooling. PCB is vertical without air stream cooling.
Soldering temperature, wave- & reflow soldering allowed	T_{sold}	-	-	260	°C	reflow MSL1

3 Electrical characteristics

at $T_j = 25^\circ\text{C}$, unless otherwise specified

Table 4 Static characteristics

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Drain-source breakdown voltage	$V_{(BR)DSS}$	600	-	-	V	$V_{GS} = 0\text{ V}$, $I_D = 1\text{ mA}$
Gate threshold voltage	$V_{(GS)th}$	3.7	4.2	4.7	V	$V_{DS} = V_{GS}$, $I_D = 0.2\text{ mA}$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS} = 600\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 25^\circ\text{C}$
			31.2	-		$V_{DS} = 600\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 150^\circ\text{C}$
Gate-source leakage current	I_{GSS}	-	-	1.2	μA	$V_{GS} = 20\text{ V}$, $V_{DS} = 0\text{ V}$
Drain-source on-state resistance	$R_{DS(on)}$	-	0.100	0.120	Ω	$V_{GS} = 10\text{ V}$, $I_D = 8.3\text{ A}$, $T_j = 25^\circ\text{C}$
			0.22	-		$V_{GS} = 10\text{ V}$, $I_D = 8.3\text{ A}$, $T_j = 150^\circ\text{C}$
Gate resistance	R_G	-	9.8	-	Ω	$f = 1\text{ MHz}$

Table 5 Dynamic characteristics

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Input capacitance	C_{iss}	-	1045	-	pF	$V_{GS} = 0\text{ V}$, $V_{DS} = 400\text{ V}$, $f = 250\text{ kHz}$
Output capacitance	C_{oss}		15			
Effective output capacitance, energy related ⁴⁾	$C_{o(er)}$	-	42	-	pF	$V_{GS} = 0\text{ V}$, $V_{DS} = 0\ldots 400\text{ V}$
Effective output capacitance, time related ⁵⁾	$C_{o(tr)}$	-	421	-	pF	$I_D = \text{constant}$, $V_{GS} = 0\text{ V}$, $V_{DS} = 0\ldots 400\text{ V}$
Turn-on delay time	$t_{d(on)}$	-	17	-	ns	$V_{DD} = 400\text{ V}$, $V_{GS} = 13\text{ V}$, $I_D = 4.0\text{ A}$, $R_G = 10.0\text{ }\Omega$; see table 9
Rise time	t_r		6			
Turn-off delay time	$t_{d(off)}$		90			
Fall time	t_f		11			

⁴⁾ $C_{o(er)}$ is a fixed capacitance that gives the same stored energy as C_{oss} while V_{DS} is rising from 0 to 400 V

⁵⁾ $C_{o(tr)}$ is a fixed capacitance that gives the same charging time as C_{oss} while V_{DS} is rising from 0 to 400V

