Automotive MOSFET

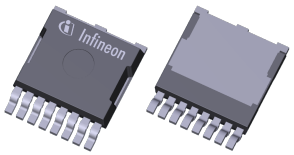
OptiMOS™ 6 Power-Transistor

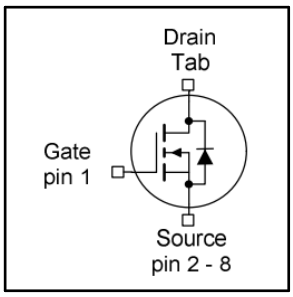
RoHS | Infineon Automotive Quality | AEC Qualified

Features

- OptiMOS™ power MOSFET for automotive applications
- N-channel - Enhancement mode - Normal Level
- Extended qualification beyond AEC-Q101
- PPAP Capable
- Enhanced electrical testing
- Robust design
- MSL1 up to 260°C peak reflow
- 175°C operating temperature
- RoHS compliant
- 100% Avalanche tested

PG-HSOG-8-1





Potential Applications

General automotive applications.

Product Validation

Qualified for automotive applications. Product validation according to AEC-Q101.

Product Summary

V_{DS}	150	V
$R_{DS(on)}$	3.8	mΩ
I_D (chip limited)	170	A

Type	Package	Marking
IAUTN15S6N038G	PG-HSOG-8-1	6N15N038

Table of Contents

Description 1
Maximum ratings 3
Thermal characteristics 4
Electrical characteristics 4
Electrical characteristics diagrams 6
Package outline & footprint 10
Revision history 11
Disclaimer 12

Maximum Ratings

at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	V_{GS} = 10 V, Chip limitation[1,2)]	170	A
		V_{GS} = 10 V, DC current	170	
		T_a = 100°C, V_{GS} = 10 V, R_{thJA} on 2s2p[2,3)]	24	
Pulsed drain current[2)]	$I_{D,pulse}$	T_C = 25°C, t_p = 100 µs	601	
Avalanche energy, single pulse[2)]	E_{AS}	I_D = 85 A	285	mJ
Avalanche current, single pulse	I_{AS}	–	170	A
Gate source voltage	V_{GS}	–	±20	V
Power dissipation	P_{tot}	T_C = 25°C	263	W
Operating temperature	T_j	–	-55 ... +175	°C

Thermal Characteristics[2)]

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction - case	R_{thJC}	–	–		0.57	K/W
Thermal resistance, junction - ambient[3)]	R_{thJA}	–	–	15.0	–	

Electrical Characteristics

at T_j=25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Static Characteristics						
Drain-source breakdown voltage	$V_{(Br)DSS}$	V_{GS} = 0 V, I_D = 1 mA	150	–	–	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 166 µA	3	3.5	4	
Zero gate voltage drain current	I_{DSS}	V_{DS} = 120 V, V_{GS} = 0 V, T_j = 25°C	–	–	1	µA
		V_{DS} = 120 V, V_{GS} = 0 V, T_j = 100°C[2)]	–	–	100	
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} = 8 V, I_D = 43 A	–	3.7	4.8	mΩ
		V_{GS} = 10 V, I_D = 85 A	–	3.3	3.8	
Gate resistance[2)]	R_G	–	–	1.0	–	Ω

