OptiMOS™-5 Power-Transistor

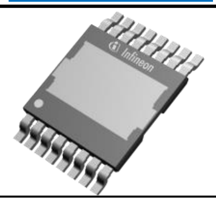
Product Summary

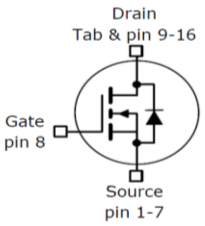
V_{DS}	100	V
$R_{DS(on)}$	1.9	mΩ
I_D	260	A

Features

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

PG-HDSOP-16-2





Type	Package	Marking
IAUS260N10S5N019T	PG-HDSOP-16-2	5N10019

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]	260	A
		V_{GS}=10V, DC current	260	
		T_a=85 °C, V_{GS}=10 V, R_{thJA} on 2s2p[2,3]	91	
Pulsed drain current[2]	$I_{D,pulse}$	T_C=25 °C, t_p= 100 µs	995	
Avalanche energy, single pulse[2]	E_{AS}	I_D=130 A	400	mJ
Avalanche current, single pulse	I_{AS}	-	220	A
Gate source voltage	V_{GS}	-	±20	V
Power dissipation	P_{tot}	T_C=25 °C	300	W
Operating and storage temperature	T_j, T_{stg}	-	-55 ... +175	°C
IEC climatic category; DIN IEC 68-1	-	-	55/175/56	

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics[2)]						
Thermal resistance, junction - case	R_{thJC}	Top	-	-	0.5	K/W
		Bottom (Pin 1-7)	-	9	-	
		Bottom (Pin 9-16)	-	3	-	
Thermal resistance, junction - ambient[4)]	R_{thJA}	Top	-	2.8	-	
		Bottom (through PCB)	-	40	-	

Electrical characteristics, at T_j=25 °C, unless otherwise specified

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=1 mA	100	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=210 µA	2.2	3.0	3.8	
Zero gate voltage drain current	I_{DSS}	V_{DS}=100 V, V_{GS}=0 V, T_j=25 °C	-	0.1	1	µA
		V_{DS}=50 V, V_{GS}=0 V, T_j=85 °C[2)]	-	1	20	
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}=6 V, I_D=65 A	-	2.0	2.6	mΩ
		V_{GS}=10 V, I_D=100 A	-	1.6	1.9	
Gate resistance[2)]	R_G	-	-	1.2	-	Ω

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics[2]						
Input capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=50 V, f=1 MHz	-	9100	11830	pF
Output capacitance	C_{oss}		-	1386	1801	
Reverse transfer capacitance	C_{rss}		-	61	92	
Turn-on delay time	$t_{d(on)}$	V_{DD}=50 V, V_{GS}=10 V, I_D=100 A, R_G=3.5 Ω	-	21	-	ns
Rise time	t_r		-	11	-	
Turn-off delay time	$t_{d(off)}$		-	49	-	
Fall time	t_f		-	38	-	
Gate Charge Characteristics[2]						
Gate to source charge	Q_{gs}	V_{DD}=50 V, I_D=100 A, V_{GS}=0 to 10 V	-	41	54	nC
Gate to drain charge	Q_{gd}		-	28	42	
Gate charge total	Q_g		-	128	166	
Gate plateau voltage	$V_{plateau}$		-	4.5	-	V
Reverse Diode						
Diode continous forward current[2]	I_S	T_C=25 °C	-	-	260	A
Diode pulse current[2]	$I_{S,pulse}$	T_C=25 °C, t_p= 100 µs	-	-	2000	
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_F=100 A, T_j=25 °C	-	0.9	1.3	V
Reverse recovery time[2]	t_{rr}	V_R=50 V, I_F=50A, di_F/dt=100 A/µs	-	79	-	ns
Reverse recovery charge[2]	Q_{rr}		-	177	-	nC

