SIPMOS® Small-Signal-Transistor

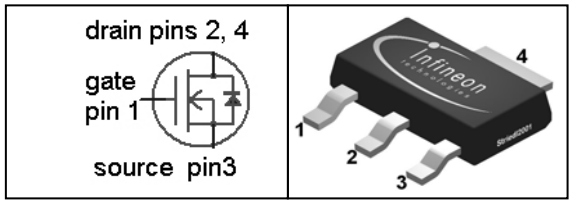
Features

- N-channel
- Depletion mode
- d*v*/d*t* rated
- Available with $V_{GS(th)}$ indicator on reel
- Pb-free lead plating; RoHS compliant

Product Summary

V_{DS}	240	V
$R_{DS(on),max}$	6	Ω
$I_{DSS,min}$	0.05	A

PG-SOT-223



Type	Package	Ordering Code	Tape and Reel Information	Marking
BSP129	PG-SOT-	Q67000-S073	E6327: 1000 pcs/reel	BSP129
BSP129	PG-SOT-223	Q67042 S4294	E6906: 1000 pcs/reel sorted in $V_{GS(th)}$ bands[1)]	BSP129

Maximum ratings, at T_j=25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_A=25 °C	0.35	A
		T_A=70 °C	0.28	
Pulsed drain current	$I_{D,pulse}$	T_A=25 °C	1.4	
Reverse diode d*v*/d*t*	d*v*/d*t*	I_D=0.36 A, V_{DS}=192 V, d*i*/d*t*=200 A/µs, $T_{j,max}$=150 °C	6	kV/µs
Gate source voltage	V_{GS}		±20	V
ESD sensitivity (HBM) as per MIL-STD 883			Class 1	
Power dissipation	P_{tot}	T_A=25 °C	1.8	W
Operating and storage temperature	T_j, T_{stg}		-55 ... 150	°C
IEC climatic category; DIN IEC 68-1			55/150/56	

[1)] see table on next page and diagram 11

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - soldering point (pin 4)	R_{thJS}		-	-	25	K/W
SMD version, device on PCB	R_{thJA}	minimal footprint	-	-	115	
		6 cm^2 cooling area[1)]	-	-	70	
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=-3 V, I_D=250 µA	240	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=3 V, I_D=108 µA	-2.1	-1.4	-1	
Drain-source cutoff current	$I_{D(off)}$	V_{DS}=240 V, V_{GS}=-3 V, T_j=25 °C	-	-	0.1	µA
		V_{DS}=240 V, V_{GS}=-3 V, T_j=125 °C	-	-	10	
Gate-source leakage current	I_{GSS}	V_{GS}=20 V, V_{DS}=0 V	-	-	10	nA
On-state drain current	I_{DSS}	V_{GS}=0 V, V_{DS}=10 V	50	-	-	mA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=0 V, I_D=25 mA	-	6.5	20	Ω
		V_{GS}=10 V, I_D=0.35 A	-	4.2	6.0	
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=0.28 A	0.18	0.36	-	S
Threshold voltage $V_{GS(th)}$ sorted in bands[3)]						
J	$V_{GS(th)}$	V_{DS}=3 V, I_D=108 µA	-1.2	-	-1	V
K			-1.35	-	-1.15	
L			-1.5	-	-1.3	
M			-1.65	-	-1.45	
N			-1.8	-	-1.6	

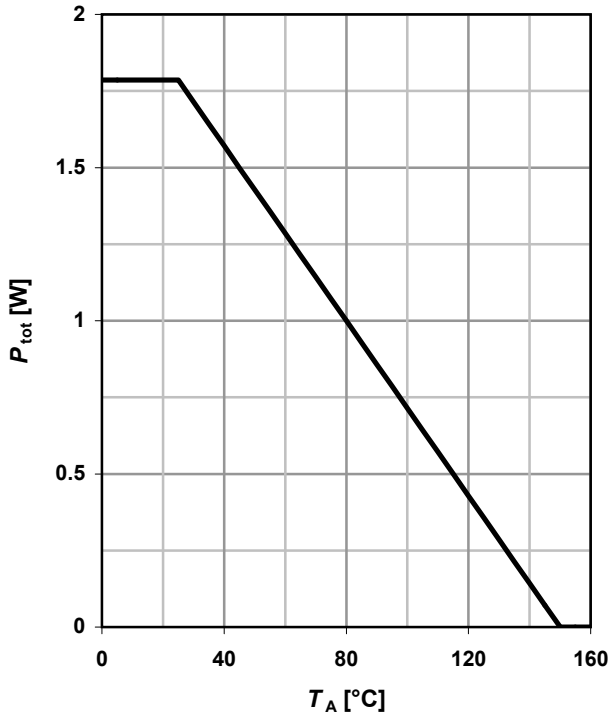
[2)] Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm^2 (single layer, 70 µm thick) copper area for drain connection. PCB is vertical in still air.

