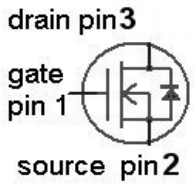
SIPMOS® Small-Signal-Transistor

Features

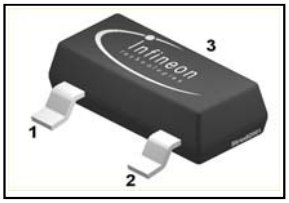
- N-channel
- Depletion mode
- d*v*/d*t* rated
- Available with $V_{GS(th)}$ indicator on reel
- Pb-free lead plating; RoHS compliant
- Qualified according to AEC Q101
- Halogen-free according to IEC61249-2-21

Product Summary

V_{DS}	600	V
$R_{DS(on),max}$	700	Ω
$I_{DSS,min}$	0.007	A



PG-SOT-23



Type	Package	Pb-free	Tape and Reel Information	Marking
BSS126	PG-SOT-23	Yes	H6327: 3000 pcs/reel	SHs
BSS126	PG-SOT-23	Yes	H6906: 3000 pcs/reel sorted in $V_{GS(th)}$ bands [1)]	SHs

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_A=25 °C	0.021	A
		T_A=70 °C	0.017	
Pulsed drain current	$I_{D,pulse}$	T_A=25 °C	0.085	
Reverse diode d*v*/d*t*	d*v*/d*t*	I_D=0.016 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 JESD22-A114			Class 0 (0 >250 V)	
Power dissipation	P_{tot}	T_A=25 °C	0.50	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

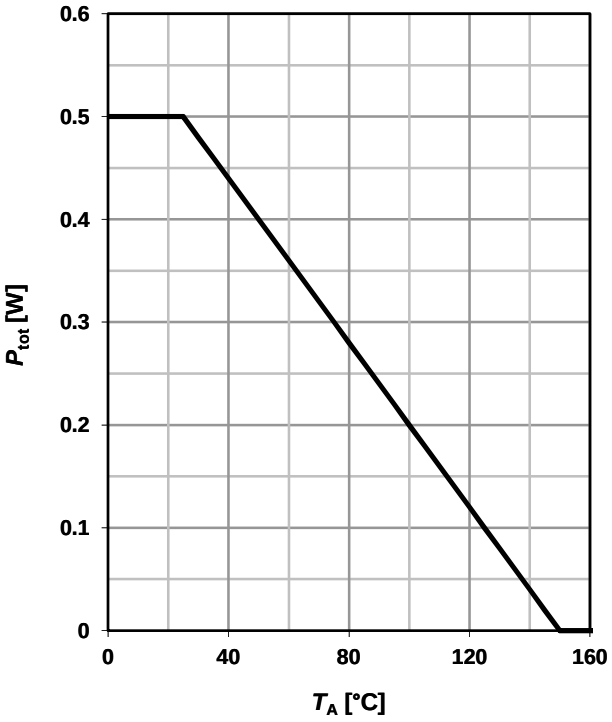
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - ambient	R_{thJA}	minimal footprint	-	-	250	K/W
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=-5 V, I_D=250 µA	600	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=3 V, I_D=8 µA	-2.7	-2.0	-1.6	
Drain-source cutoff current	$I_{D(off)}$	V_{DS}=600 V, V_{GS}=-5 V, T_j=25 °C	-	-	0.1	µA
		V_{DS}=600 V, V_{GS}=-5 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}=25 V	7	-	-	mA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=0 V, I_D=3 mA	-	320	700	Ω
		V_{GS}=10 V, I_D=16 mA	-	280	500	
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=0.01 A	0.008	0.017	-	S
Threshold voltage $V_{GS(th)}$ sorted in bands[2)]						
J	$V_{GS(th)}$	V_{DS}=3 V, I_D=8 µA	-1.8	-	-1.6	V
K			-1.95	-	-1.75	
L			-2.1	-	-1.9	
M			-2.25	-	-2.05	
N			-2.4	-	-2.2	