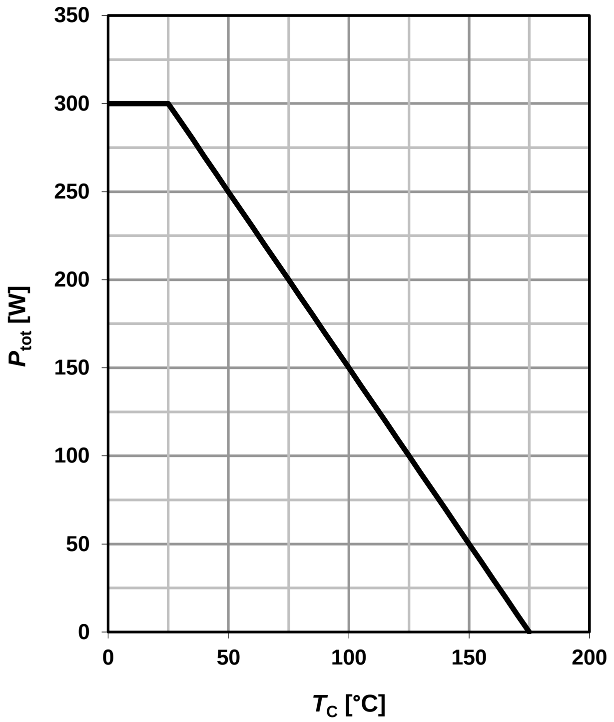
[1] Practically the current is limited by the overall system design including the customer-specific PCB.

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

[4] Device on a four-layer 2s2p FR4 PCB with topside cooling. Thermal insulation material is 100 µm thick and has a conductivity of 0.7 W/mK. Top surface of heat sink is fixed at ambient temperature. Bottom surface of PCB is left at free convection. Values may vary depending on the customer-specific design.

