SIPMOS® Small-Signal-Transistor

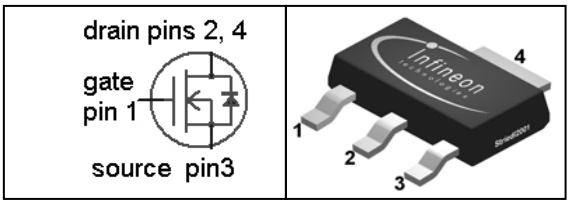
Features

- N-channel
- Depletion mode
- d*v*/d*t* rated

Product Summary

V_{DS}	600	V
$R_{DS(on),max}$	60	Ω
$I_{DSS,min}$	0.02	A

SOT-223



Type	Package	Ordering Code	Tape and Reel Information	Marking
BSP135	SOT-223	Q62702-S655	E6327: 1000 pcs/reel	BSP135

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_A=25 °C	0.12	A
		T_A=70 °C	0.10	
Pulsed drain current	$I_{D,pulse}$	T_A=25 °C	0.48	
Reverse diode d*v*/d*t*	d*v*/d*t*	I_D=0.12 A, V_{DS}=20 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	

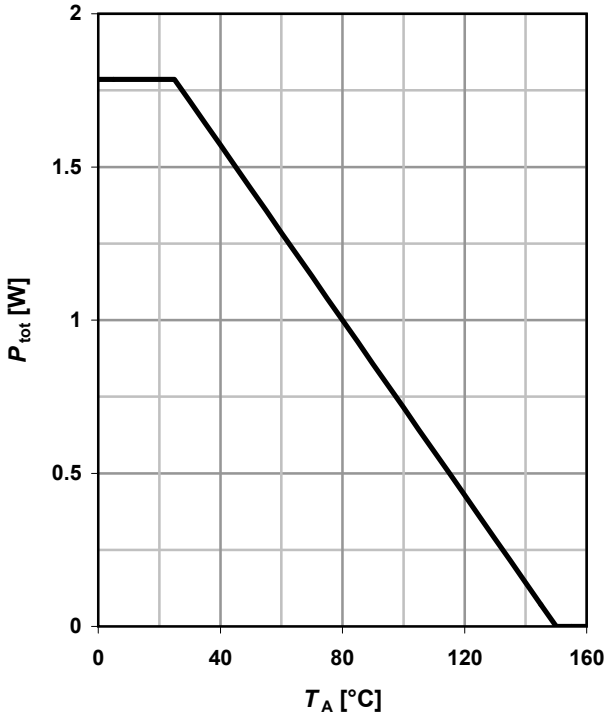
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - soldering point (pin 4)	R_{thJS}		-	-	25	K/W
SMD version, device on PCB	R_{thJA}	minimal footprint	-	-	115	
		6 cm^2 cooling area[1)]	-	-	70	
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=-3 V, I_D=250 µA	600	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=3 V, I_D=94 µA	-2.1	-1.4	-1	
Drain-source cutoff current	$I_{D(off)}$	V_{DS}=600 V, V_{GS}=-3 V, T_j=25 °C	-	-	0.1	µA
		V_{DS}=600 V, V_{GS}=-3 V, T_j=125 °C	-	-	10	
Gate-source leakage current	I_{GSS}	V_{GS}=20 V, V_{DS}=0 V	-	-	100	nA
On-state drain current	I_{DSS}	V_{GS}=0 V, V_{DS}=10 V	20	-	-	mA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=0 V, I_D=0.01A	-	30	60	Ω
		V_{GS}=10 V, I_D=0.12 A	-	25	45	
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=0.1 A	0.08	0.16	-	S

[1)] 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.