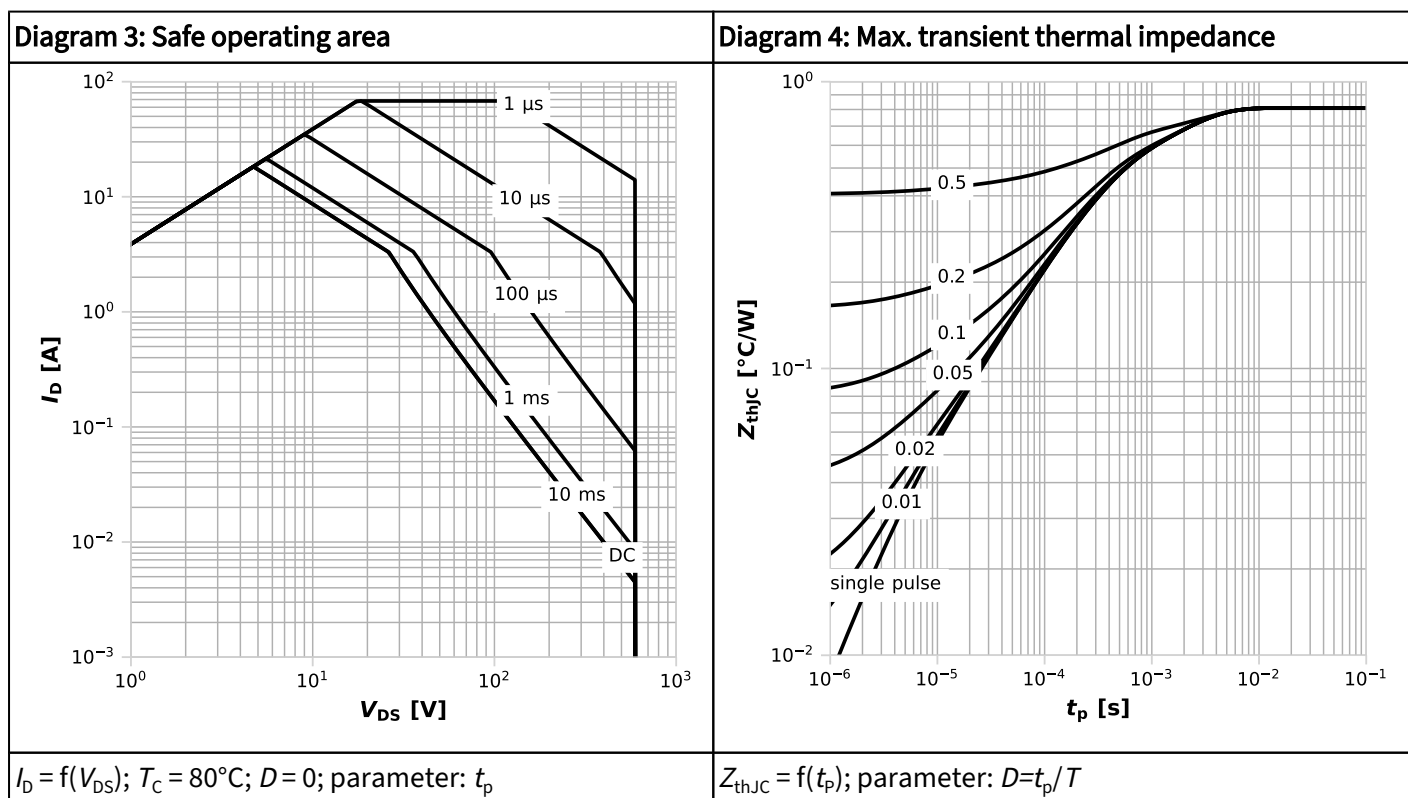
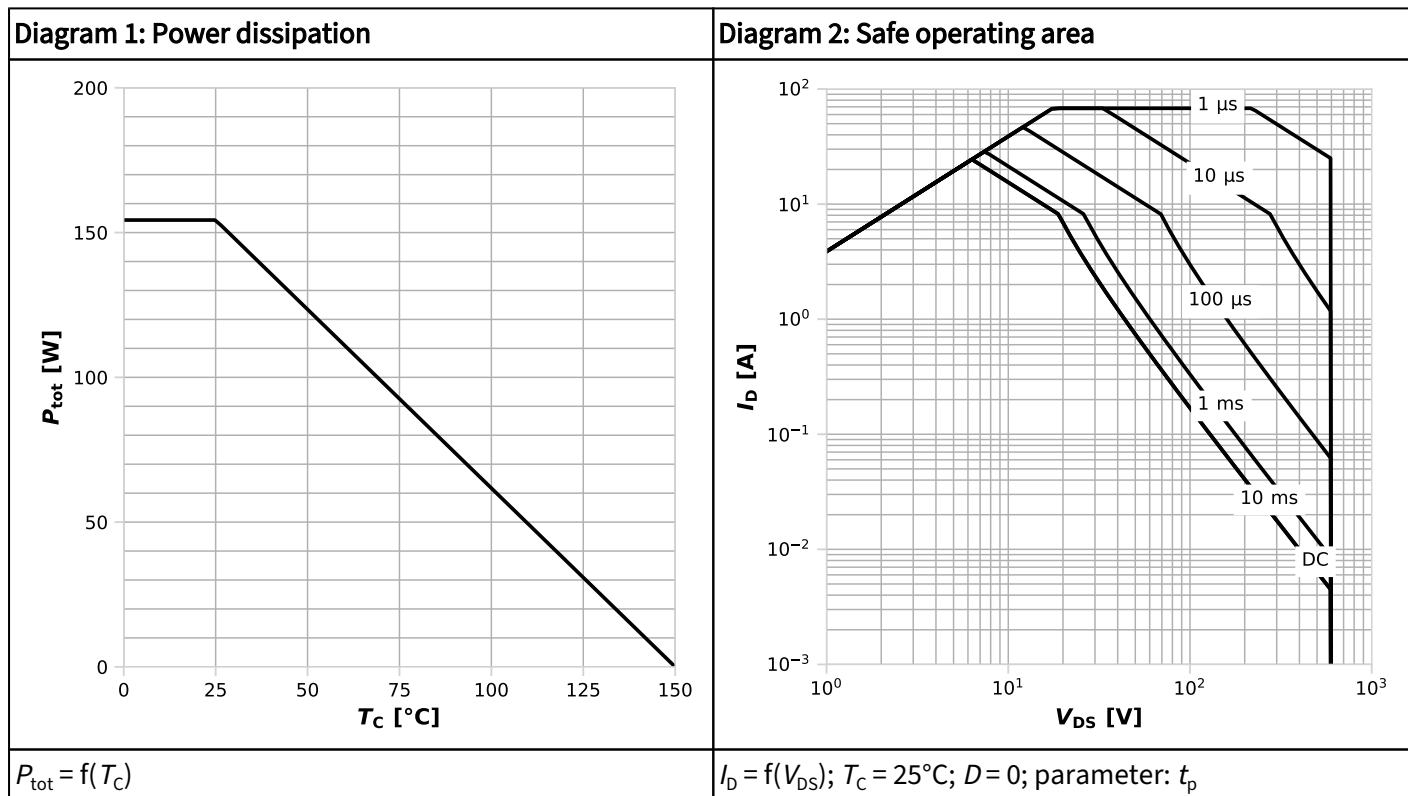
Table 6 Gate charge characteristics

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Gate to source charge	Q_{gs}	-	6	-	nC	$V_{DD} = 400\text{ V}$, $I_D = 4.0\text{ A}$, $V_{GS} = 0\text{ to }10\text{ V}$
Gate to drain charge	Q_{gd}		9		nC	
Gate charge total	Q_g		24		nC	
Gate plateau voltage	$V_{plateau}$		6.1		V	