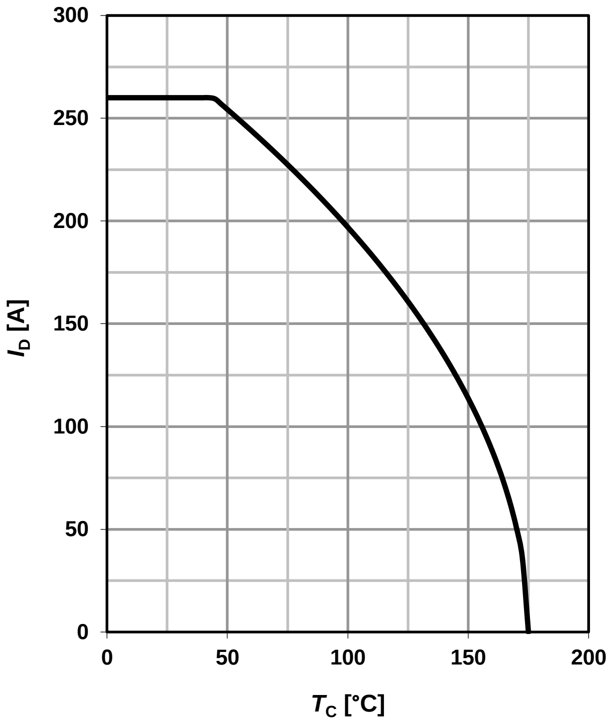
1 Power dissipation

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



2 Drain current

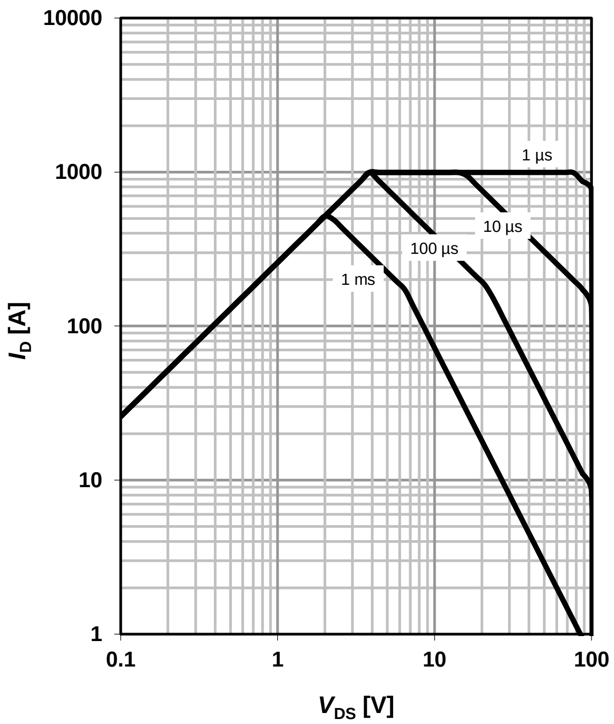
$I_D = f(T_C)$; $V_{GS} \geq 6$ V



3 Safe operating area

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

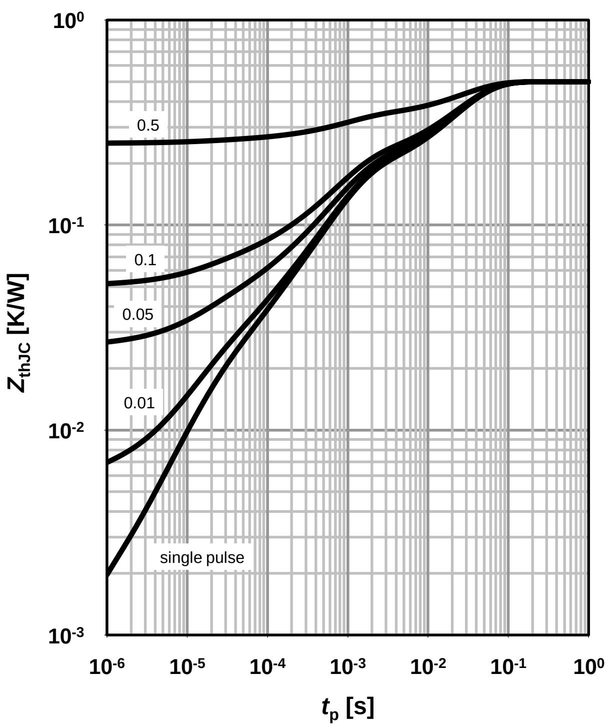
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJC} = f(t_p)$

