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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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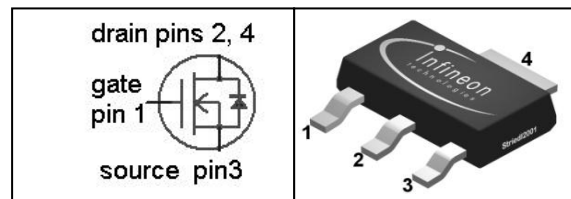


SIPMOS[®] Small-Signal-Transistor
Features

- N-channel
- Depletion mode
- dv/dt rated
- Available with $V_{GS(th)}$ indicator on reel
- Pb-free lead plating; RoHS compliant
- Qualified according to AEC Q101
- Halogen-free according to EC 1 - - 1

Product Summary

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


PG-SOT223


Type	Package	Tape and Reel	Marking	Packaging
BSP129	PG-SOT223	H6327: 1000 pcs/reel	BSP129	Non dry
BSP129	PG-SOT223	H6906: 1000 pcs/reel sorted in $V_{GS(th)}$ bands ¹	BSP129	Non dry

Maximum ratings, at $T_j=25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	$T_A=25\text{ °C}$	0.35	A
		$T_A=70\text{ °C}$	0.28	
Pulsed drain current	$I_{D,pulse}$	$T_A=25\text{ °C}$	1.4	
Reverse diode dv/dt	dv/dt	$I_D=0.36\text{ A}$, $V_{DS}=192\text{ V}$, $di/dt=200\text{ A}/\mu\text{s}$, $T_{j,max}=150\text{ °C}$	6	kV/ μs
Gate source voltage	V_{GS}		± 20	V
ESD class (JEDEC22-A114-HBM)			1A(>250V,<500V)	
Power dissipation	P_{tot}	$T_A=25\text{ °C}$	1.8	W
Operating and storage temperature	T_j, T_{stg}		-55 ... 150	$^{\circ}\text{C}$
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 $T_j=25\text{ °C}$, unless otherwise specified
Static characteristics

Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=-3\text{ V}, I_D=250\text{ }\mu\text{A}$	240	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=3\text{ V}, I_D=108\text{ }\mu\text{A}$	-2.1	-1.4	-1	
Drain-source cutoff current	$I_{D(off)}$	$V_{DS}=240\text{ V},$ $V_{GS}=-3\text{ V}, T_j=25\text{ °C}$	-	-	0.1	μA
		$V_{DS}=240\text{ V},$ $V_{GS}=-3\text{ V}, T_j=125\text{ °C}$	-	-	10	
Gate-source leakage current	I_{GSS}	$V_{GS}=20\text{ V}, V_{DS}=0\text{ V}$	-	-	10	nA
On-state drain current	I_{DSS}	$V_{GS}=0\text{ V}, V_{DS}=10\text{ V}$	50	-	-	mA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=0\text{ V}, I_D=25\text{ mA}$	-	6.5	20	Ω
		$V_{GS}=10\text{ V}, I_D=0.35\text{ A}$	-	4.2	6.0	
Transconductance	g_{fs}	$ V_{DS} >2 I_D R_{DS(on)max},$ $I_D=0.28\text{ A}$	0.18	0.36	-	S

Threshold voltage $V_{GS(th)}$ sorted in bands³⁾

J	$V_{GS(th)}$	$V_{DS}=3\text{ V}, I_D=108\text{ }\mu\text{A}$	-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 cm² (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}	$V_{GS}=-3\text{ V}, V_{DS}=25\text{ V},$ $f=1\text{ MHz}$	-	82	108	pF
Output capacitance	C_{oss}		-	12	16	
Reverse transfer capacitance	C_{rss}		-	6	10	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=120\text{ V},$ $V_{GS}=-2\dots 5\text{ V},$ $I_D=0.2\text{ A}, R_G=7.6\ \Omega$	-	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