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	-	98	146	pF
Output capacitance	C_{oss}		-	8.5	13	
Reverse transfer capacitance	C_{rss}		-	3.4	5.1	
Turn-on delay time	$t_{d(on)}$	V_{DD}=300 V, V_{GS}=-3...5 V, I_D=0.1 A, R_G=6 Ω	-	5.4	8.1	ns
Rise time	t_r		-	5.6	8.4	
Turn-off delay time	$t_{d(off)}$		-	28	42	
Fall time	t_f		-	182	273	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=400 V, I_D=0.1 A, V_{GS}=-3 to 5 V	-	0.24	0.36	nC
Gate to drain charge	Q_{gd}		-	2.0	3.0	
Gate charge total	Q_g		-	3.7	4.9	
Gate plateau voltage	$V_{plateau}$		-	0.20	-	V
Reverse Diode						
Diode continous forward current	I_S	T_A=25 °C	-	-	0.12	A
Diode pulse current	$I_{S,pulse}$		-	-	0.48	
Diode forward voltage	V_{SD}	V_{GS}=-3 V, I_F=0.12 A, T_j=25 °C	-	0.78	1.2	V
Reverse recovery time	t_{rr}	V_R=300 V, I_F=0.1 A, di_F/dt=100 A/µs	-	87	130	ns
Reverse recovery charge	Q_{rr}		-	70	104	nC

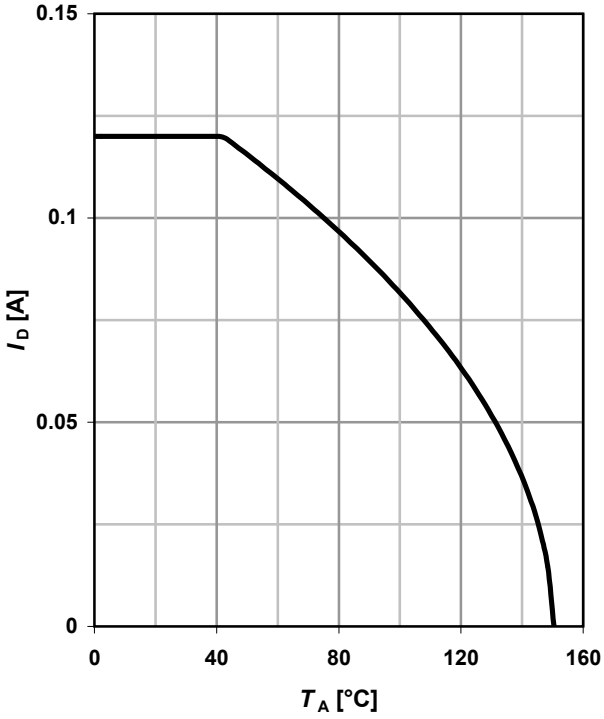
1 Power dissipation

P_{tot}=f(T_A)