[2)] 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						
I_D=f(V_{GS}); V_{DS}=3 V; T_j=25 °C	C_{iss}	V_{GS}=-5 V, V_{DS}=25 V, f=1 MHz	-	21	28	pF
Output capacitance	C_{oss}		-	2.4	3.2	
Reverse transfer capacitance	C_{rss}		-	1.0	1.5	
Turn-on delay time	$t_{d(on)}$	V_{DD}=300 V, V_{GS}=-3…7 V, I_D=0.01 A, R_G=6 Ω	-	6.1	9.2	ns
Rise time	t_r		-	9.7	14.5	
Turn-off delay time	$t_{d(off)}$		-	14	21	
Fall time	t_f		-	115	170	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=400 V, I_D=10 mA, V_{GS}=-3 to 5 V	-	0.05	0.08	nC
Gate to drain charge	Q_{gd}		-	1.2	1.8	
Gate charge total	Q_g		-	1.4	2.1	
Gate plateau voltage	$V_{plateau}$		-	0.10	-	V
Reverse Diode						
Diode continous forward current	I_S	T_A=25 °C	-	-	0.016	A
Diode pulse current	$I_{S,pulse}$		-	-	0.064	
Diode forward voltage	V_{SD}	V_{GS}=-5 V, I_F=16 mA, T_j=25 °C	-	0.81	1.2	V
Reverse recovery time	t_{rr}	V_R=300 V, I_F=0.01 A, di_F/dt=100 A/µs	-	160	240	ns
Reverse recovery charge	Q_{rr}		-	13.2	19.8	nC