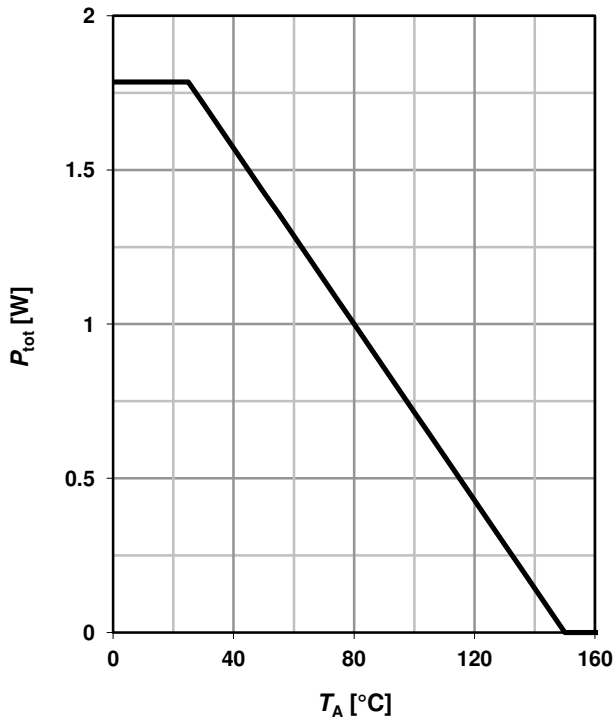
Gate to source charge	Q_{gs}	$V_{DD}=192\text{ V}, I_D=0.2\text{ A},$ $V_{GS}=-3\text{ to }5\text{ V}$	-	0.24	0.36	nC
Gate to drain charge	Q_{gd}		-	1.7	2.6	
Gate charge total	Q_g		-	3.8	5.7	
Gate plateau voltage	$V_{plateau}$		-	0.37	-	V

Reverse Diode

Diode continuous forward current	I_S	$T_A=25\text{ }^\circ\text{C}$	-	-	0.35	A
Diode pulse current	$I_{S,pulse}$		-	-	1.4	
Diode forward voltage	V_{SD}	$V_{GS}=-3\text{ V}, I_F=0.35\text{ A},$ $T_j=25\text{ }^\circ\text{C}$	-	0.79	1.2	V
Reverse recovery time	t_{rr}	$V_R=120\text{ V}, I_F=0.2\text{ A},$ $di_F/dt=100\text{ A}/\mu\text{s}$	-	53	80	ns
Reverse recovery charge	Q_{rr}		-	65	97	nC