2 Drain current

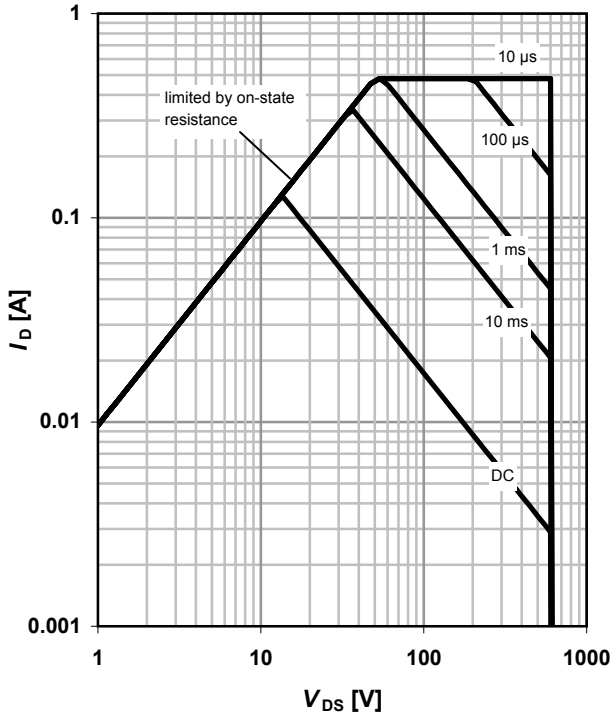
I_D=f(T_A); V_{GS}≥10 V



3 Safe operation area

I_D=f(V_{DS}); T_A=25 °C; D=0

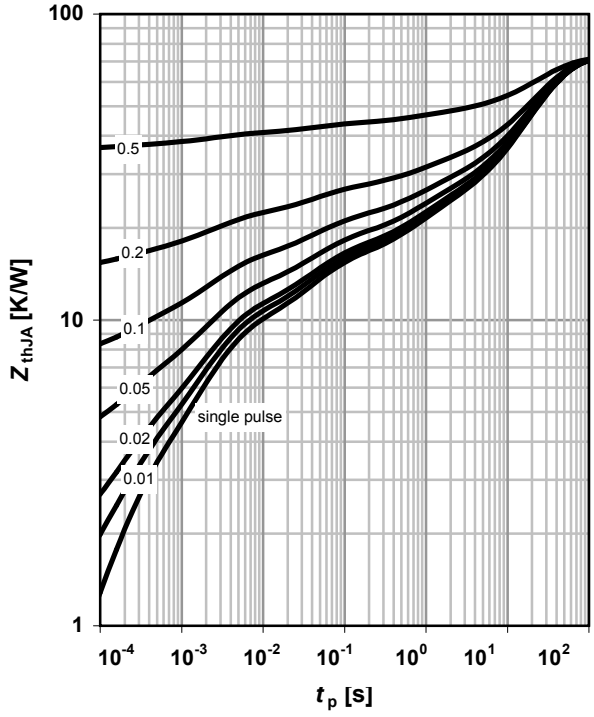
parameter: t_p



4 Max. transient thermal impedance

Z_{thJA}=f(t_p)