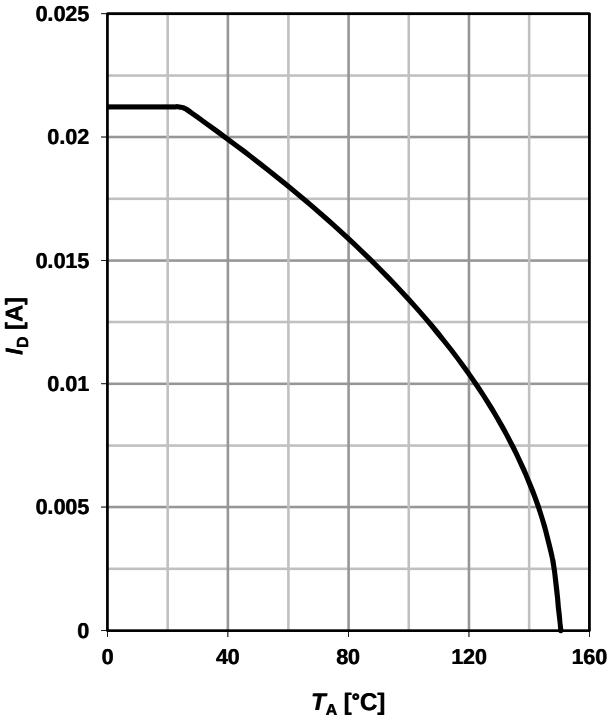
1 Power dissipation

$P_{tot}=f(T_A)$



2 Drain current

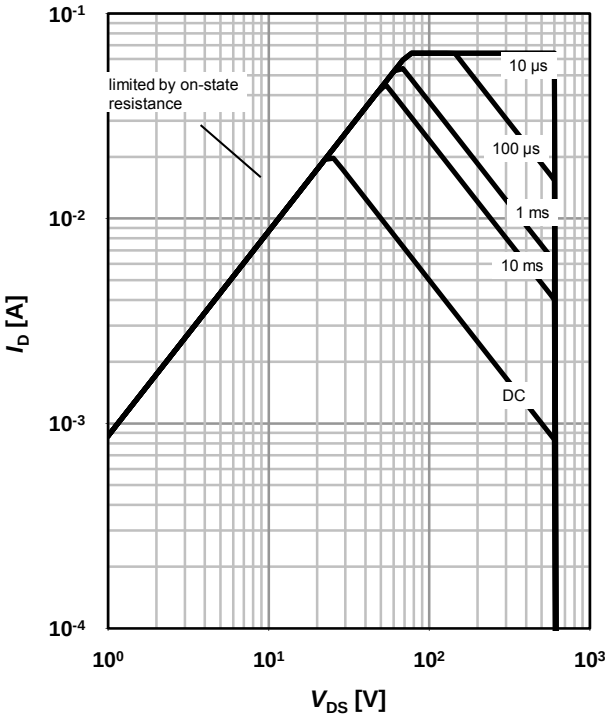
$I_D=f(T_A)$; $V_{GS}\geq 10$ V



3 Safe operating area

$I_D=f(V_{GS})$; V_{DS}=3 V; T_j=25 °C

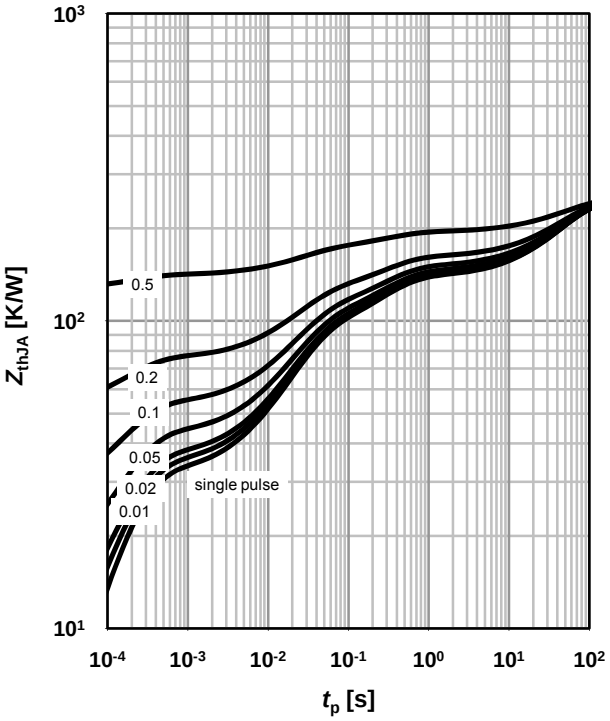
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJA}=f(t_p)$