Table 7 Reverse diode characteristics

Parameter	Symbol	Values			Unit	Note / Test condition
		Min.	Typ.	Max.		
Diode forward voltage	V_{SD}	-	0.9	-	V	$V_{GS} = 0\text{ V}$, $I_F = 4.0\text{ A}$, $T_j = 25^\circ\text{C}$
Reverse recovery time	t_{rr}	-	70	87	ns	$V_R = 400\text{ V}$, $I_F = 4.0\text{ A}$, $di_F/dt = 100\text{ A}/\mu\text{s}$; see table 8
Reverse recovery charge	Q_{rr}		0.24	0.36	μC	
Peak reverse recovery current	I_{rrm}		6.87	-	A	

4 Electrical characteristics diagrams



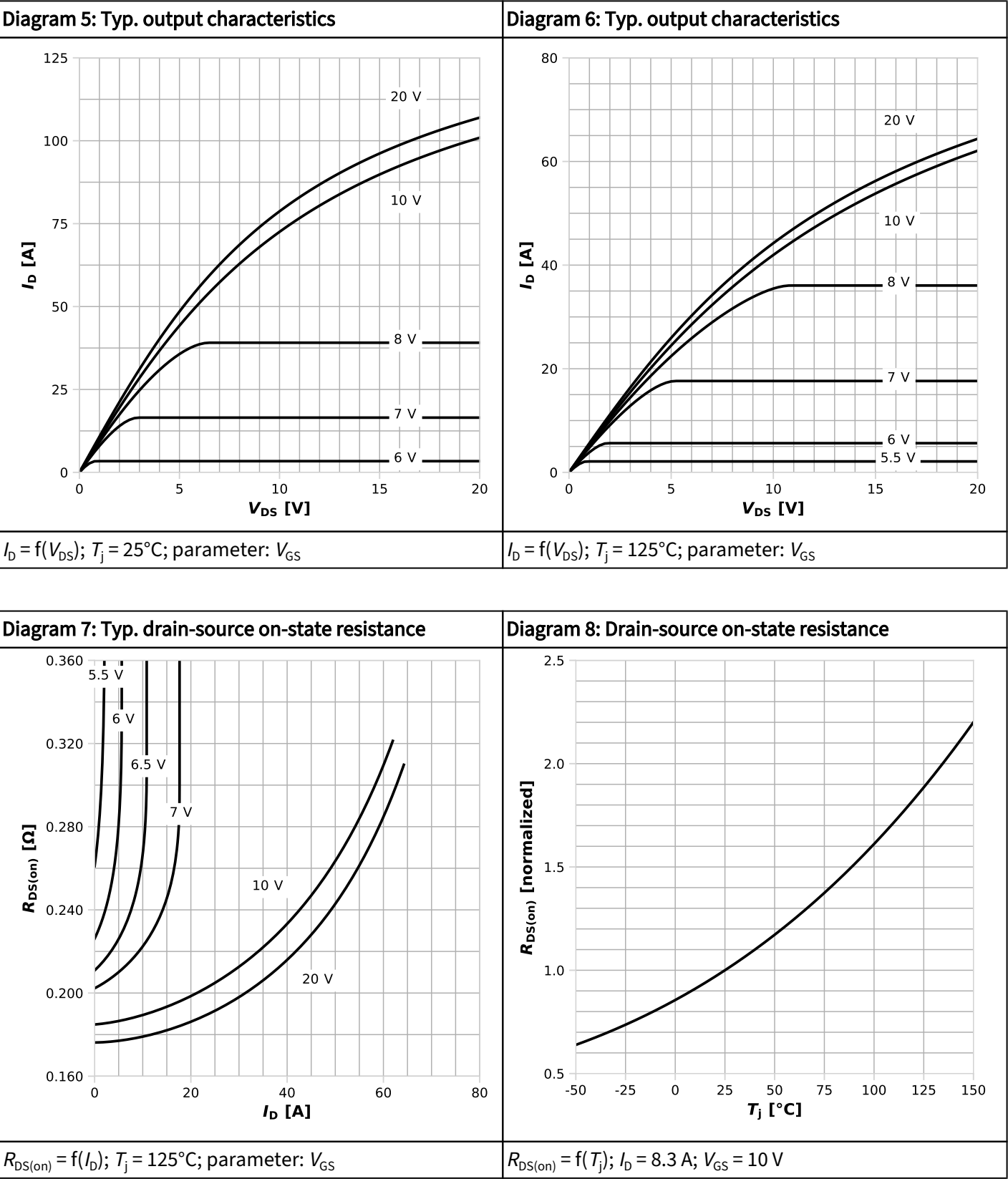
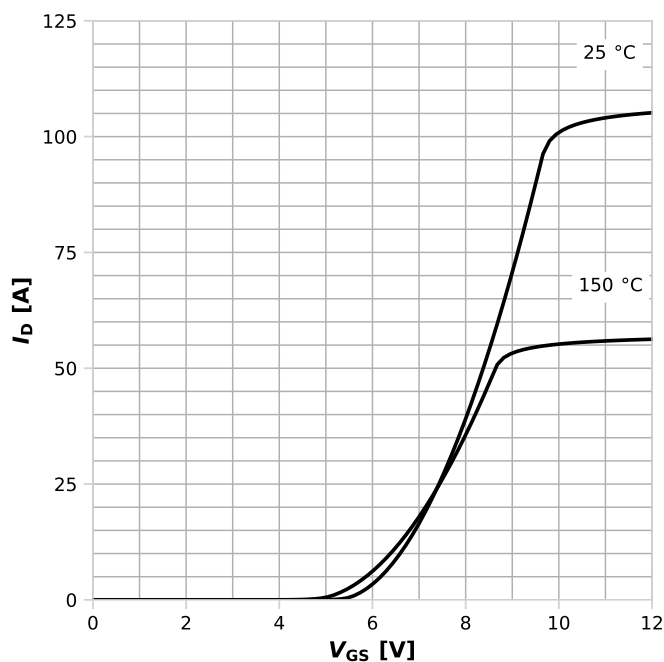
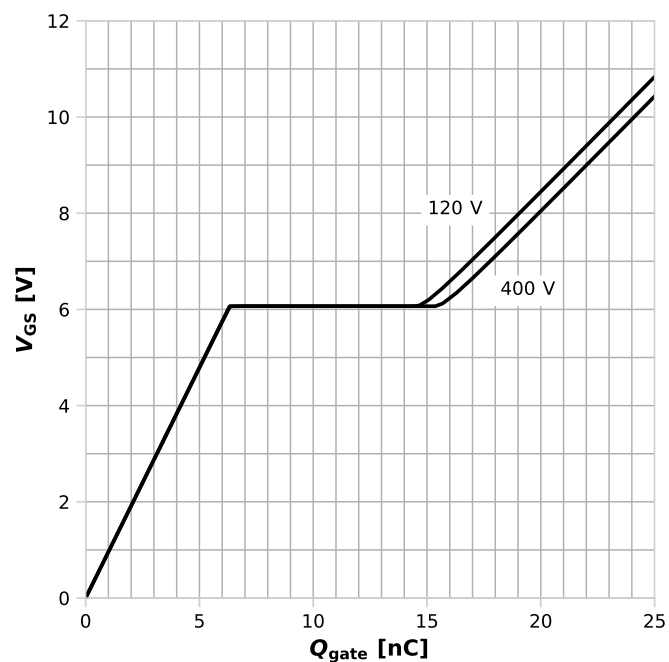