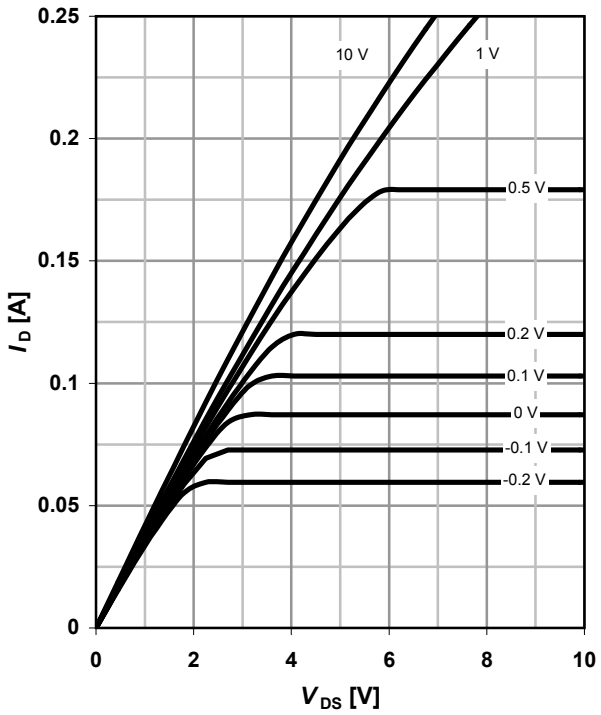
parameter: D=t_p/T



5 Typ. output characteristics

I_D=f(V_{DS}); T_j=25 °C

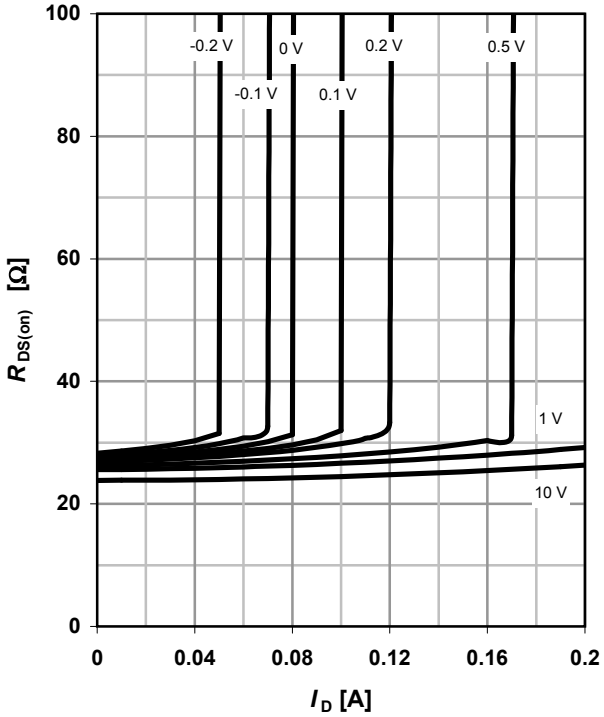
parameter: V_{GS}



6 Typ. drain-source on resistance

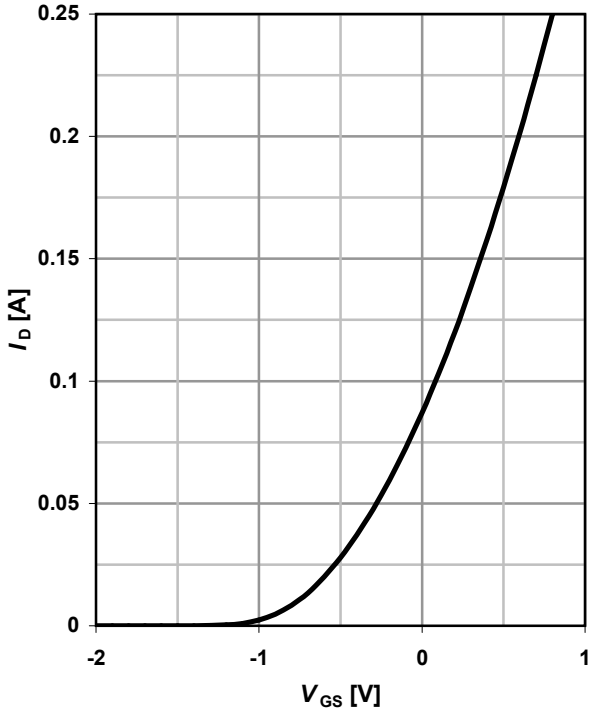
$R_{DS(on)}$=f(I_D); T_j=25 °C

parameter: V_{GS}



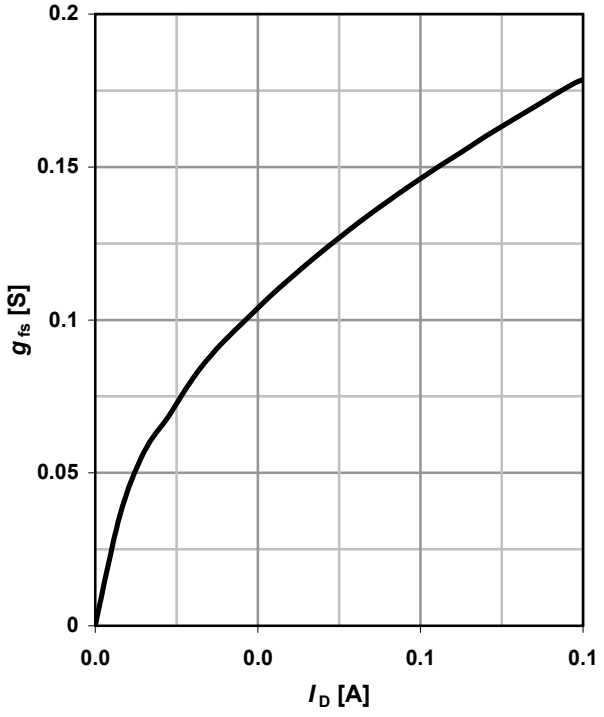
7 Typ. transfer characteristics