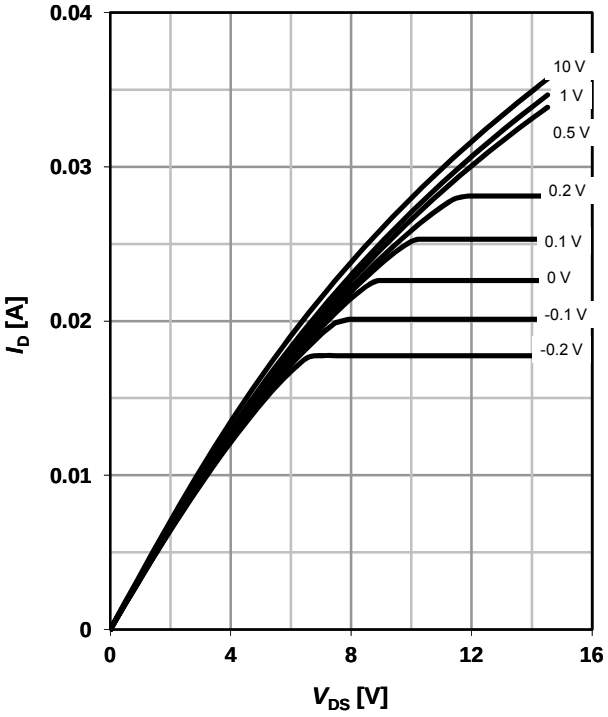
parameter: $D=t_p/T$



5 Typ. output characteristics

I_D=f(V_{DS}); T_j=25 °C

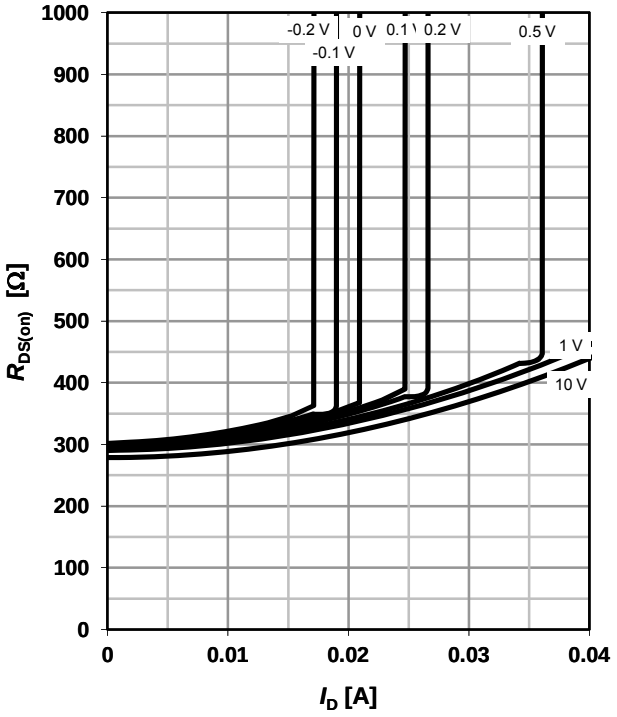
parameter: V_{GS}



6 Typ. drain-source on resistance

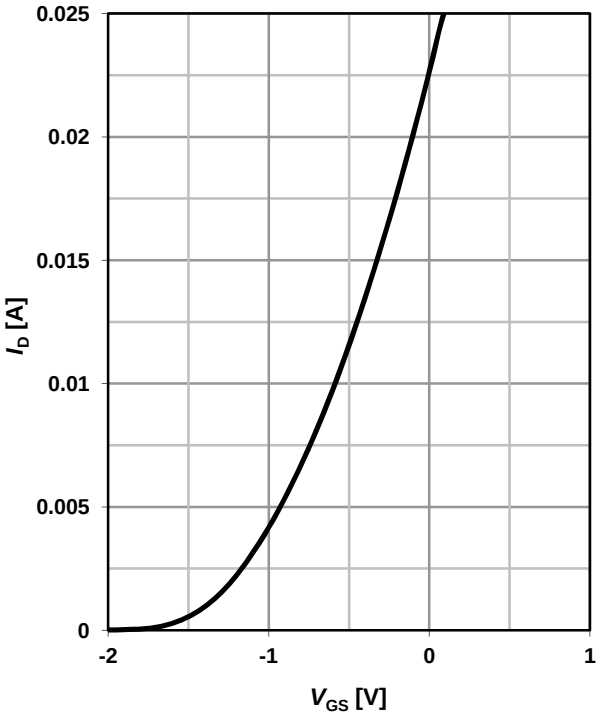
$R_{DS(on)}$=f(I_D); T_j=25 °C

parameter: V_{GS}