Diagram 9: Typ. transfer characteristics



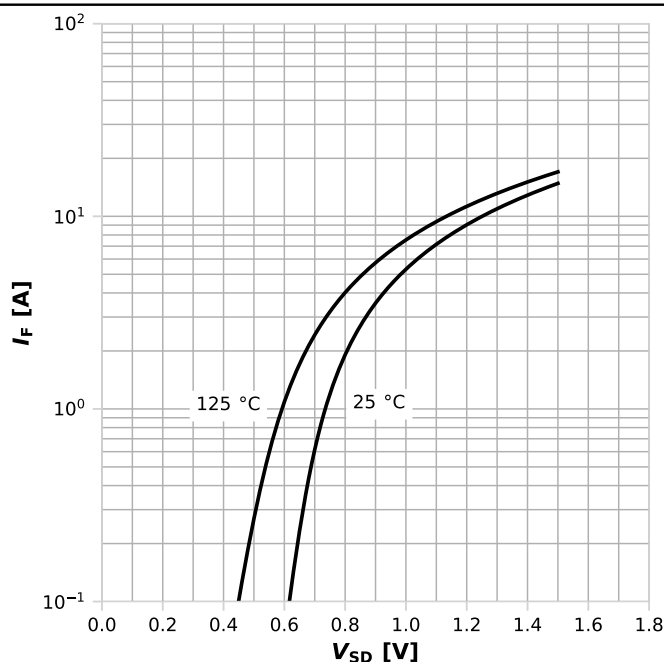
$I_D = f(V_{GS})$; $V_{DS} = 20$ V; parameter: T_j

Diagram 10: Typ. gate charge



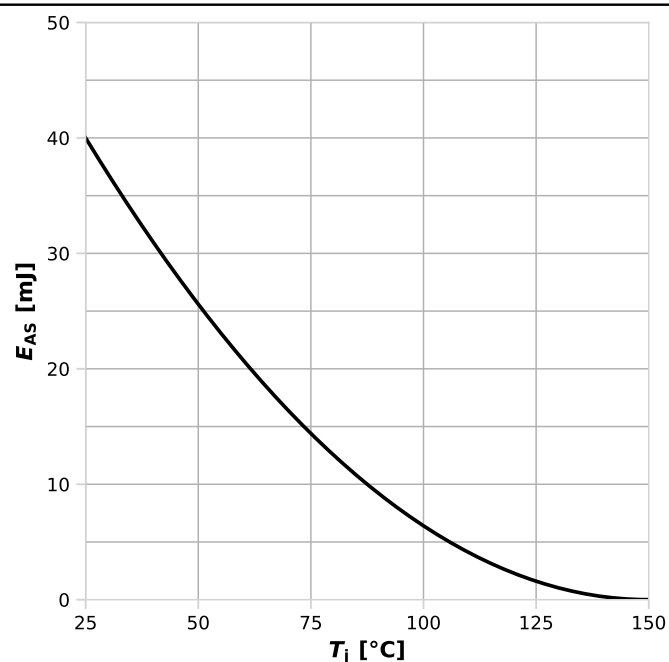
$V_{GS} = f(Q_{gate})$; $I_D = 4.0$ A pulsed; parameter: V_{DD}