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic Characteristics[2]						
Input capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 75 V, f = 1 MHz	–	4760	6200	pF
Output capacitance	C_{oss}		–	1370	1780	
Reverse transfer capacitance	C_{rss}		–	27	40	
Turn-on delay time	$t_{d(on)}$	V_{DD} = 75 V, V_{GS} = 10 V, I_D = 85 A, R_G = 3.5 Ω	–	17	–	ns
Rise time	t_r		–	36	–	
Turn-off delay time	$t_{d(off)}$		–	26	–	
Fall time	t_f		–	33	–	
Gate Charge Characteristics[2]						
Gate to source charge	Q_{gs}	V_{DD} = 75 V, I_D = 85 A, V_{GS} = 0 to 10 V	–	26	33	nC
Gate to drain charge	Q_{gd}		–	17	25	
Gate charge total	Q_g		–	67	88	
Gate plateau voltage	$V_{plateau}$		–	5.4	–	V
Reverse Diode						
Diode continuous forward current[2]	I_S	T_C = 25°C	–	–	170	A
Diode pulse current[2]	$I_{S,pulse}$	T_C = 25°C, t_p = 100 µs	–	–	601	
Diode forward voltage	V_{SD}	V_{GS} = 0 V, I_F = 85 A, T_j = 25°C	–	0.9	1.0	V
Reverse recovery time[2]	t_{rr}	V_R = 75 V, I_F = 50 A, di_F/dt = 100 A/µs	–	33	50	ns
Reverse recovery charge[2]	Q_{rr}		–	16	32	nC

[1] Practically the current is limited by the overall system design including the customer-specific PCB.

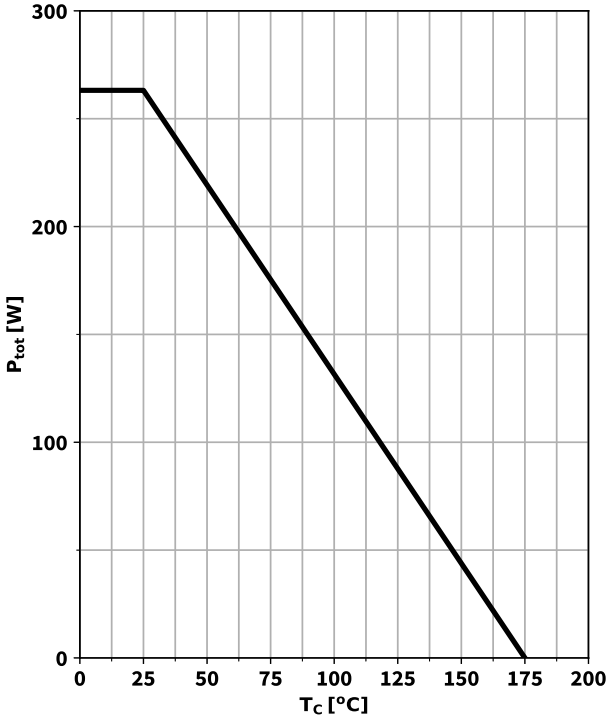
[2] The parameter is not subject to production testing – specified by design.

[3] Device on 2s2p FR4 PCB defined in accordance with JEDEC standards (JESD51-5, -7). PCB is vertical in still air.