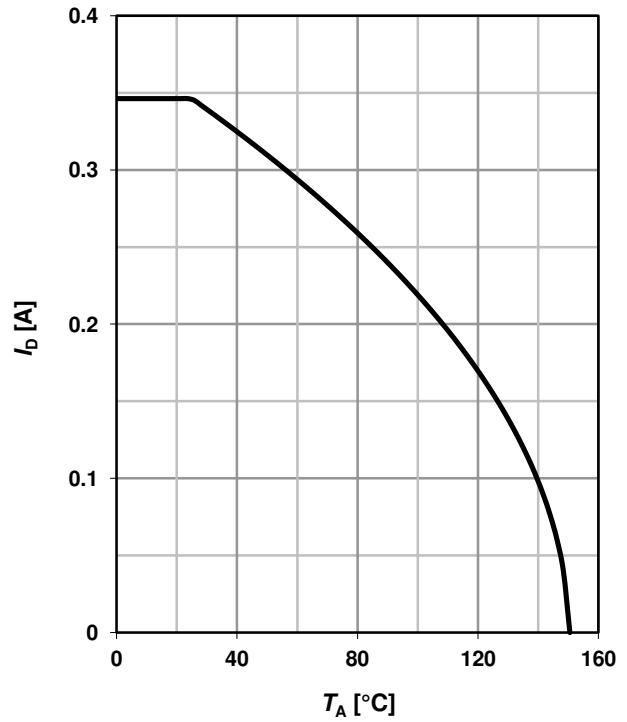
1 Power dissipation

$$P_{tot}=f(T_A)$$



2 Drain current

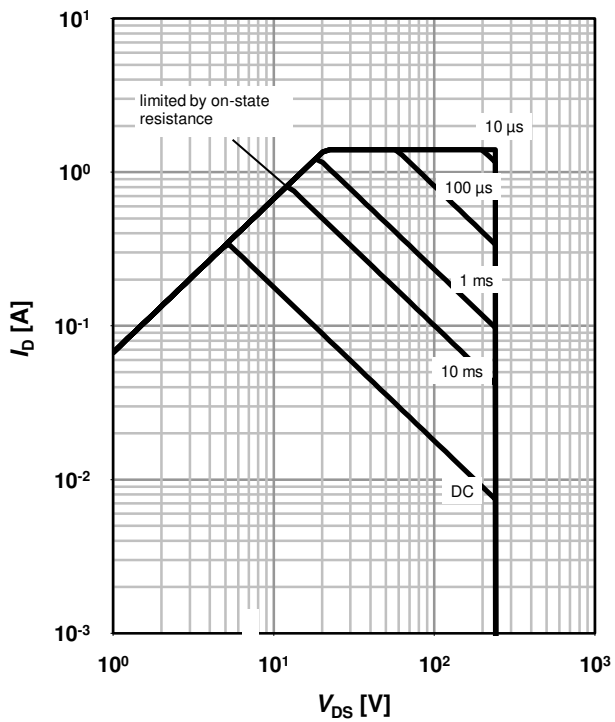
$$I_D=f(T_A); V_{GS} \geq 10 \text{ V}$$