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



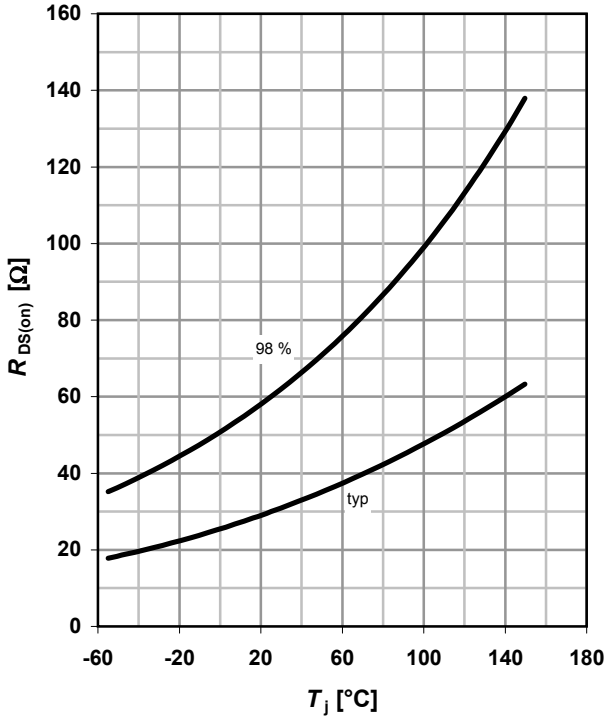
8 Typ. forward transconductance

g_{fs}=f(I_D); T_j=25 °C



9 Drain-source on-state resistance

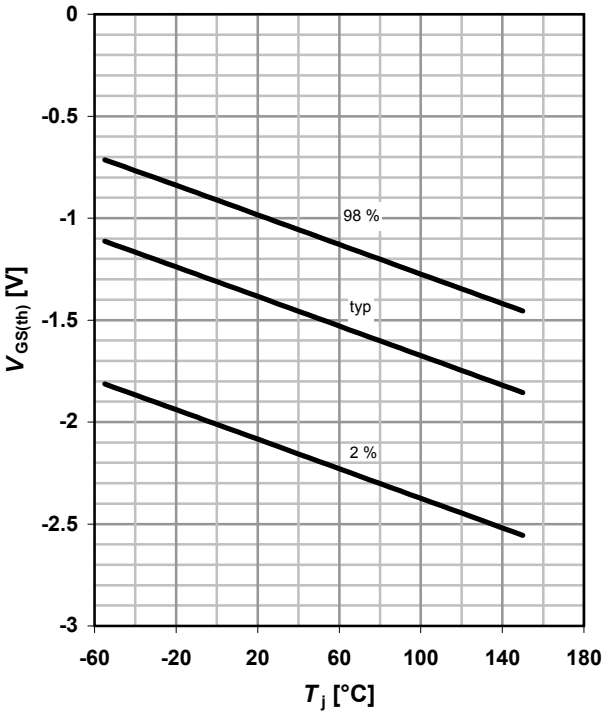
$R_{DS(on)}$=f(T_j); I_D=0.01 A; V_{GS}=0 V



10 Typ. gate threshold voltage

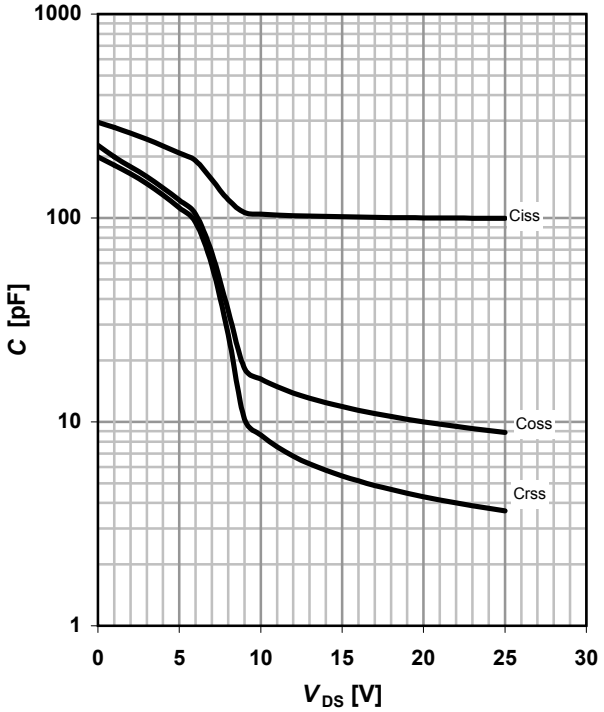
$V_{GS(th)}$=f(T_j); V_{DS}=3 V; I_D=94 µA