Electrical characteristics diagrams

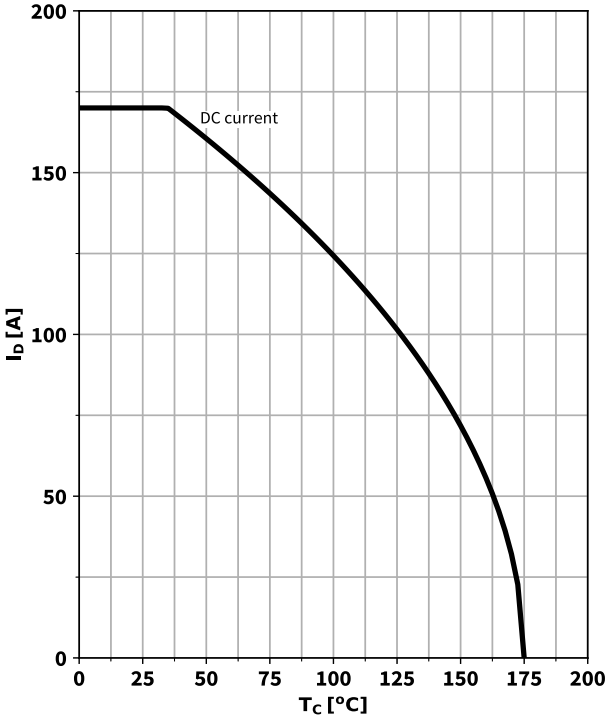
1 Power dissipation

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



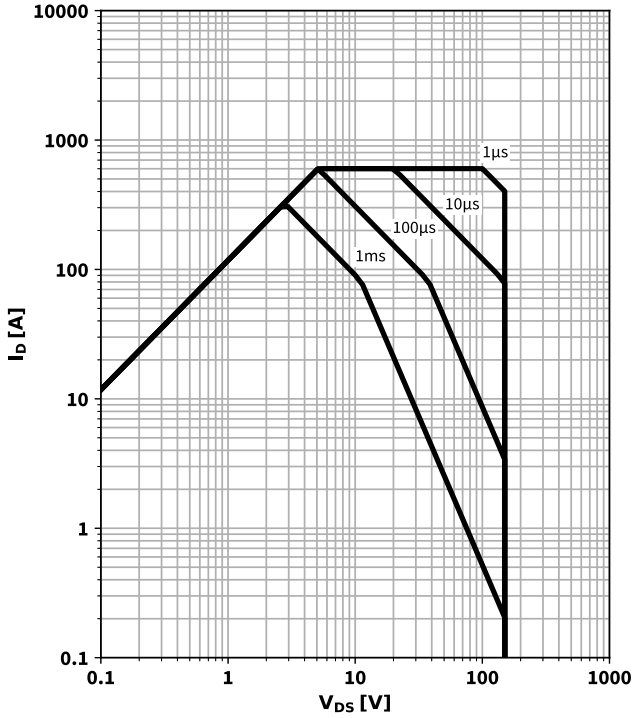
2 Drain current

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



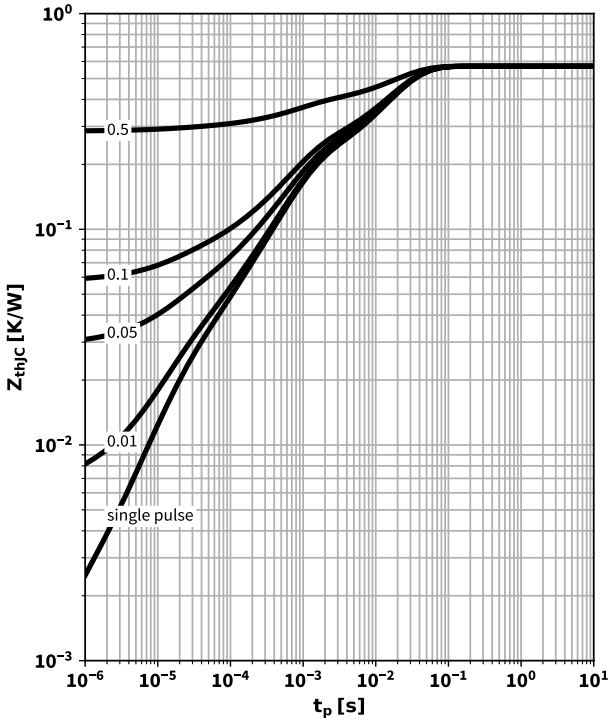
3 Safe operating area

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



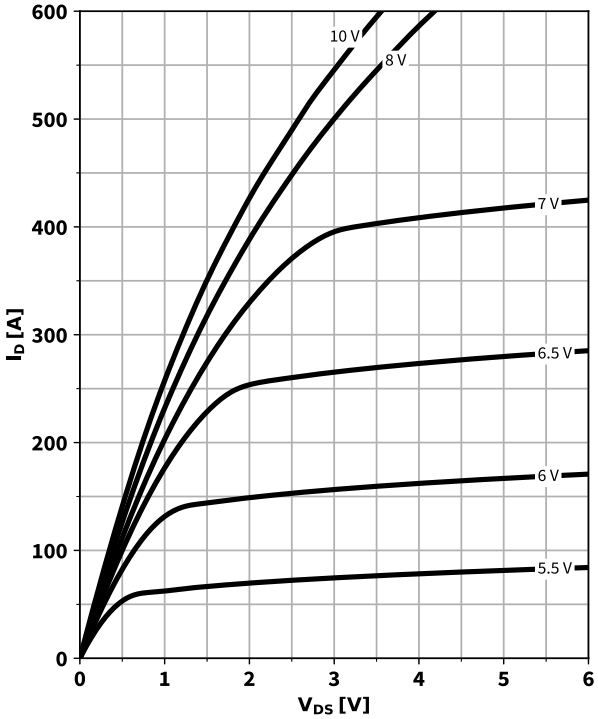
4 Max. transient thermal impedance

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