3 Safe operating area

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

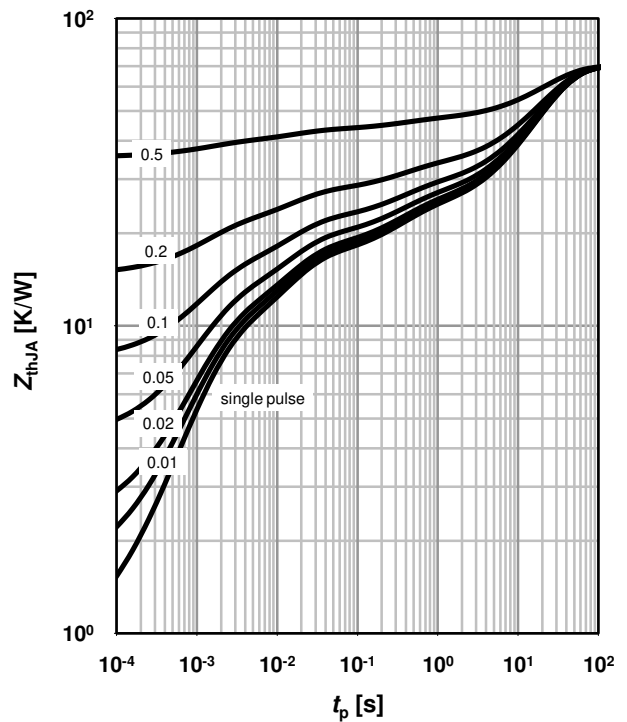
parameter: t_p



4 Max. transient thermal impedance

$$Z_{thJA}=f(t_p)$$

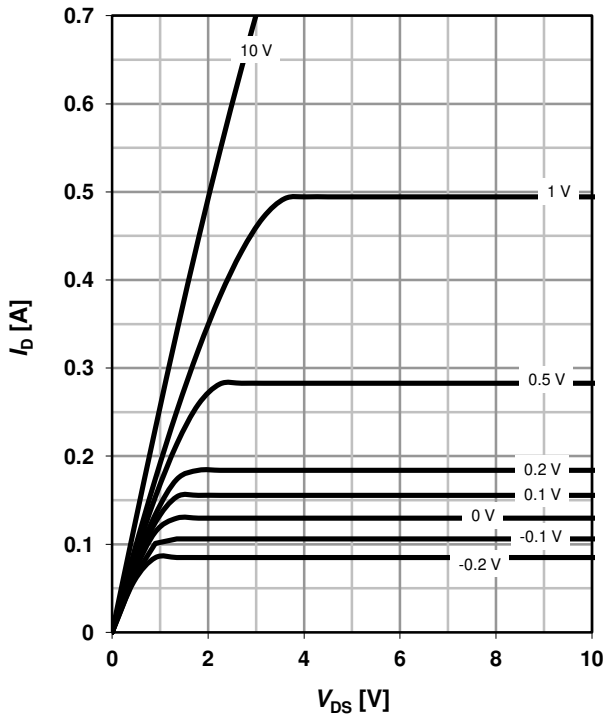
parameter: $D=t_p/T$



5 Typ. output characteristics

$I_D = f(V_{DS}); T_j = 25\text{ }^\circ\text{C}$

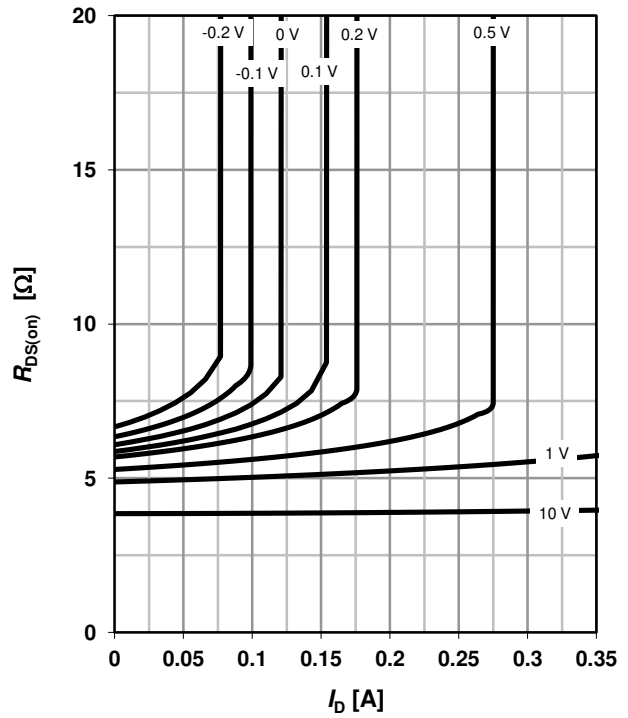
parameter: V_{GS}



6 Typ. drain-source on resistance

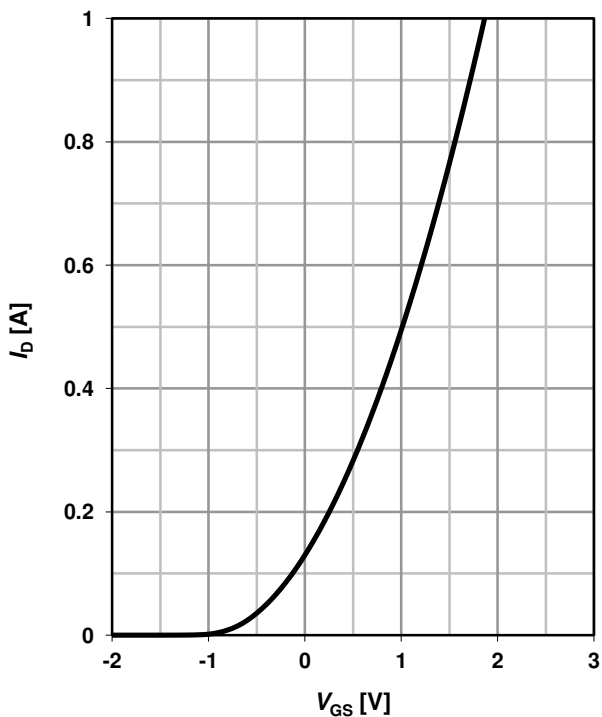
$R_{DS(on)} = f(I_D); T_j = 25\text{ }^\circ\text{C}$