parameter: I_D



11 Typ. Capacitances

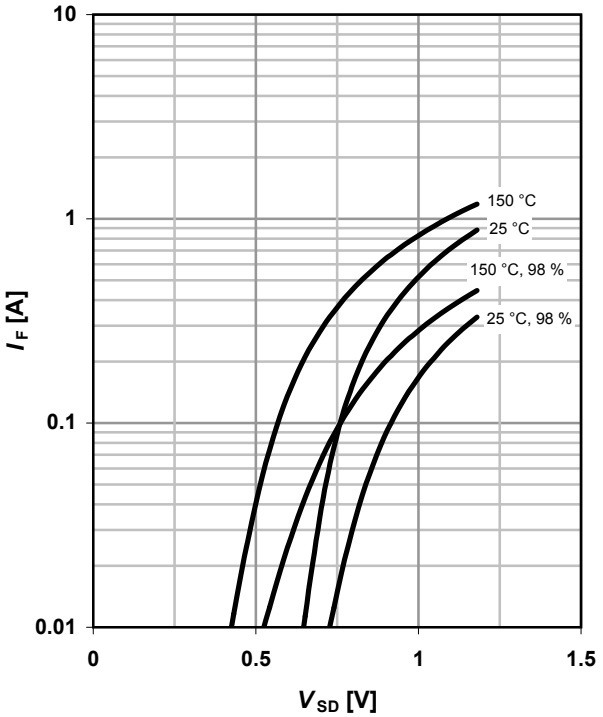
C=f(V_{DS}); V_{GS}=-3 V; f=1 MHz



12 Forward characteristics of reverse diode

I_F=f(V_{SD})