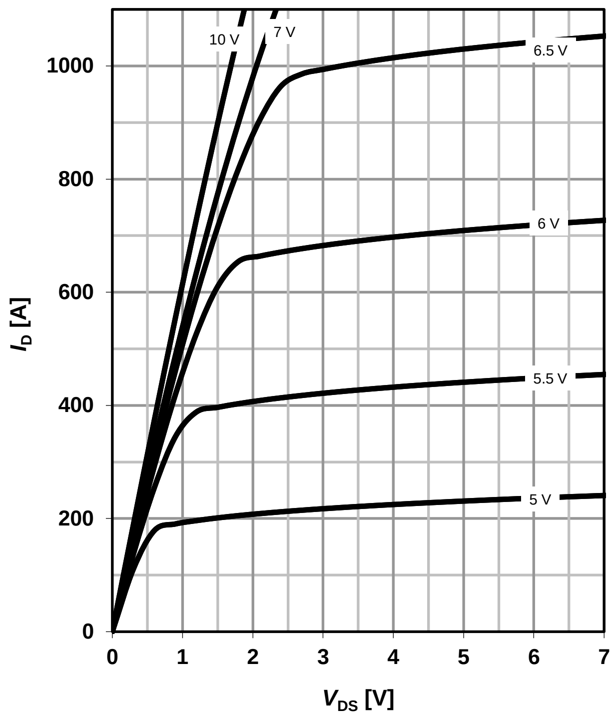
parameter: $D = t_p/T$



5 Typ. output characteristics

$I_D = f(V_{DS})$; $T_j = 25$ °C

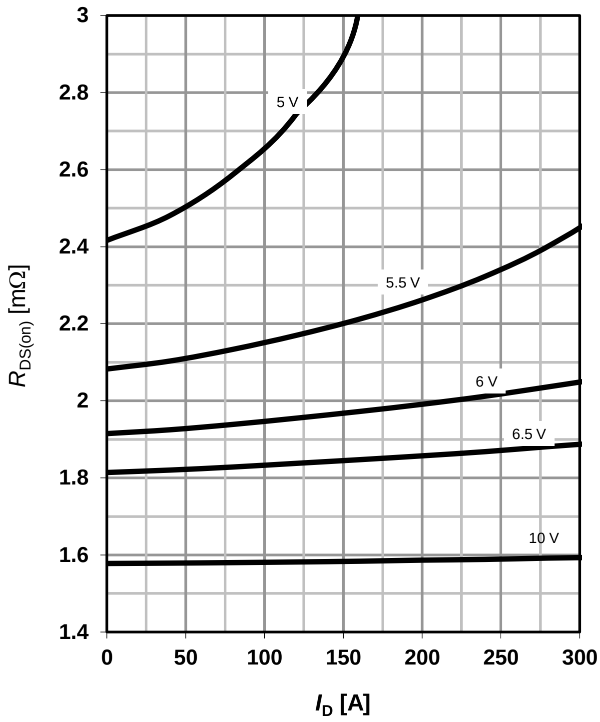
parameter: V_{GS}



6 Typ. drain-source on-state resistance

$R_{DS(on)} = f(I_D)$; $T_j = 25$ °C

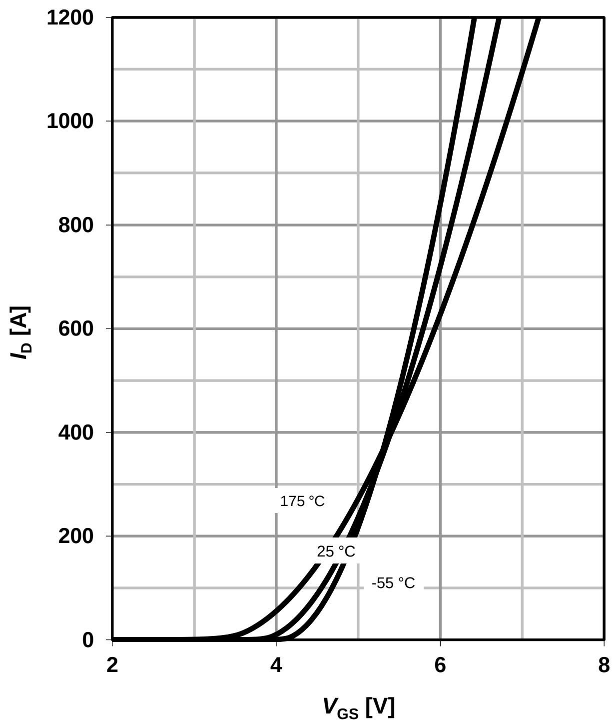
parameter: V_{GS}



7 Typ. transfer characteristics

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