parameter: V_{GS}



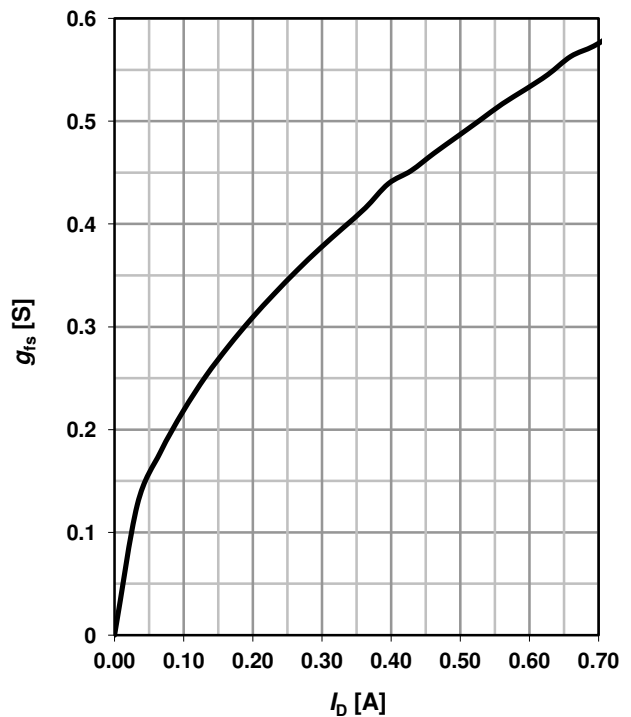
7 Typ. transfer characteristics

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



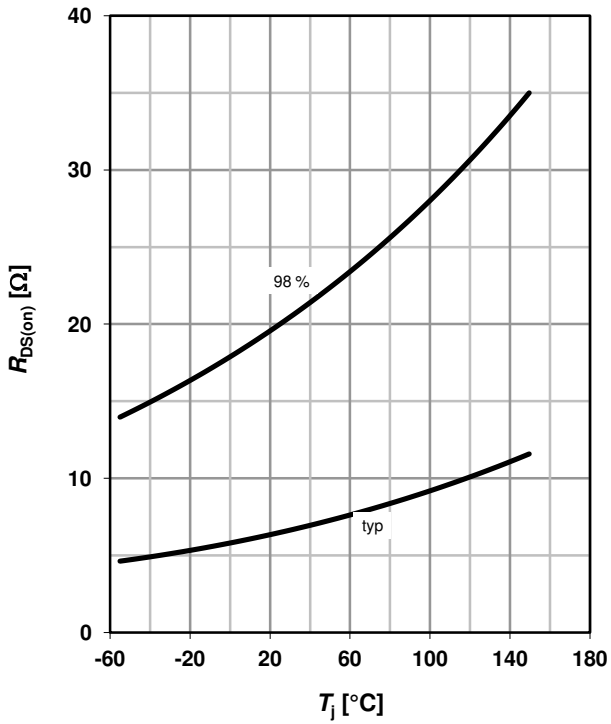
8 Typ. forward transconductance

$g_{fs} = f(I_D); T_j = 25\text{ }^\circ\text{C}$



9 Drain-source on-state resistance

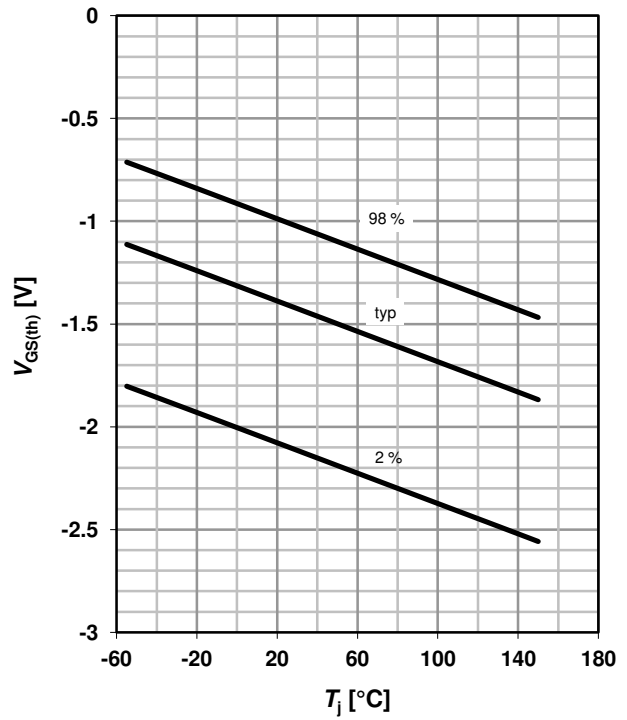
$R_{DS(on)}=f(T_j); I_D=0.025\text{ A}; V_{GS}=0\text{ V}$