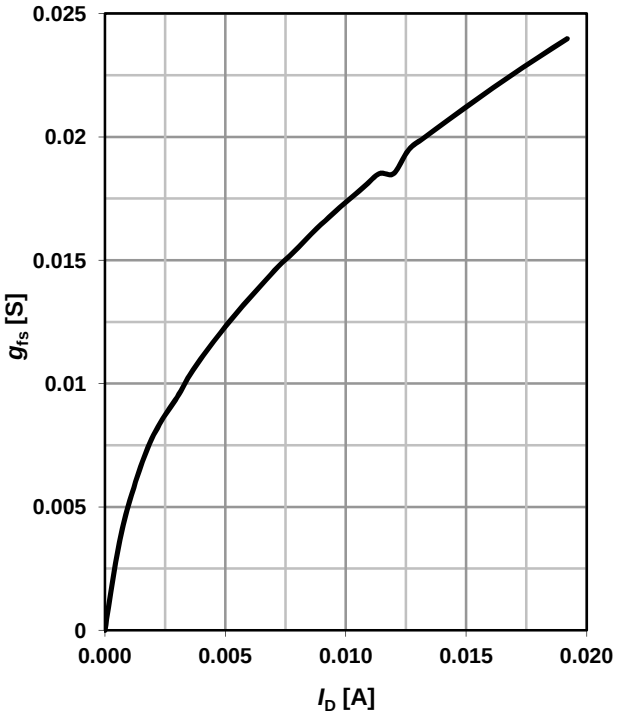
7 Typ. transfer characteristics

I_D=f(V_{GS}); V_{DS}=3 V; T_j=25 °C



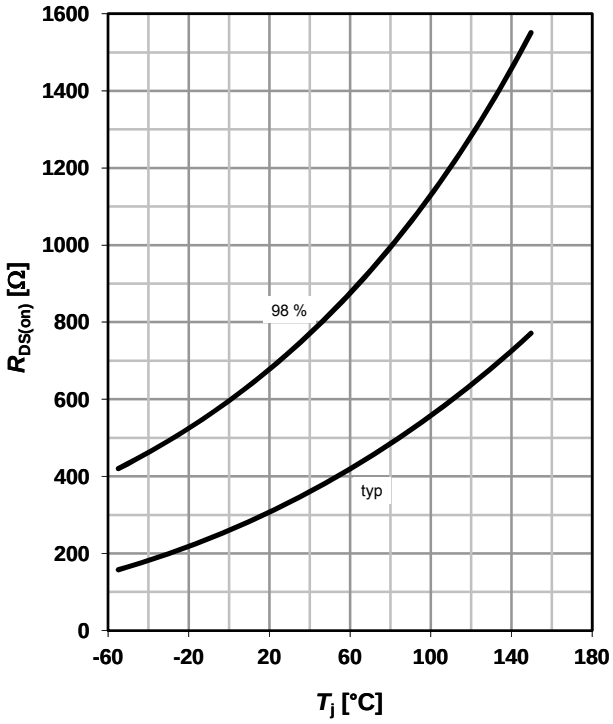
8 Typ. forward transconductance

g_{fs}=f(I_D); T_j=25 °C



9 Drain-source on-state resistance

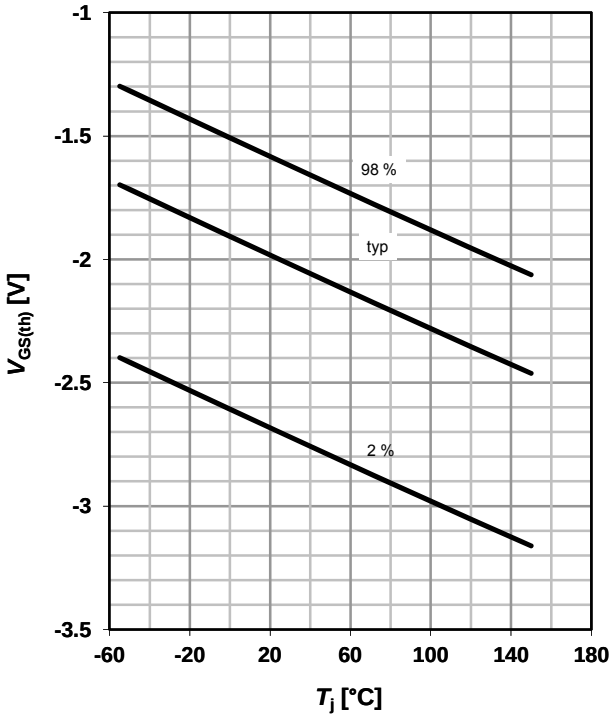
$R_{DS(on)}=f(T_j)$; I_D= 0.016mA; V_{GS}=0 V