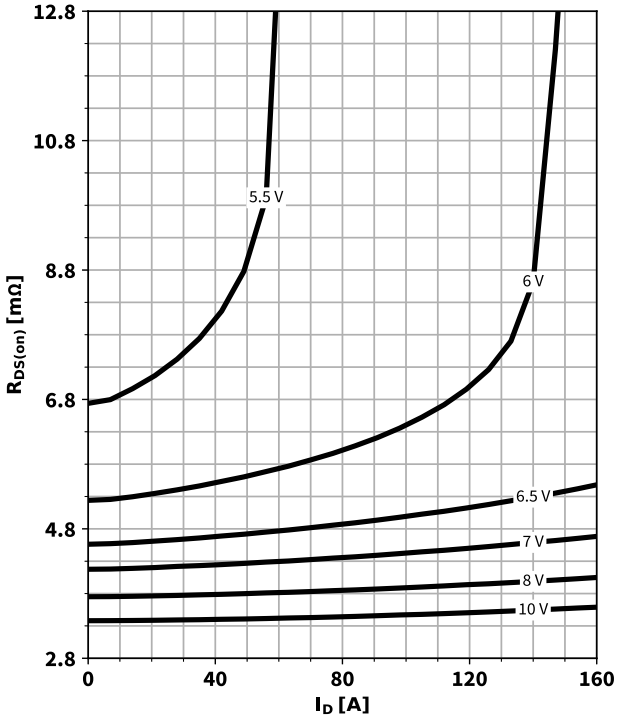
5 Typ. output characteristics

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



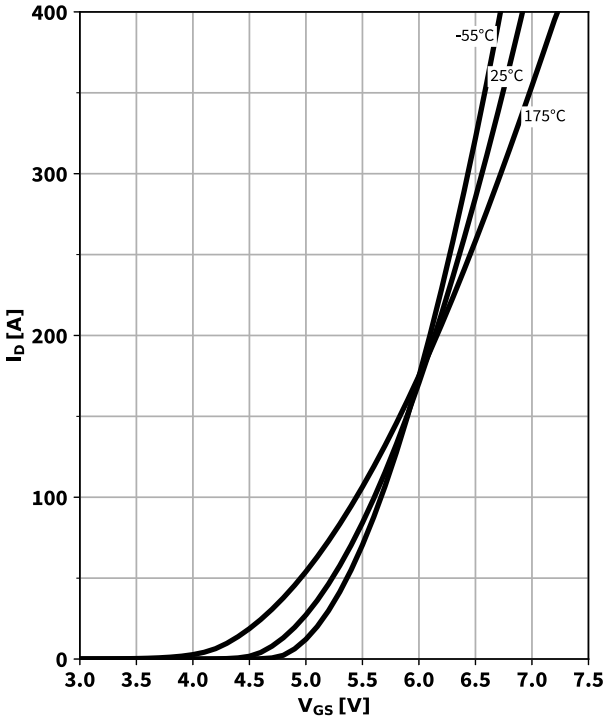
6 Typ. drain-source on-state resistance

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



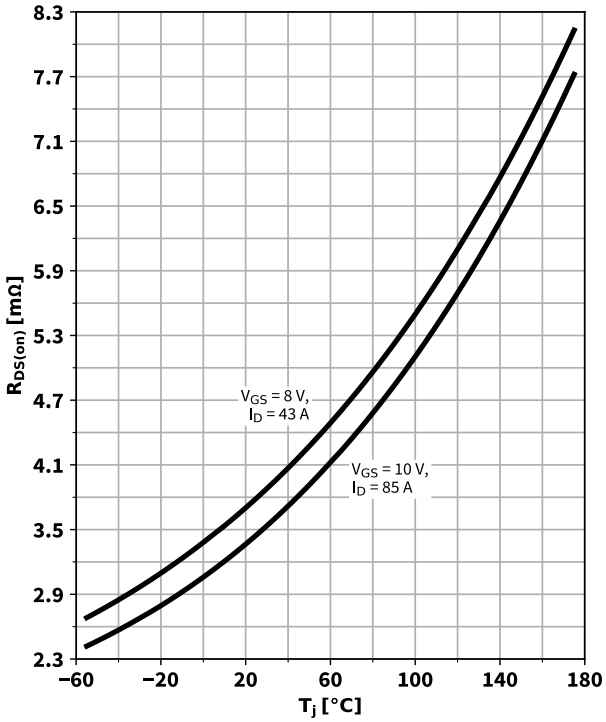
7 Typ. transfer characteristics

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



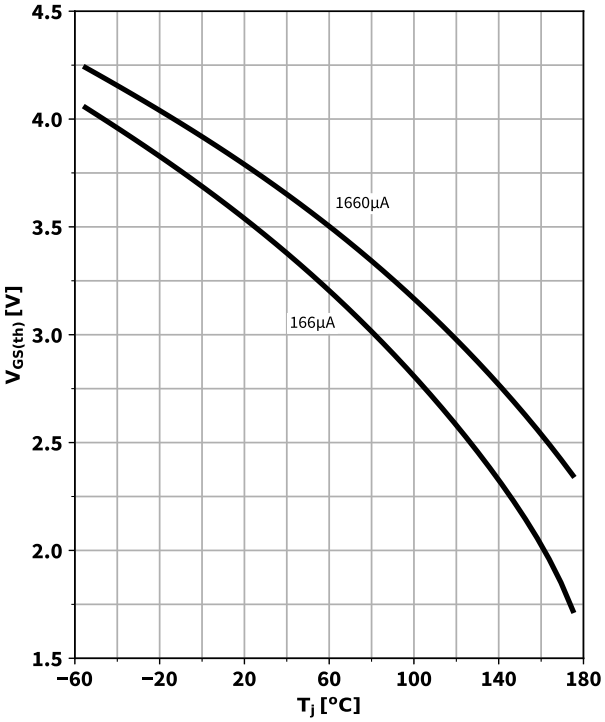
8 Typ. drain-source on-state resistance