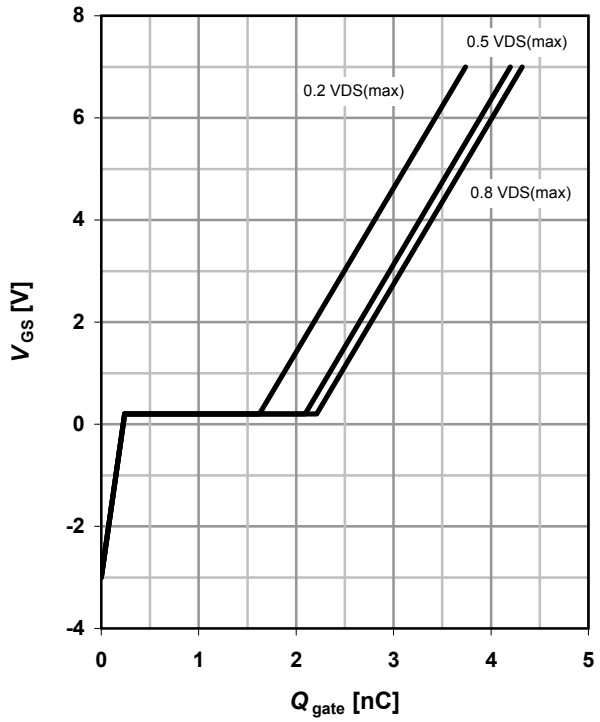
parameter: T_j



14 Typ. gate charge

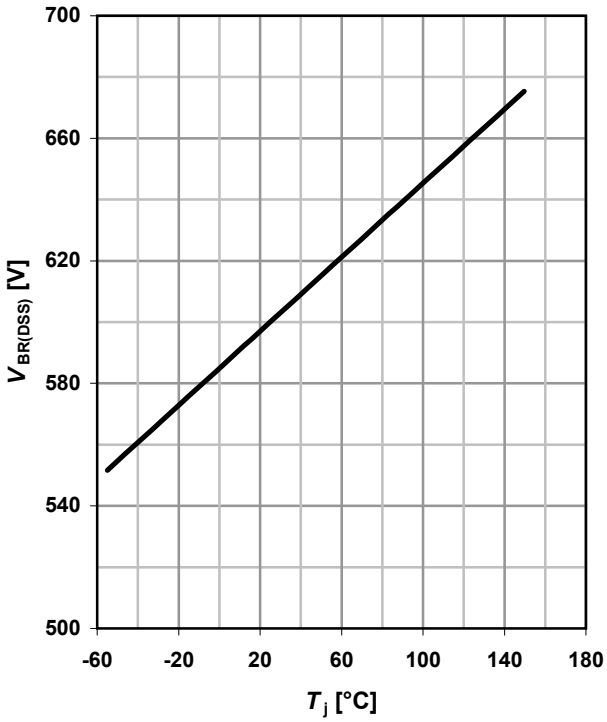
V_{GS}=f(Q_{gate}); I_D=0.1 A pulsed

parameter: V_{DD}

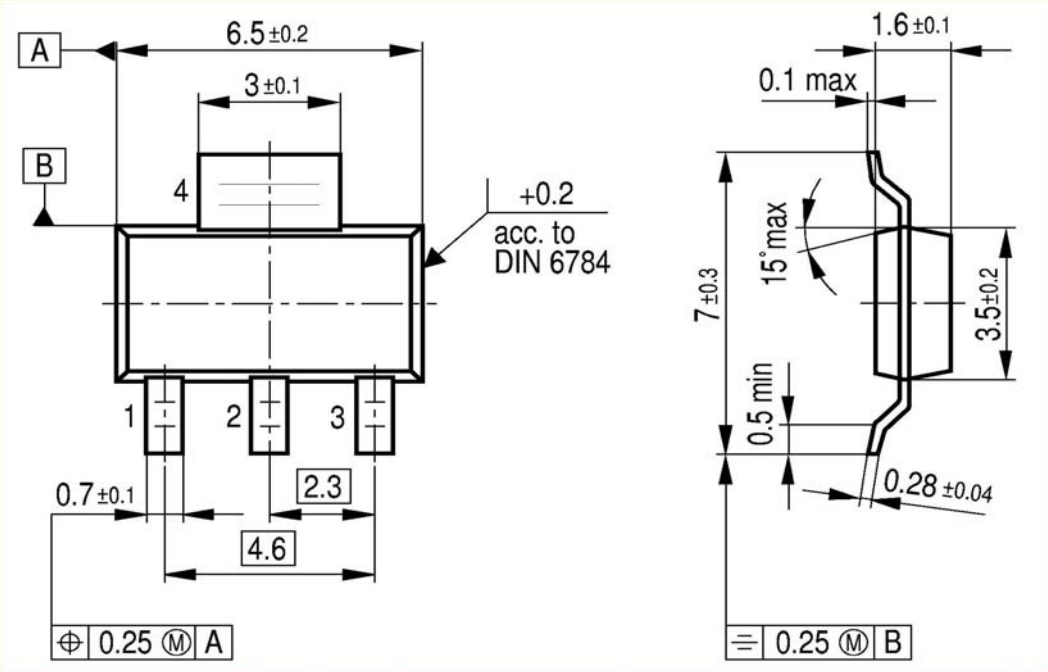


15 Drain-source breakdown voltage

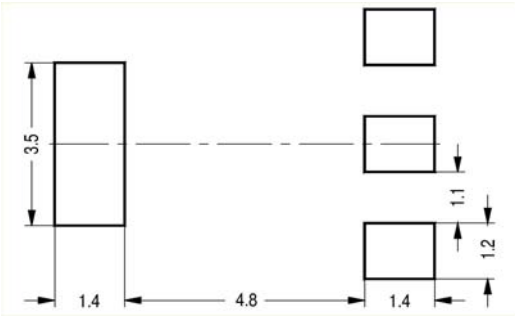
$V_{BR(DSS)}$=f(T_j); I_D=250 µA



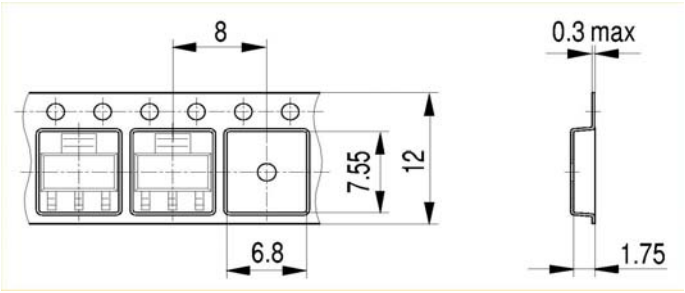
Package Outline:



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 started 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.