10 Typ. gate threshold voltage

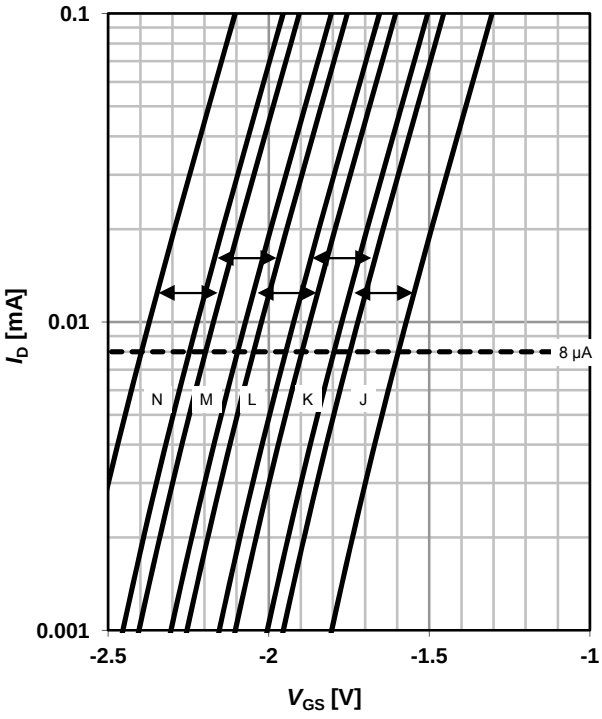
$V_{GS(th)}=f(T_j)$; V_{DS}=3 V; I_D = 8 µA