[3)] Each reel contains transistors out of one band whose identifying letter is printed on the reel label. A specific band cannot be ordered separately.

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics						
Input capacitance	C_{iss}	V_{GS}=-3 V, V_{DS}=25 V, f=1 MHz	-	82	108	pF
Output capacitance	C_{oss}		-	12	16	
Reverse transfer capacitance	C_{rss}		-	6	10	
Turn-on delay time	$t_{d(on)}$	V_{DD}=120 V, V_{GS}=-2...5 V, I_D=0.2 A, R_G=7.6 Ω	-	4.4	6.6	ns
Rise time	t_r		-	4.1	6.2	
Turn-off delay time	$t_{d(off)}$		-	22	33	
Fall time	t_f		-	35	53	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=192 V, I_D=0.2 A, V_{GS}=-3 to 5 V	-	0.24	0.36	nC
Gate to drain charge	Q_{gd}		-	1.7	2.6	
Gate charge total	Q_g		-	3.8	5.7	
Gate plateau voltage	$V_{plateau}$		-	0.37	-	V
Reverse Diode						
Diode continous forward current	I_S	T_A=25 °C	-	-	0.35	A
Diode pulse current	$I_{S,pulse}$		-	-	1.4	
Diode forward voltage	V_{SD}	V_{GS}=-3 V, I_F=0.35 A, T_j=25 °C	-	0.79	1.2	V
Reverse recovery time	t_{rr}	V_R=120 V, I_F=0.2 A, di_F/dt=100 A/µs	-	53	80	ns
Reverse recovery charge	Q_{rr}		-	65	97	nC