Diagram 11: Forward characteristics of reverse diode



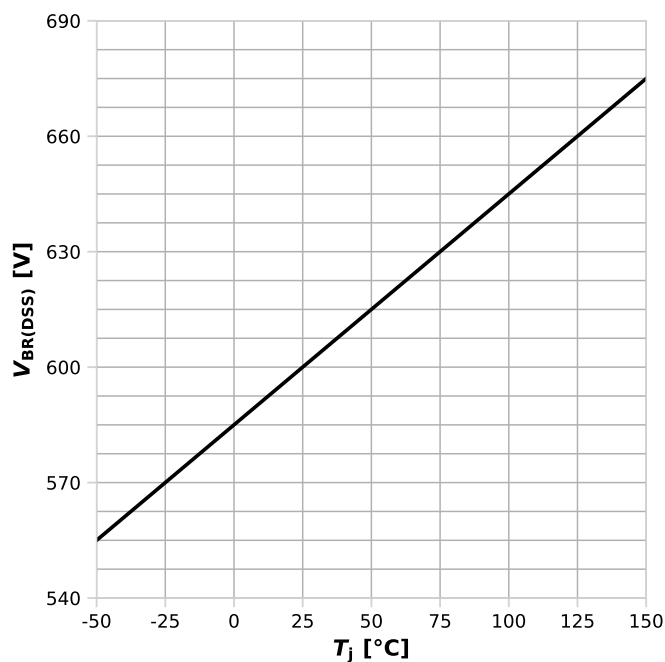
$I_F = f(V_{SD})$; parameter: T_j

Diagram 12: Avalanche energy



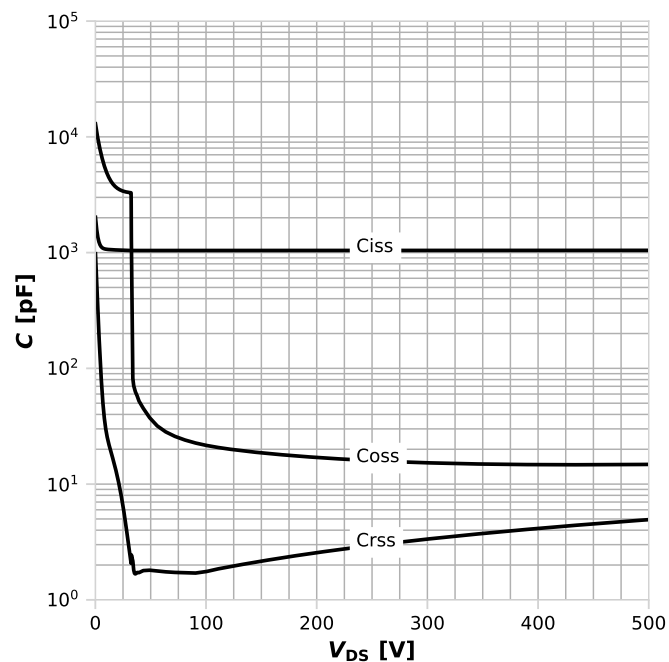
$E_{AS} = f(T_j)$; $I_D = 2.2$ A; $V_{DD} = 50$ V

Diagram 13: Drain-source breakdown voltage



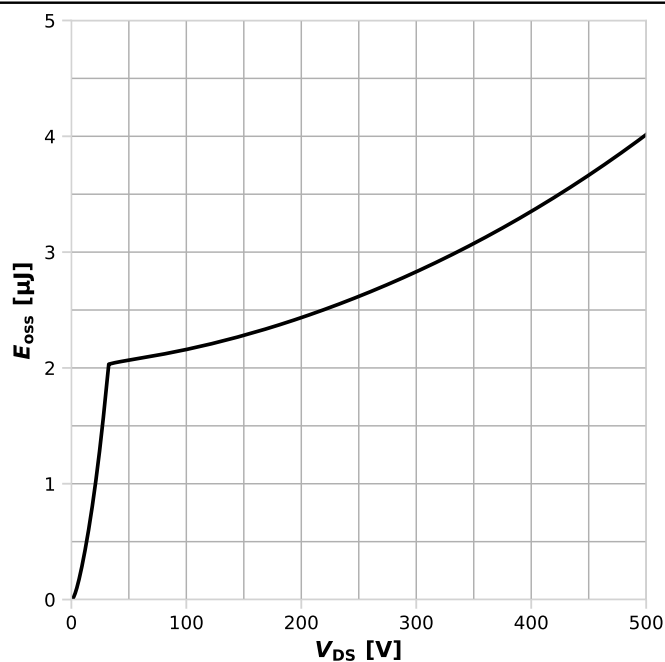
$$V_{BR(DSS)} = f(T_j); I_D = 1 \text{ mA}$$