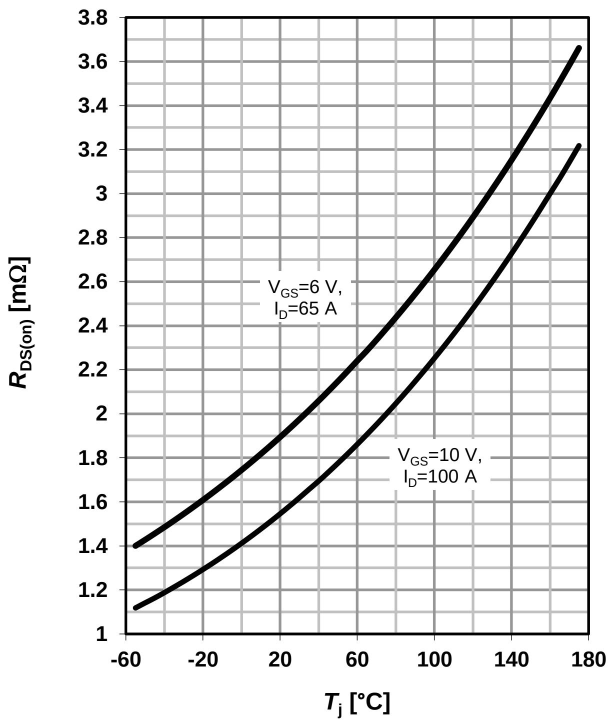
parameter: T_j



8 Typ. drain-source on-state resistance

$R_{DS(on)} = f(T_j)$

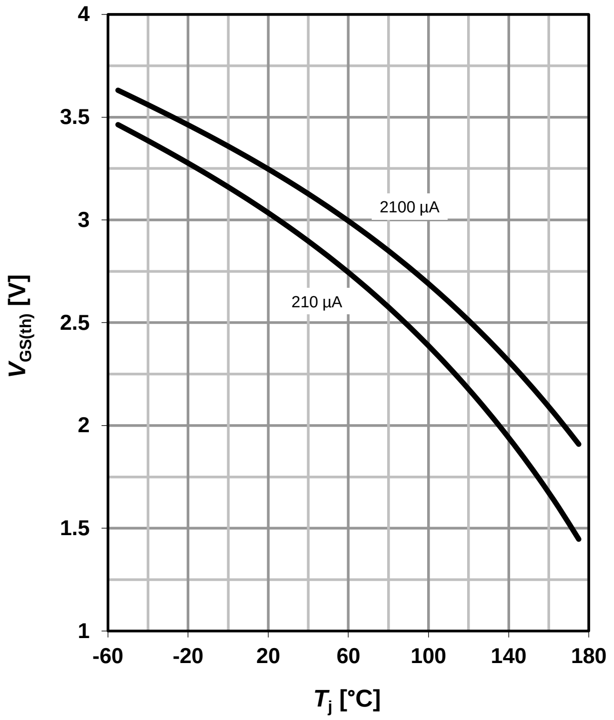
parameter: I_D, V_{GS}



9 Typ. gate threshold voltage

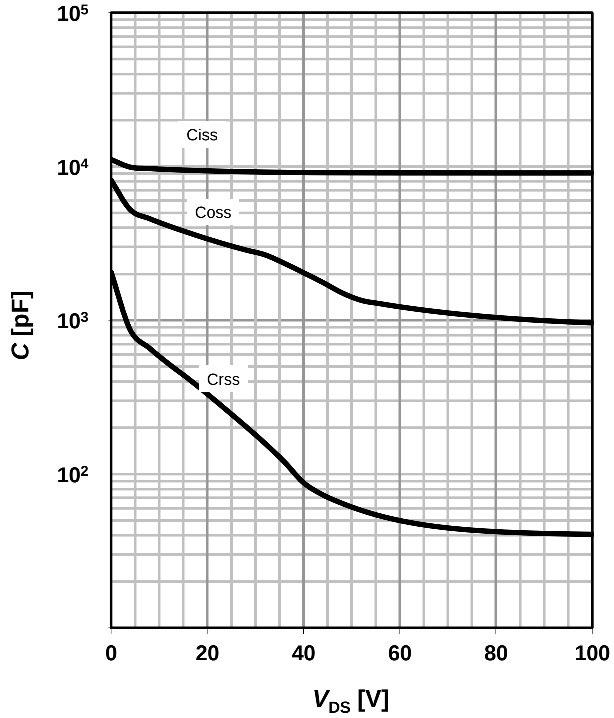
$V_{GS(th)} = f(T_j)$; $V_{GS} = V_{DS}$

parameter: I_D



10 Typ. capacitances

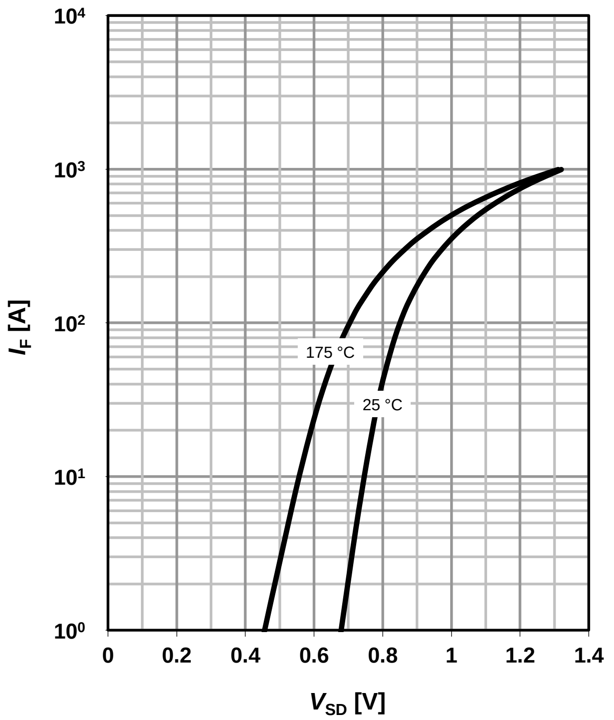
$C = f(V_{DS})$; $V_{GS} = 0$ V; $f = 1$ MHz