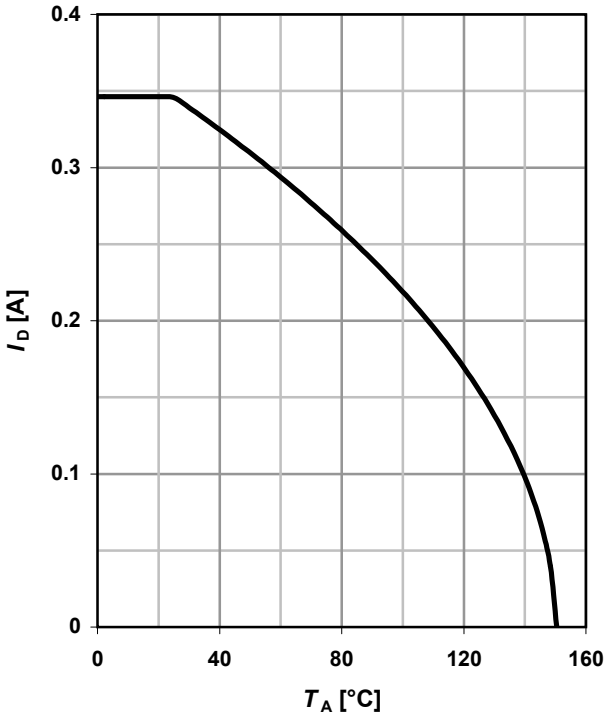
1 Power dissipation

$P_{tot}=f(T_A)$



2 Drain current

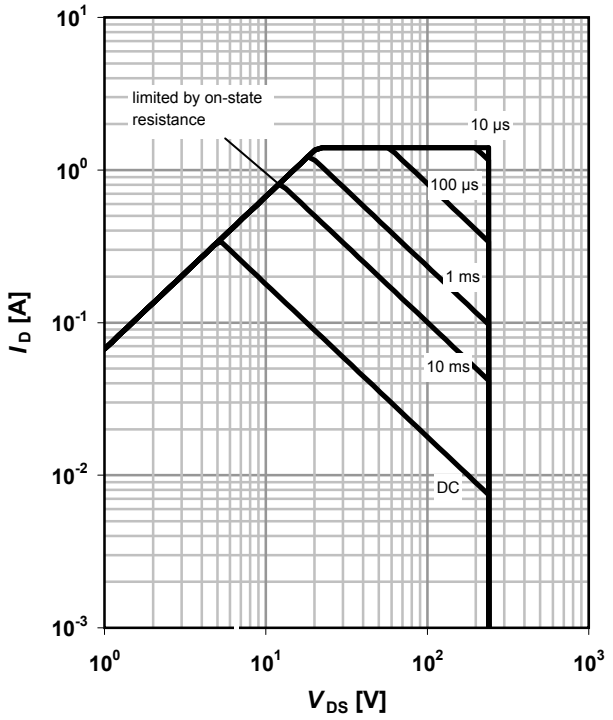
$I_D=f(T_A)$; $V_{GS}\geq 10$ V



3 Safe operating area

$I_D=f(V_{DS})$; $T_A=25$ °C; $D=0$

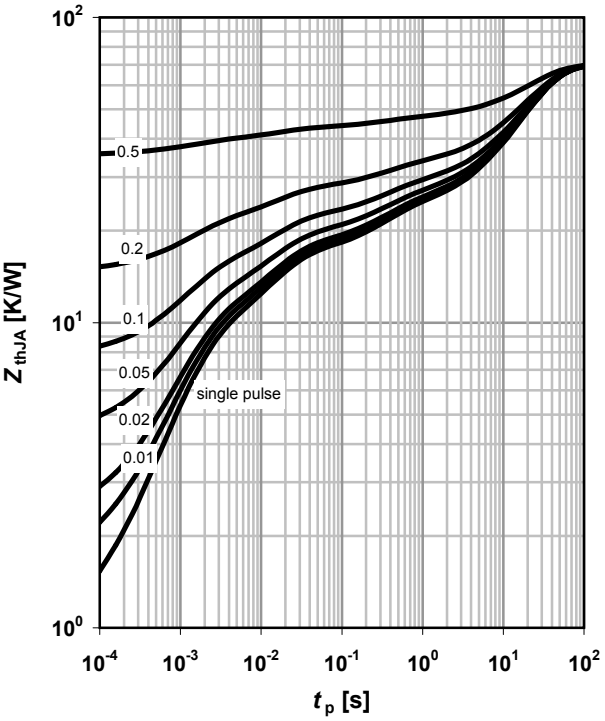
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJA}=f(t_p)$