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



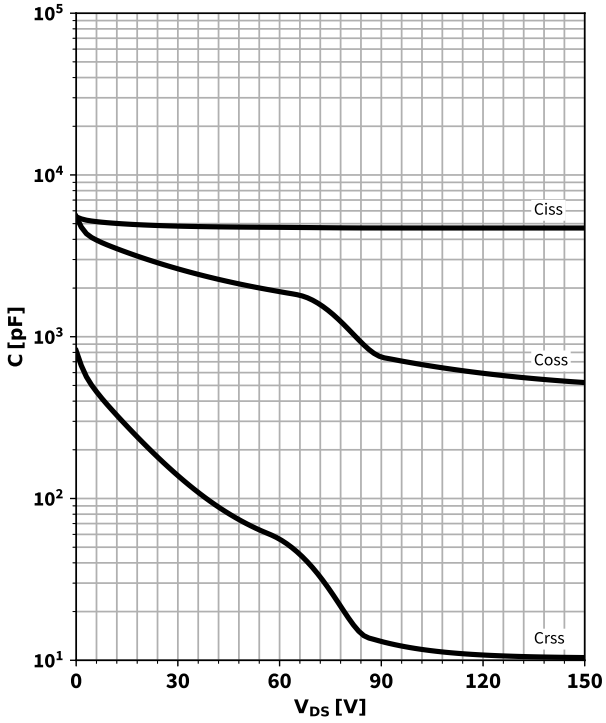
9 Typ. gate threshold voltage

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



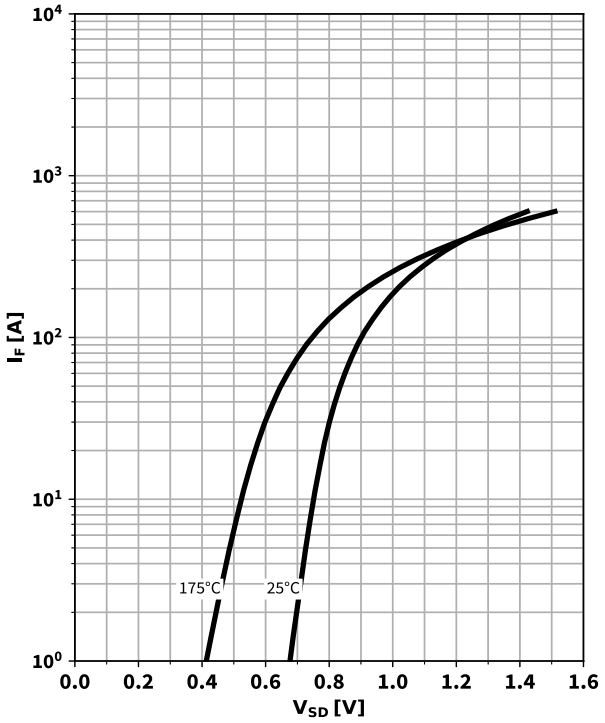
10 Typ. capacitances

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



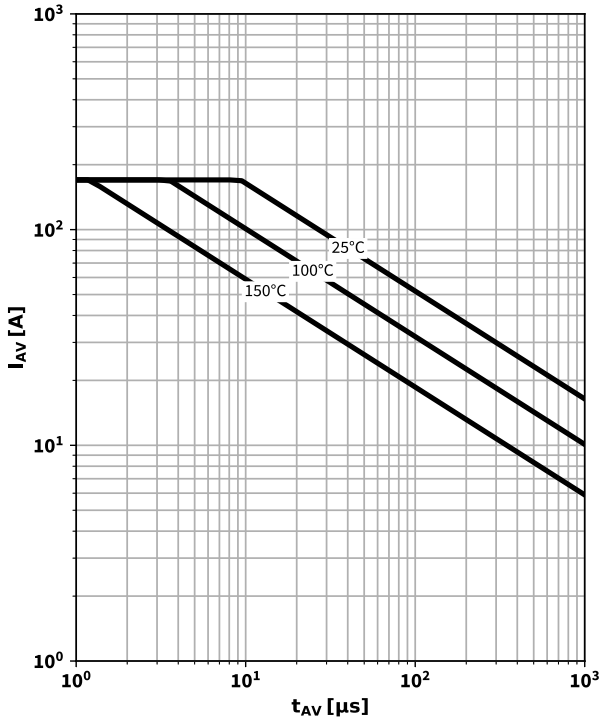
11 Typ. forward diode characteristics

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



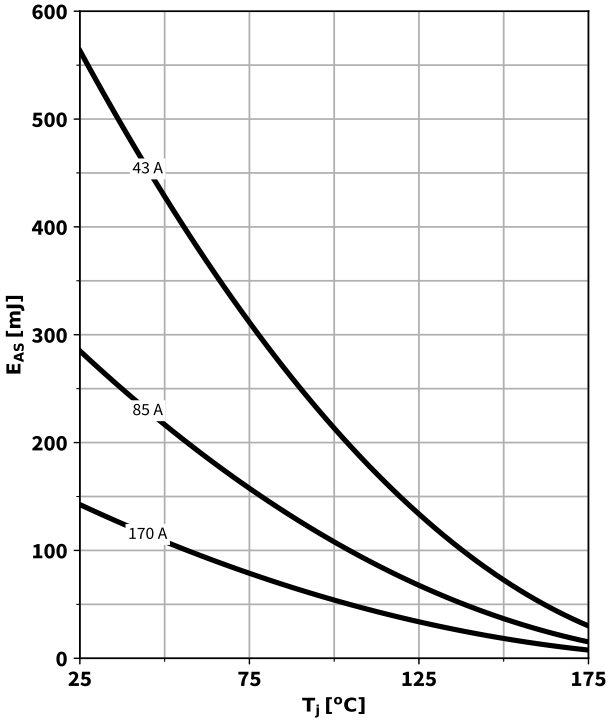