parameter: I_D



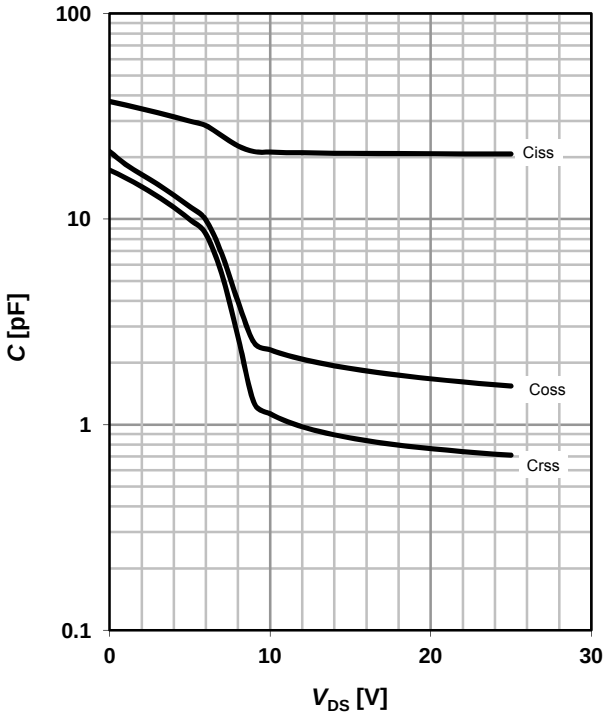
11 Threshold voltage bands

$I_D=f(V_{GS})$; V_{DS}=3 V; T_j=25 °C



12 Typ. capacitances

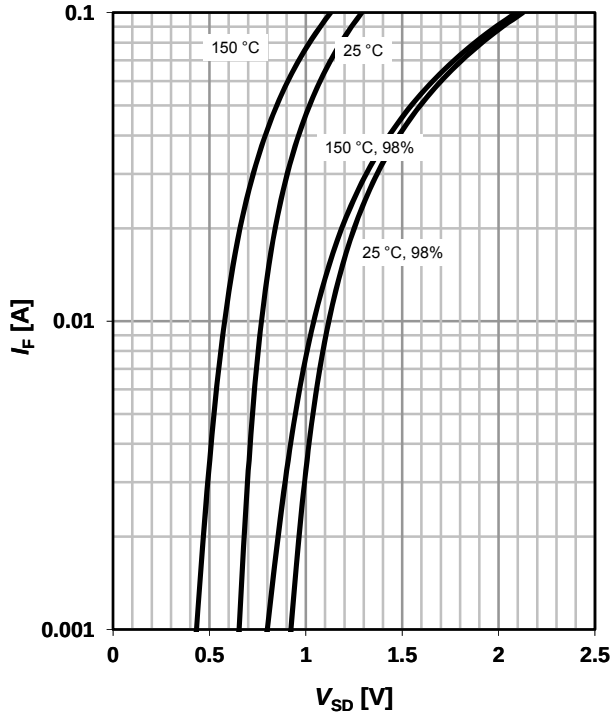
$C=f(V_{DS})$; V_{GS}=-3 V; f=1 MHz



13 Forward characteristics of reverse diode

$I_F=f(V_{SD})$

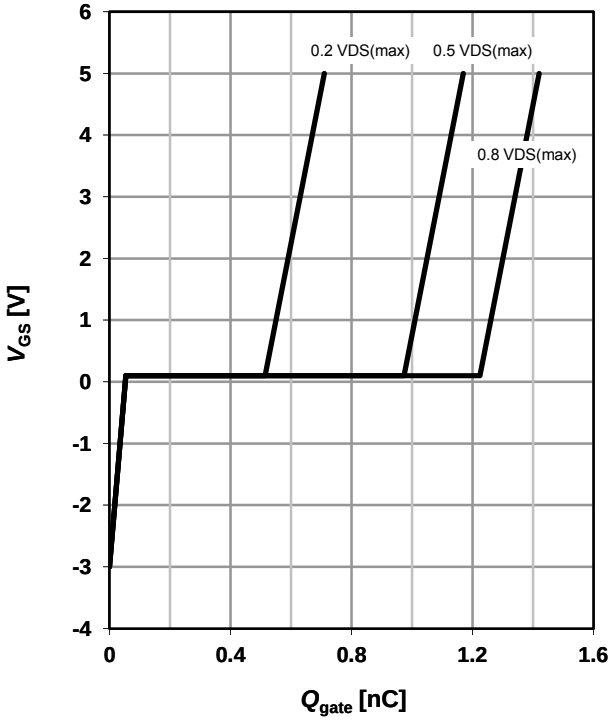
parameter: T_j



15 Typ. gate charge

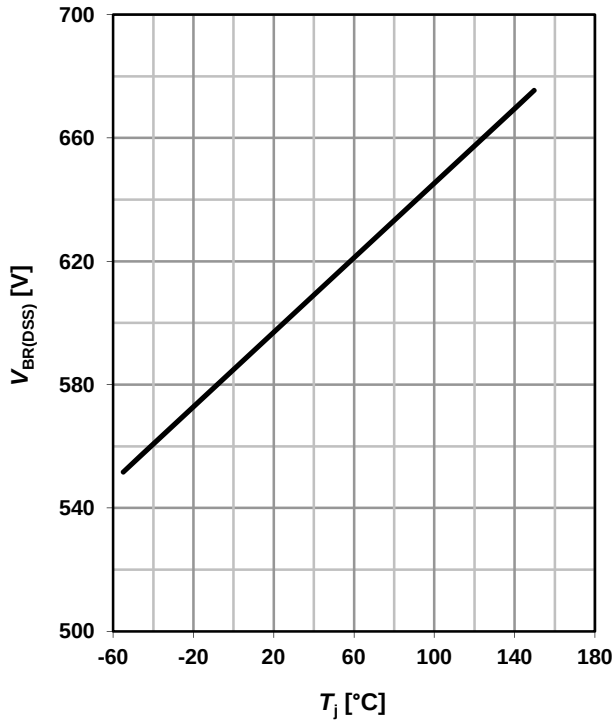