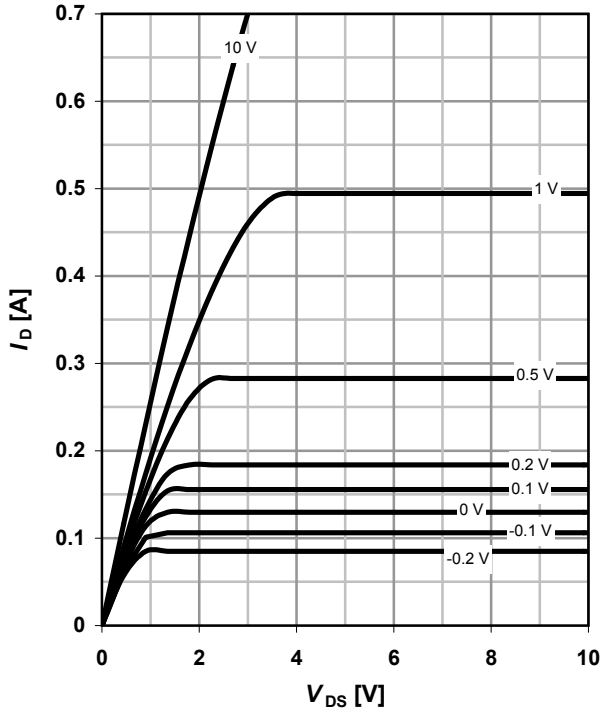
parameter: $D=t_p/T$



5 Typ. output characteristics

I_D=f(V_{DS}); T_j=25 °C

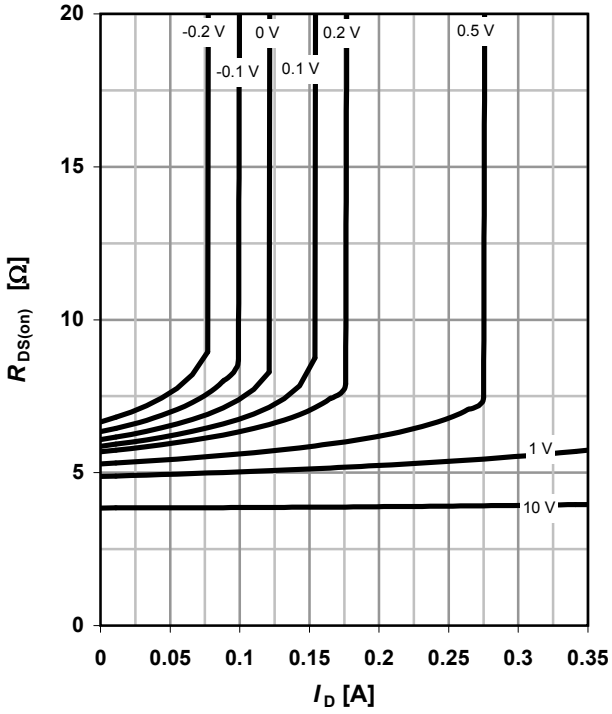
parameter: V_{GS}



6 Typ. drain-source on resistance

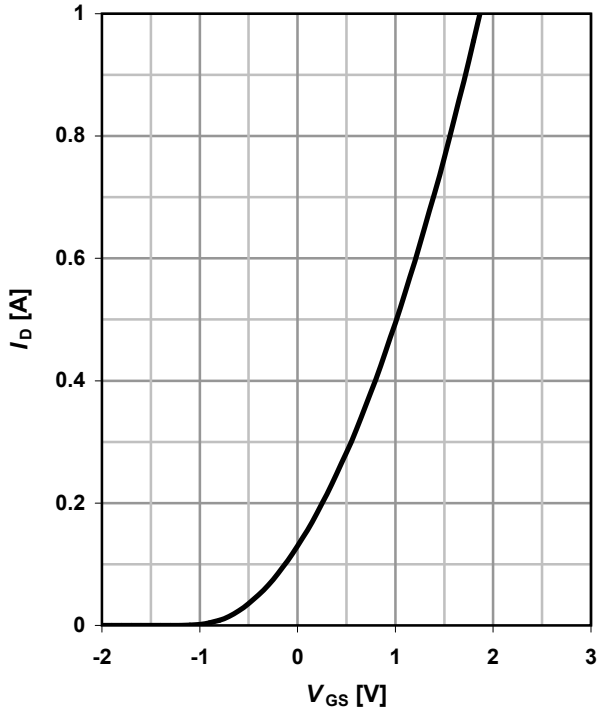
$R_{DS(on)}$=f(I_D); T_j=25 °C

parameter: V_{GS}