12 Typ. avalanche characteristics

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



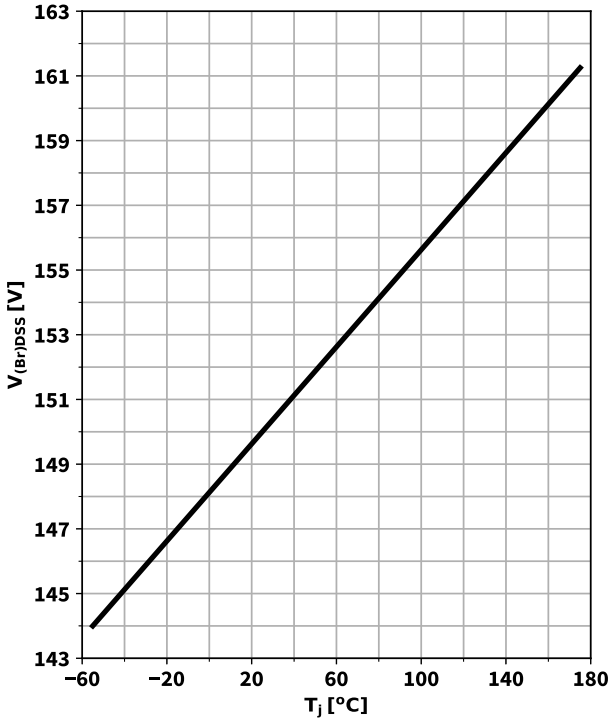
13 Typical avalanche energy

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



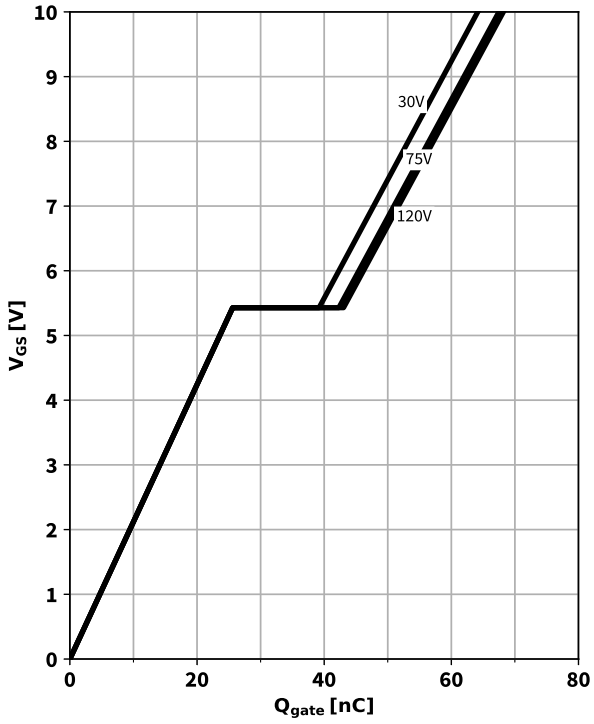
14 Drain-source breakdown voltage

$V_{(Br)DSS} = f(T_j)$; I_D = 10 mA

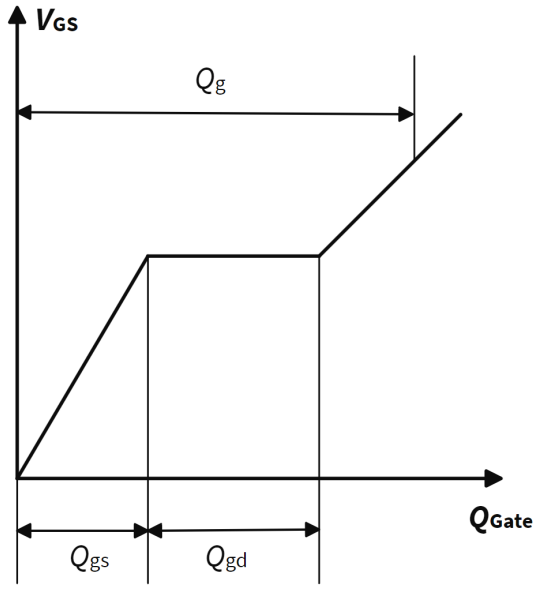


15 Typ. gate charge

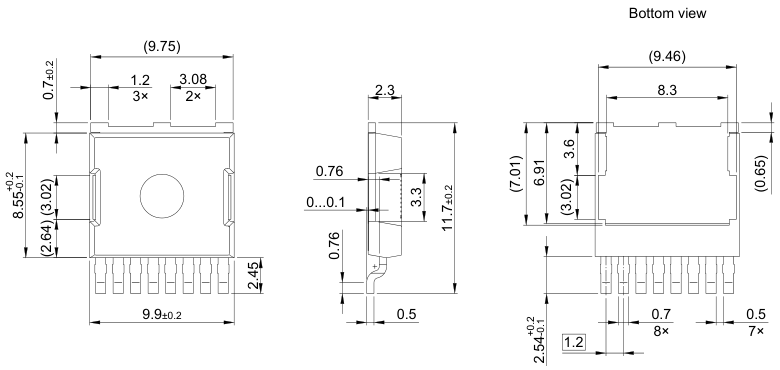
$V_{GS} = f(Q_{gate})$; I_D = 85 A pulsed; parameter: V_{DD}



16 Gate charge waveforms