$V_{GS}=f(Q_{gate})$; I_D=0.1 A pulsed

parameter: V_{DD}

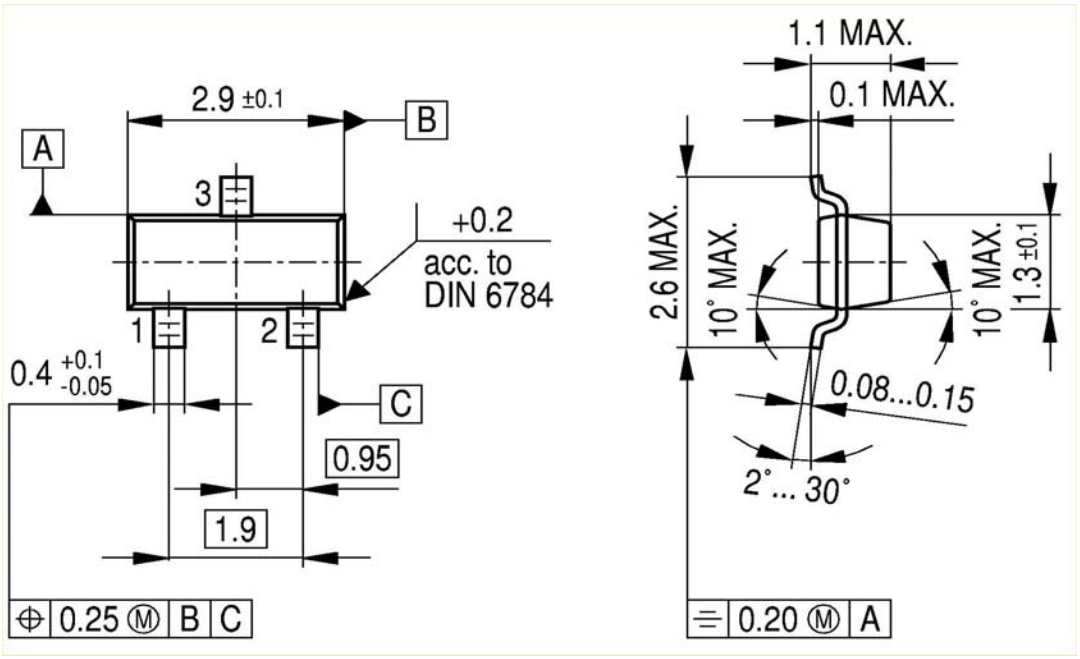


16 Drain-source breakdown voltage

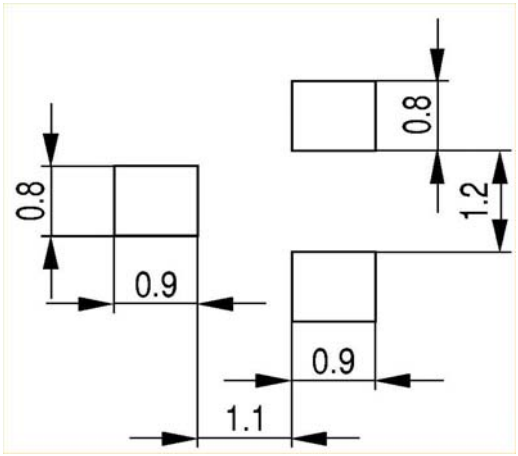
$I_D=f(V_{GS})$; V_{DS}=3 V; T_j=25 °C



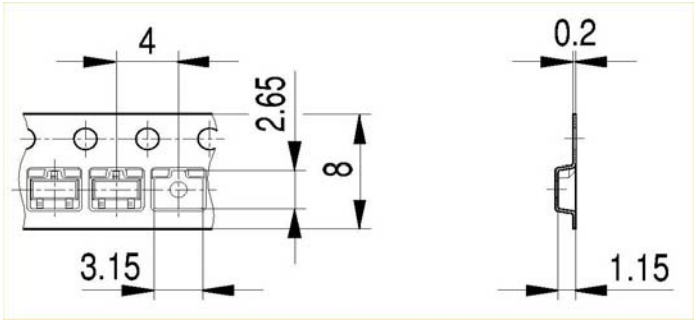
Package Outline:



Footprint:



Packaging:



Dimensions in mm

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