11 Typical forward diode characteristics

$I_F = f(V_{SD})$

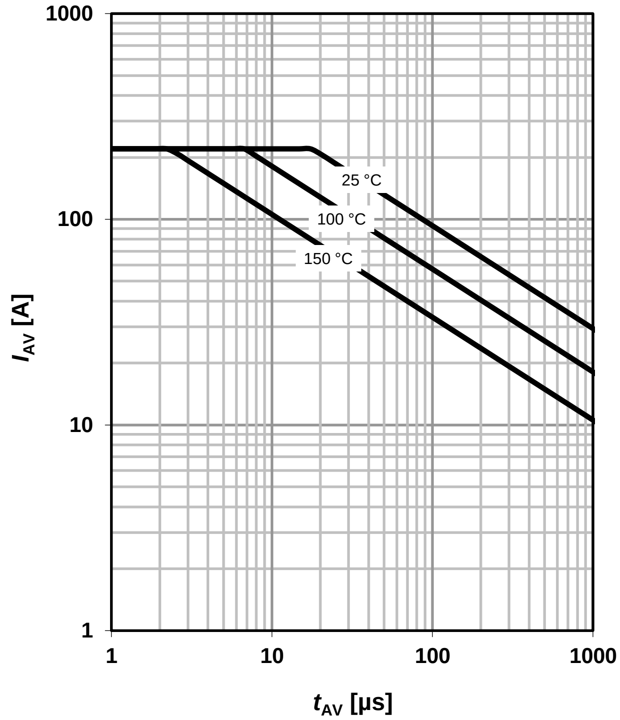
parameter: T_j



12 Typ. avalanche characteristics

$I_{AS} = f(t_{AV})$

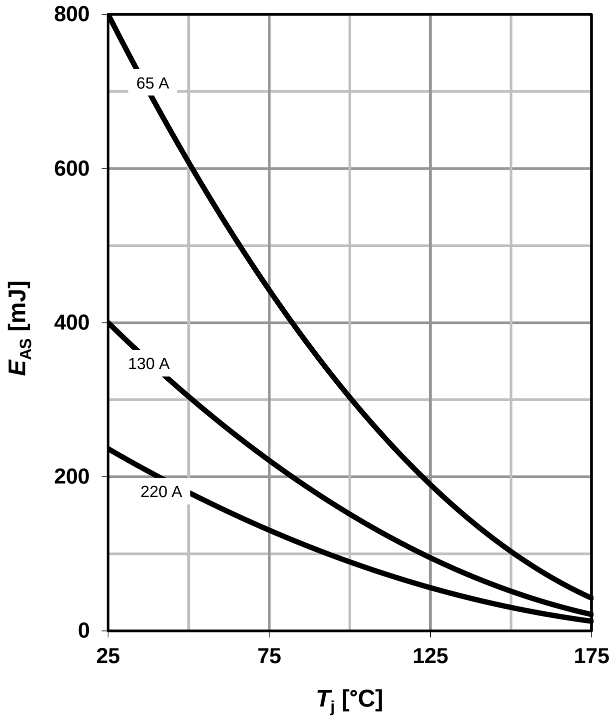
parameter: $T_{j(start)}$



13 Typical avalanche energy

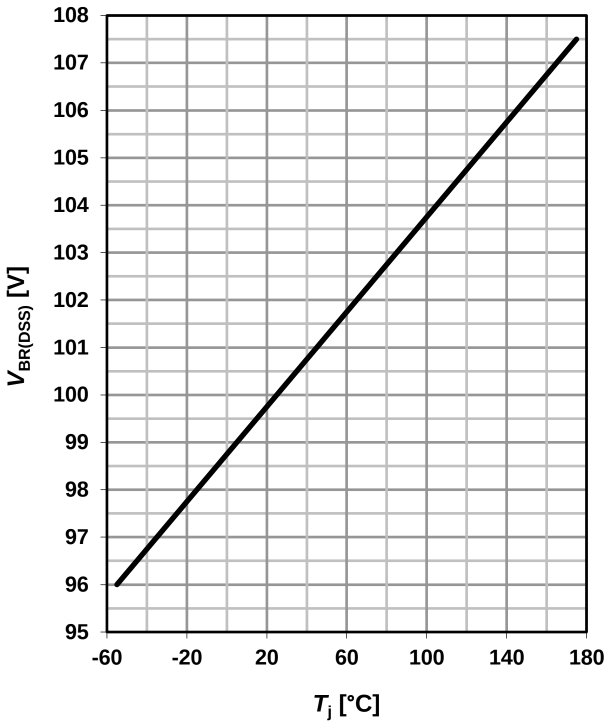
$E_{AS} = f(T_j)$

parameter: I_D



14 Drain-source breakdown voltage

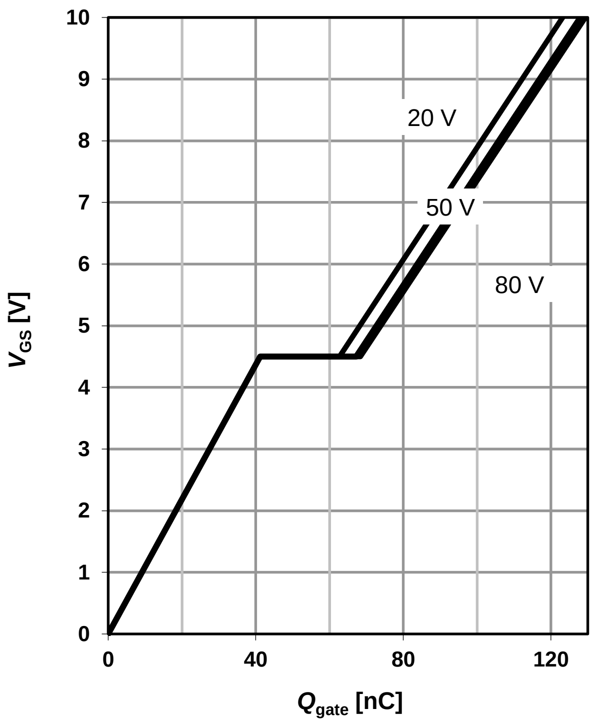
$V_{BR(DSS)} = f(T_j)$; $I_{D\_typ} = 1$ mA