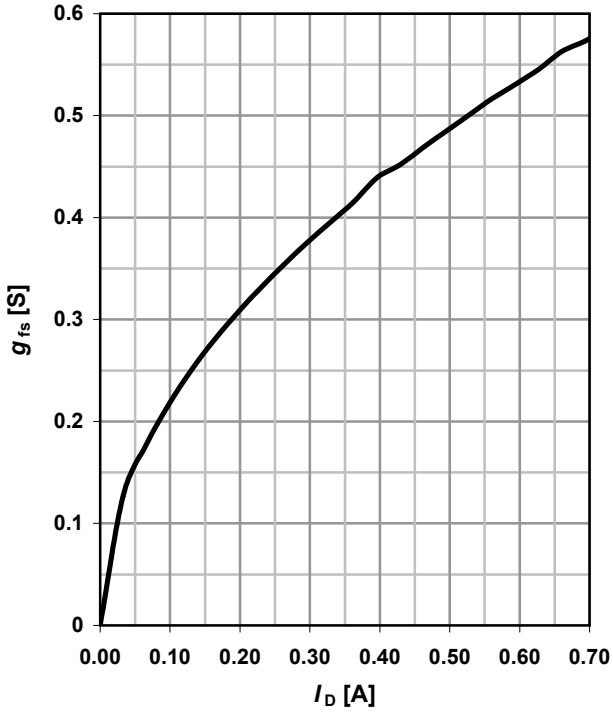
7 Typ. transfer characteristics

I_D=f(V_{GS}); $|V_{DS}|>2|I_D|R_{DS(on)max}$



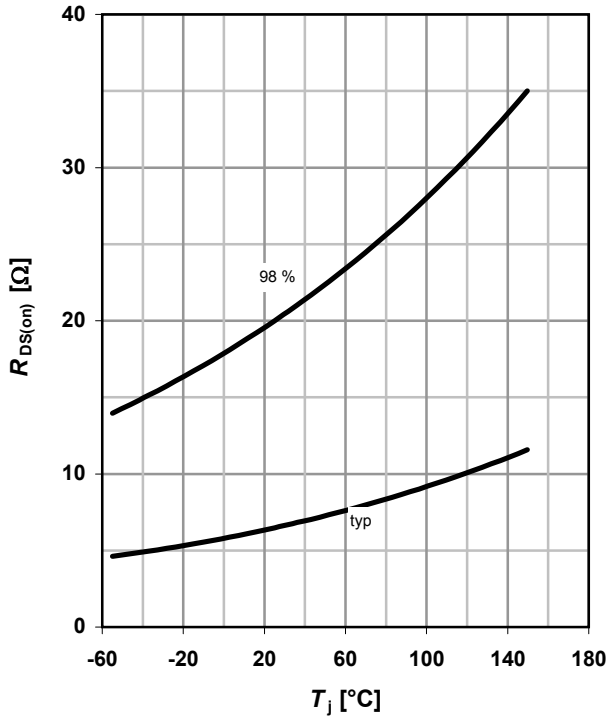
8 Typ. forward transconductance

g_{fs}=f(I_D); T_j=25 °C



9 Drain-source on-state resistance

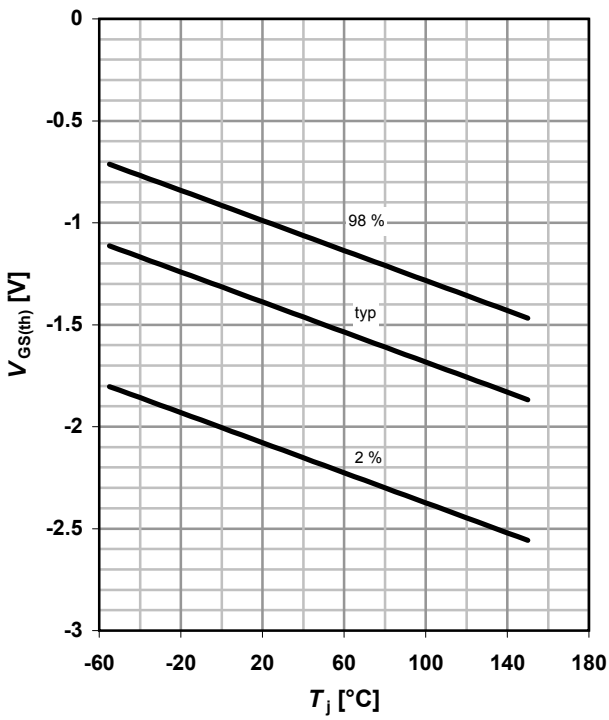
$R_{DS(on)}$=f(T_j); I_D=0.025 A; V_{GS}=0 V