Diagram 14: Typ. capacitances



$$C = f(V_{DS}); V_{GS} = 0 \text{ V}; f = 250 \text{ kHz}$$

Diagram 15: Typ. Coss stored energy



$$E_{oss} = f(V_{DS})$$

5 Test circuits

Table 8 Diode characteristics

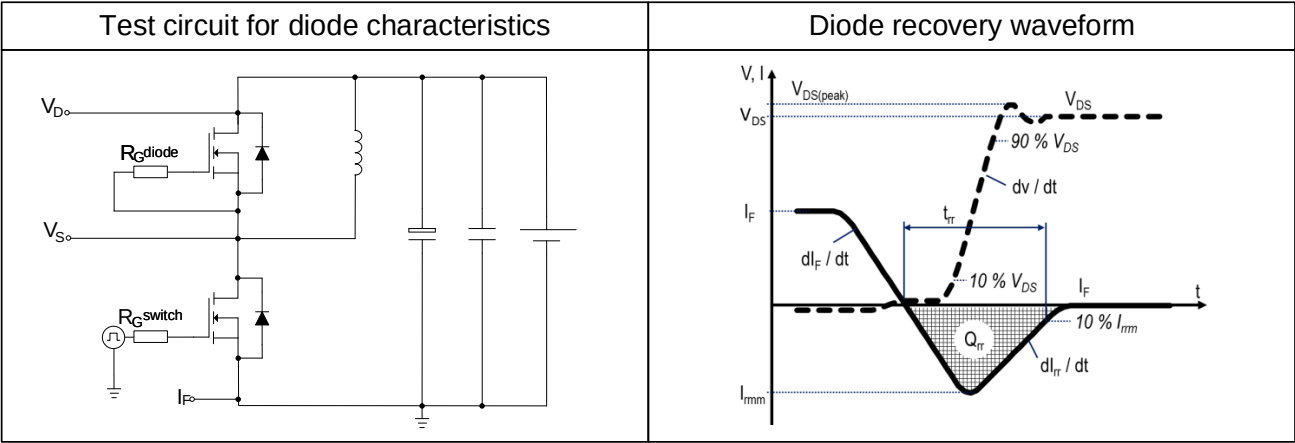


Table 9 Switching times (ss)

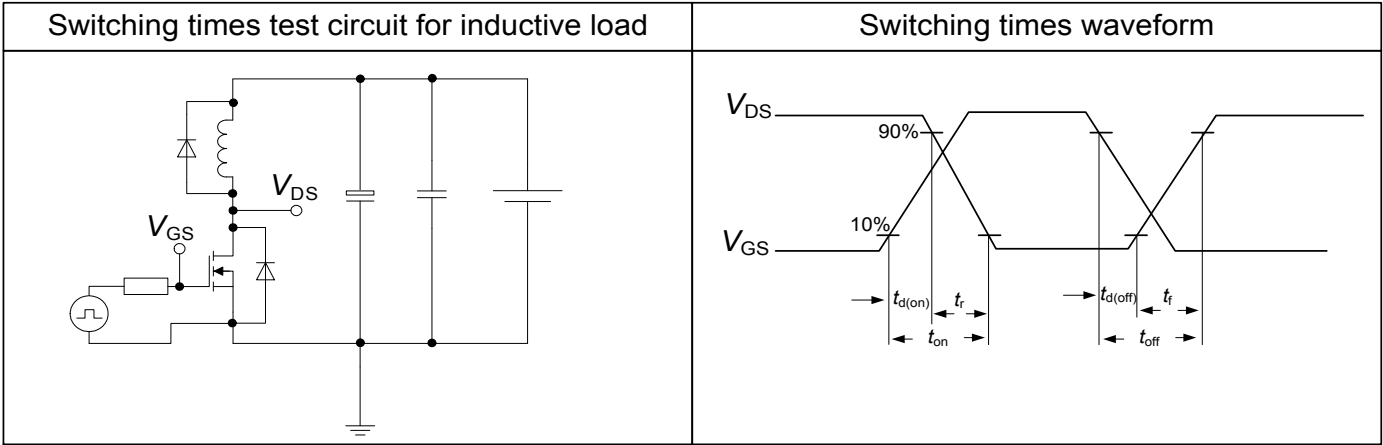
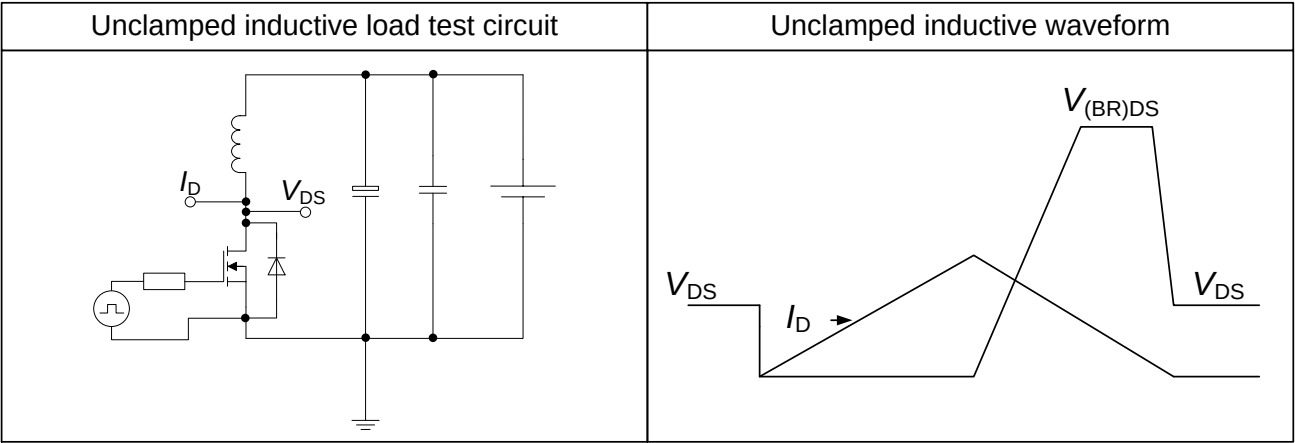