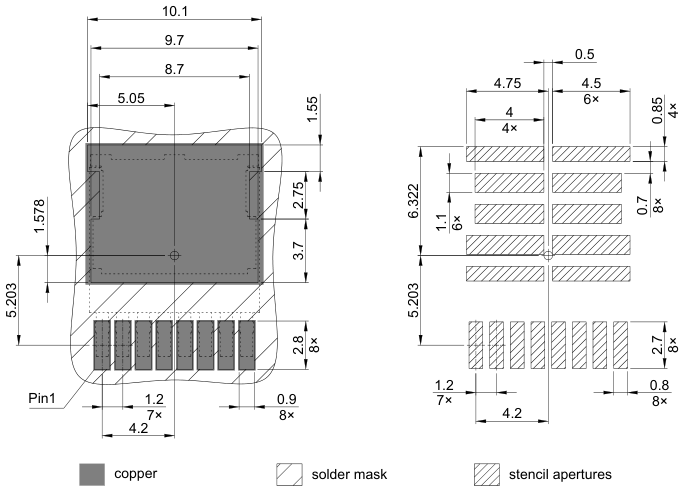


Package Outline



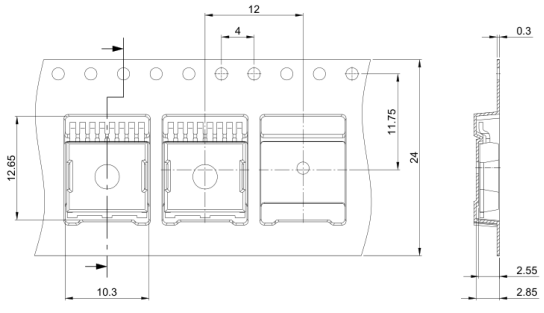
All dimensions are in units mm
The drawing is in compliance with ISO 128-30, Projection Method 1 [ ]
Drawing according to ISO 8015, general tolerances ±0.1;±1°30'

Footprint



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

Packaging



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

Revision History

Revision	Date	Changes
Revision 1.0	30.04.2025	Final data sheet

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

Edition 2025

Published by

Infeon 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
IAUTN15S6N038G-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.

ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

Kategorilere göz atın

Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

Üreticileri görün

Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

Teklif isteyin

www.entegreci.com | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.