10 Typ. gate threshold voltage

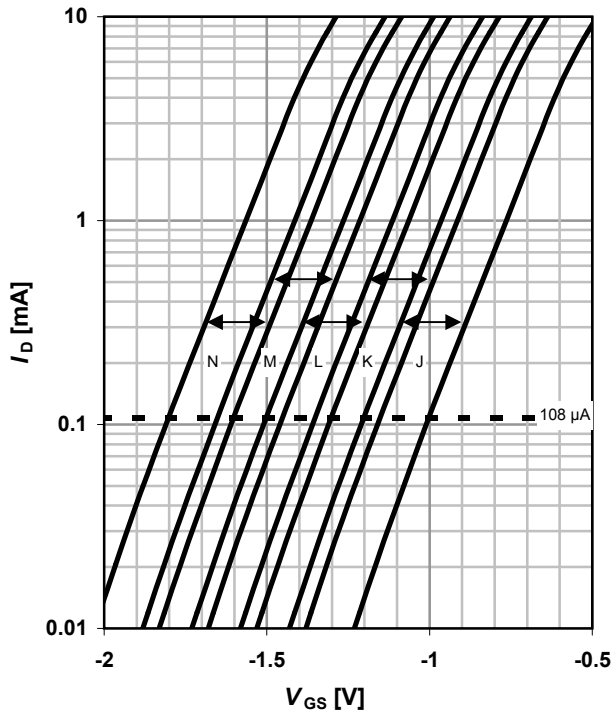
$V_{GS(th)}$=f(T_j); V_{DS}=3 V; I_D=108 µA