Table 10 Unclamped inductive load (ss)



6 Package outlines

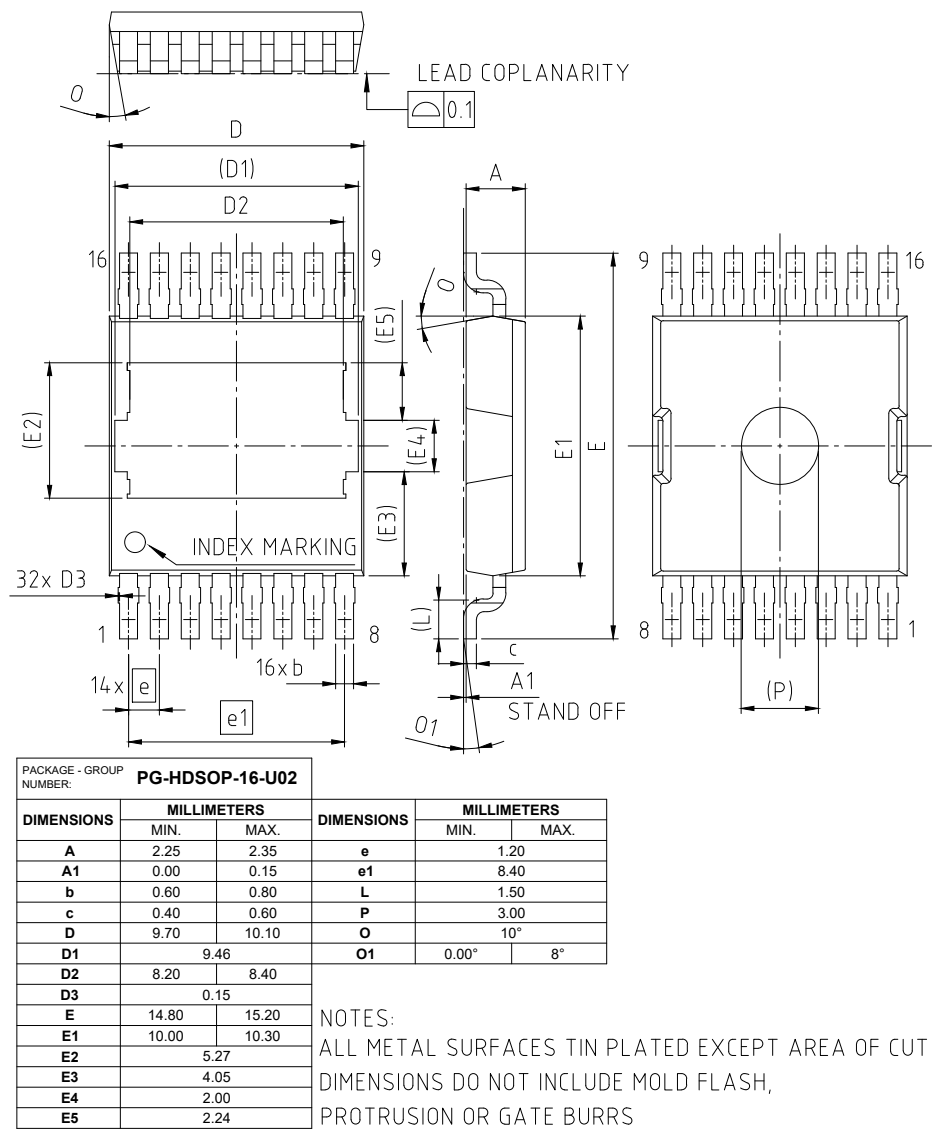


Figure 1 Outline PG-HDSOP-16, dimensions in mm

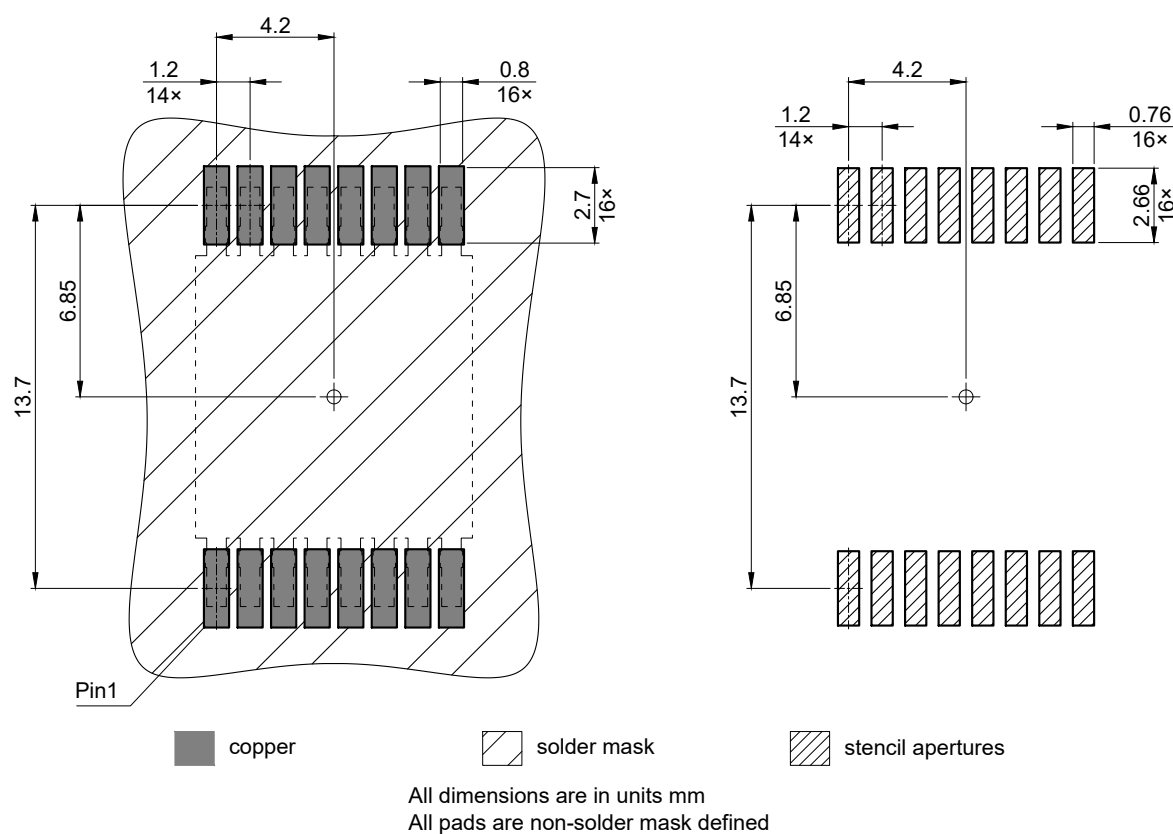
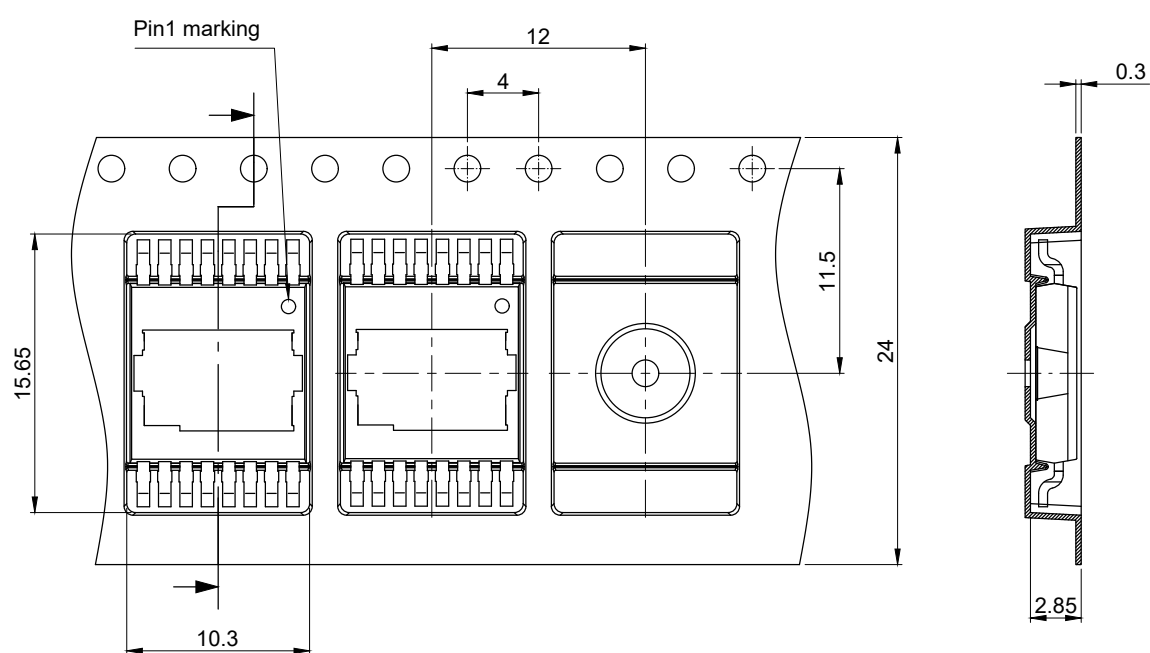


Figure 2 Footprint drawing PG-HDSOP-16, dimensions in mm



All dimensions are in units mm

The drawing is in compliance with ISO 128-30, Projection Method 1 []

Figure 3 Packaging variant PG-HDSOP-16, dimensions in mm

7 Appendix A

Table 11 **Related links**

- [IFX CoolMOS CM8 Webpage](#)
- [IFX CoolMOS CM8 application note](#)
- [IFX CoolMOS CM8 simulation model](#)
- [IFX Design tools](#)

Revision history

IPLT60R120CM8

Revision 2025-11-18, Rev. 2.0

Previous revisions

Revision	Date	Subjects (major changes since last revision)
2.0	2025-11-18	Release of final version

Trademarks

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

Published by Infineon Technologies AG, 81726 Munich, Germany

Copyright (c) 2025 Infineon Technologies AG and its affiliates. All Rights Reserved.

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.

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 <https://www.infineon.com>.