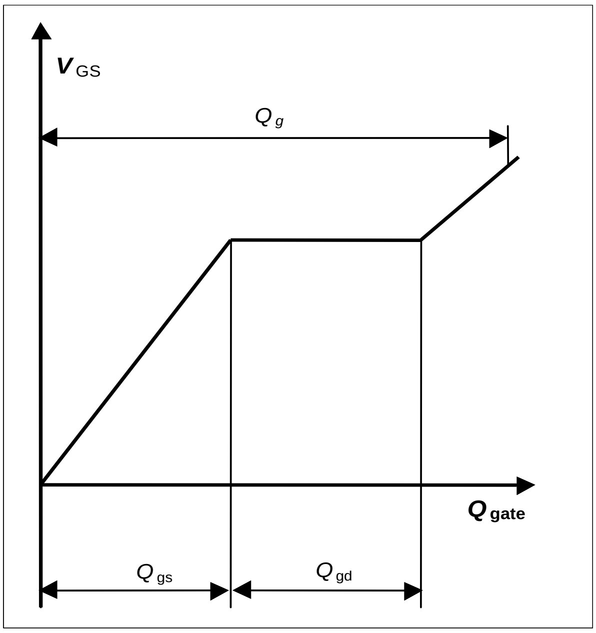
15 Typ. gate charge

$V_{GS} = f(Q_{gate})$; $I_D = 100$ A pulsed

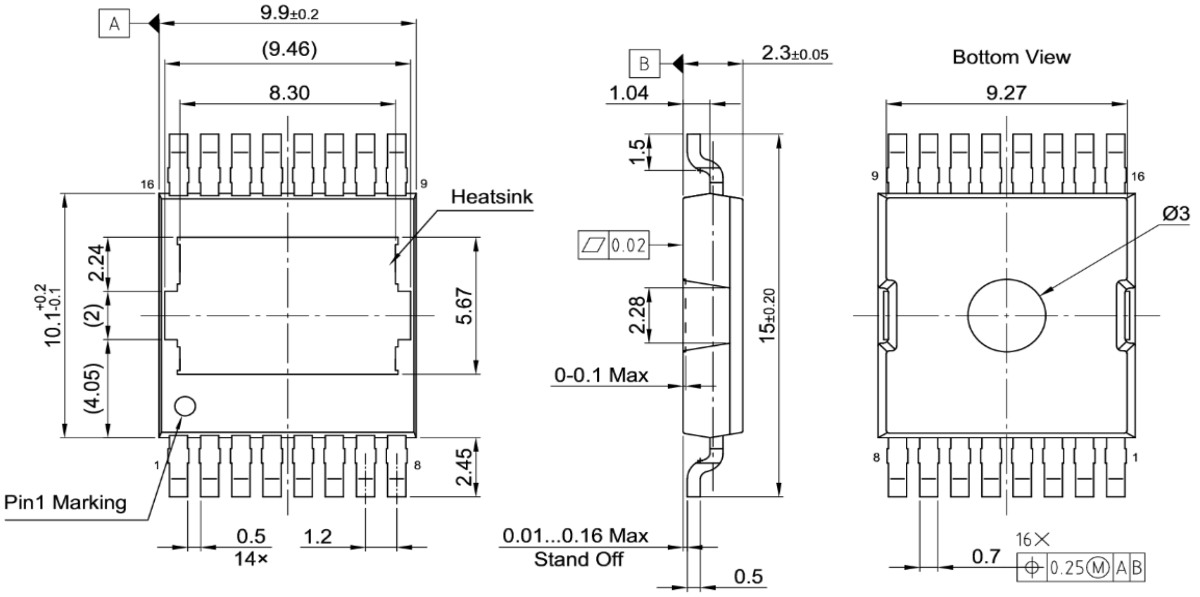
parameter: V_{DD}



16 Gate charge waveforms

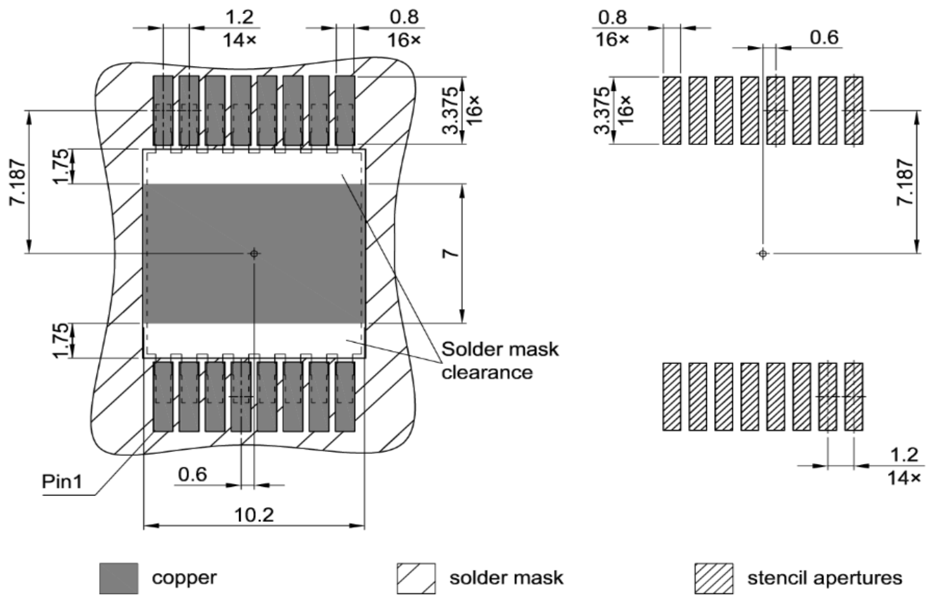


Package Outline



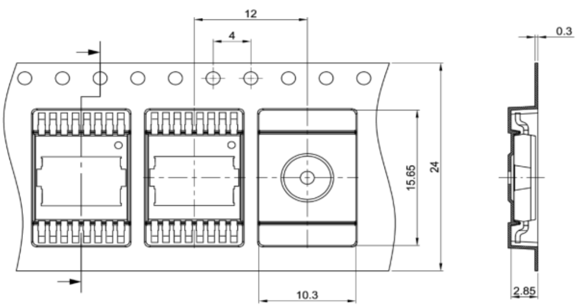
All metal surfaces tin plated except area of cut and heatsink
All dimensions are in units mm
The drawing is in compliance with ISO 128-30, Projection Method 1 [ ]

Footprint



Based on stencil thickness 0.20 mm
All dimensions are in units mm

Packaging



Published by
Infineon Technologies AG
81726 Munich, Germany

© Infineon Technologies AG 2020
All Rights Reserved.

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, 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.

Information

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, components may contain dangerous substances.
For information on the types in question, please contact the nearest Infineon Technologies Office.
Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

Revision History

Version	Date	Changes
Version 1.0	01.10.2020	Final Datasheet

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by Infineon ***manufacturer:***

Other Similar products are found below :

IRFD120 JANTX2N5237 BUK455-60A/B MIC4420CM-TR VN1206L NDP4060 SI4482DY IPS70R2K0CEAKMA1 SQD23N06-31L-GE3 TK16J60W,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 DMN1053UCP4-7 SQJ469EP-T1-GE3 NTE2384 DMC2700UDMQ-7 DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 DMP22D4UFO-7B DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 IRF40H233XTMA1 STU5N65M6 DMN6022SSD-13 DMN13M9UCA6-7 DMTH10H4M6SPS-13 DMN2990UFB-7B IPB80P04P405ATMA2 2N7002W-G MCAC30N06Y-TP MCQ7328-TP NTMC083NP10M5L BXP7N65D BXP4N65F AOL1454G WMJ80N60C4 BXP2N20L BXP2N65D BXT1150N10J BXT1700P06M TSM60NB380CP ROG RQ7L055BGTCR DMNH15H110SK3-13 SLF10N65ABV2 BSO203SP BSO211P IPA60R230P6