parameter: I_D



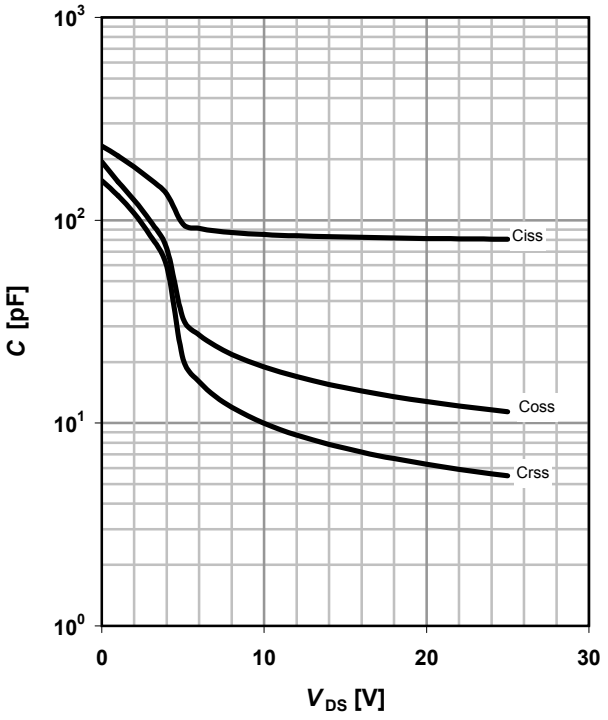
11 Threshold voltage bands

I_D=f(V_{GS}); V_{DS}=3 V; T_j=25 °C



12 Typ. capacitances

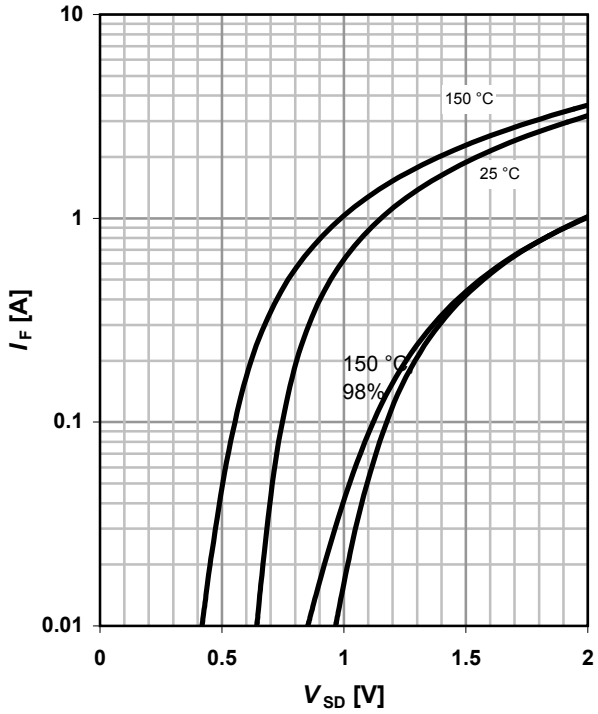
C=f(V_{DS}); V_{GS}=-3 V; f=1 MHz



13 Forward characteristics of reverse diode

$I_F=f(V_{SD})$

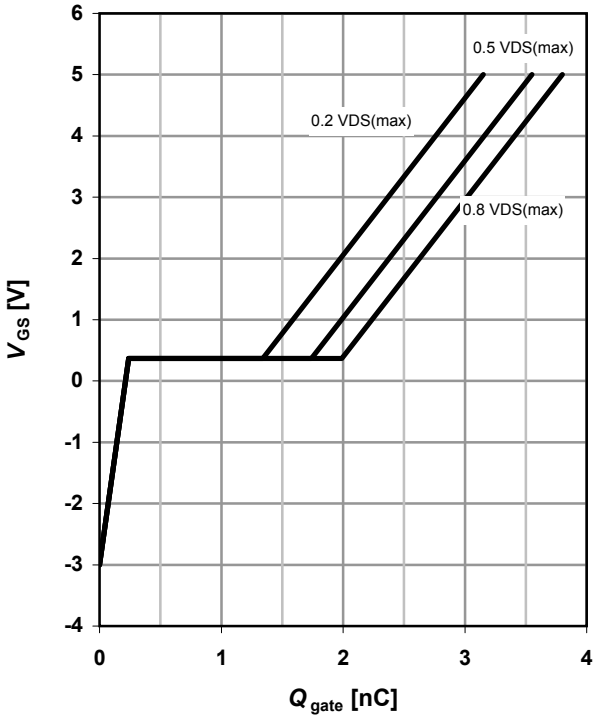
parameter: T_j



15 Typ. gate charge

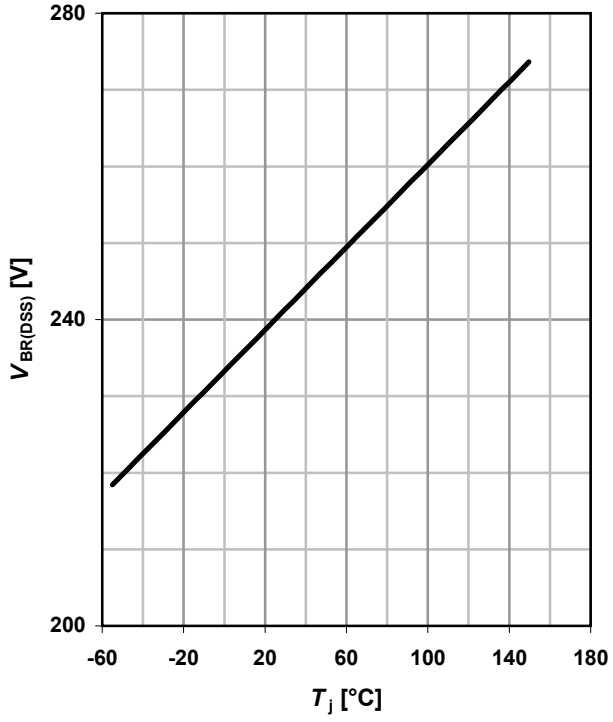
$V_{GS}=f(Q_{gate})$; I_D=0.2 A pulsed

parameter: V_{DD}

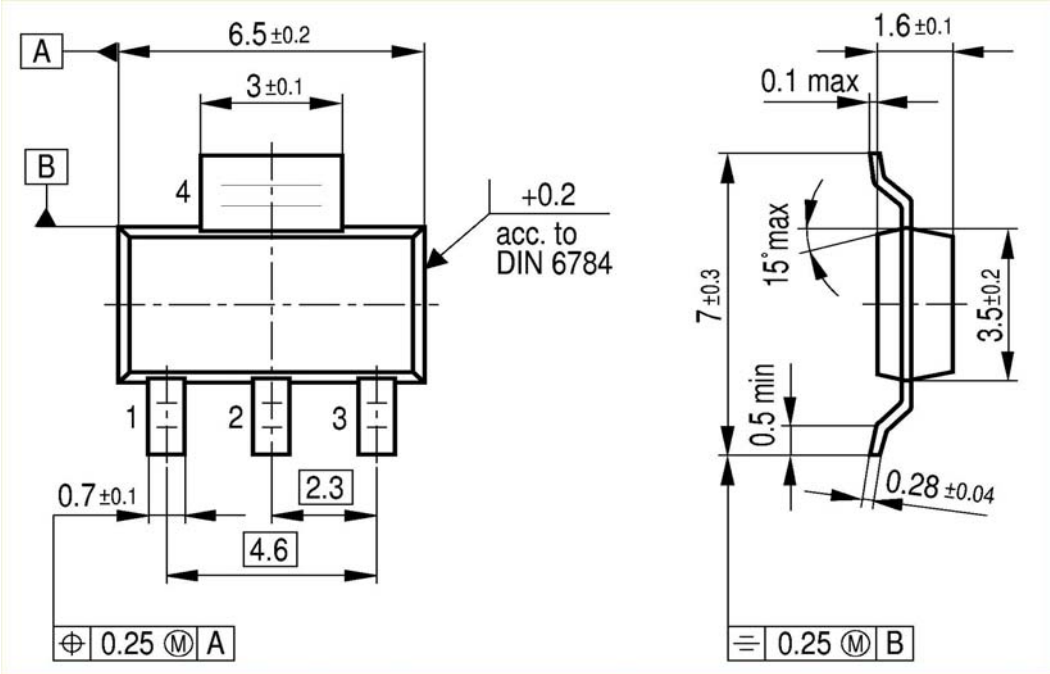


16 Drain-source breakdown voltage

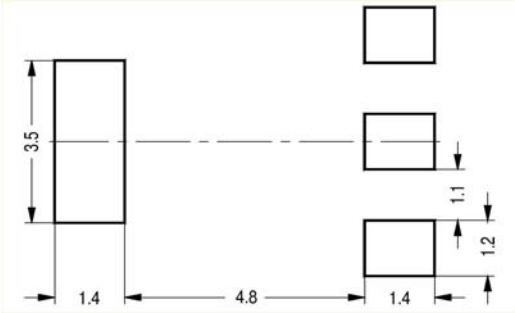
$V_{BR(DSS)}=f(T_j)$; I_D=250 µA



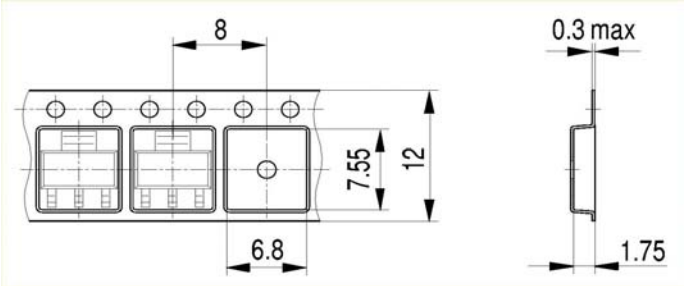
Package Outline:



Footprint:



Packaging:



Dimensions in mm

Published by
Infineon Technologies AG
Bereich Kommunikation
St.-Martin-Straße 53
D-81541 München

Attention please!
The information herein is given to describe certain components and shall not be considered as warranted characteristics.

Terms of delivery and rights to technical change reserved.

We hereby disclaim any and all warranties, including but not limited to warranties of non-infringement, regarding circuits, descriptions and charts stated herein.

Infineon Technologies is an approved CECC manufacturer.

Information
For further information on technology, delivery terms and conditions and prices, please contact your nearest Infineon Technologies office in Germany or our Infineon Technologies representatives worldwide (see address list).

Warnings
Due to technical requirements, components may contain dangerous substances.
For information on the types in question, please contact your nearest Infineon Technologies office.

Infineon Technologies' components may only be used in life-support devices or systems with the expressed 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.