10 Typ. gate threshold voltage

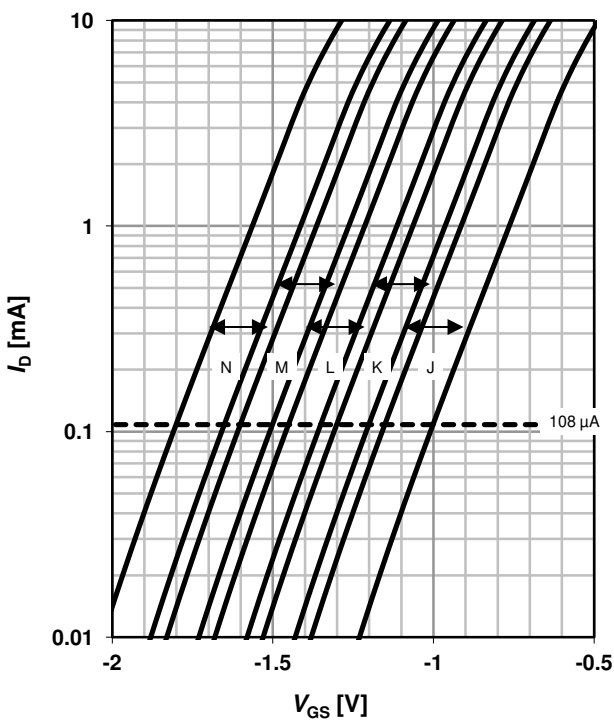
$V_{GS(th)}=f(T_j); V_{DS}=3\text{ V}; I_D=108\text{ }\mu\text{A}$

parameter: I_D



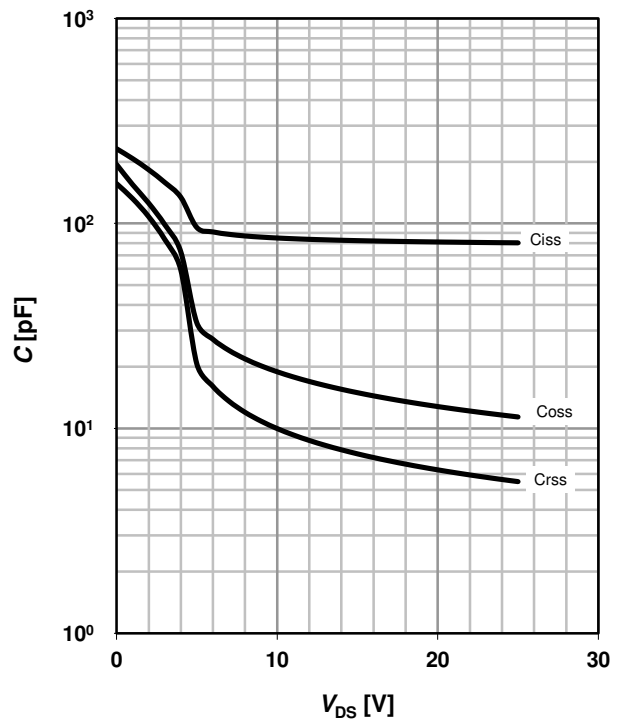
11 Threshold voltage bands

$I_D=f(V_{GS}); V_{DS}=3\text{ V}; T_j=25\text{ }^\circ\text{C}$



12 Typ. capacitances

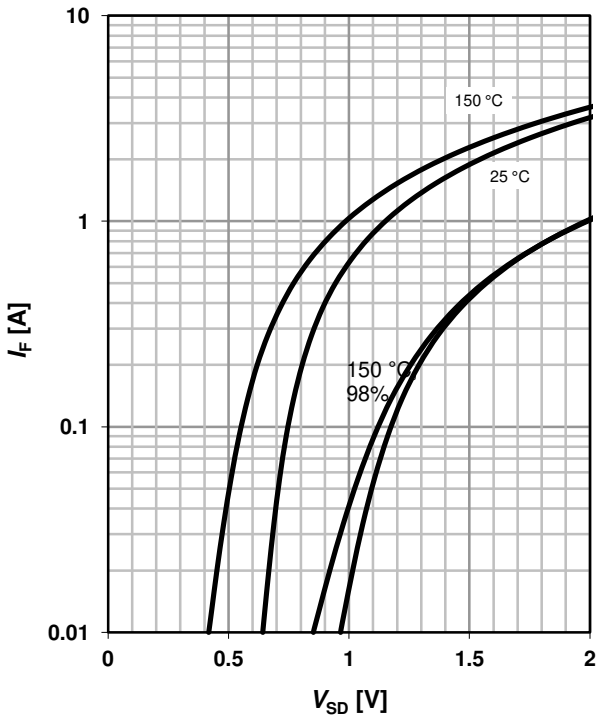
$C=f(V_{DS}); V_{GS}=-3\text{ V}; f=1\text{ MHz}$



13 Forward characteristics of reverse diode

$I_F=f(V_{SD})$

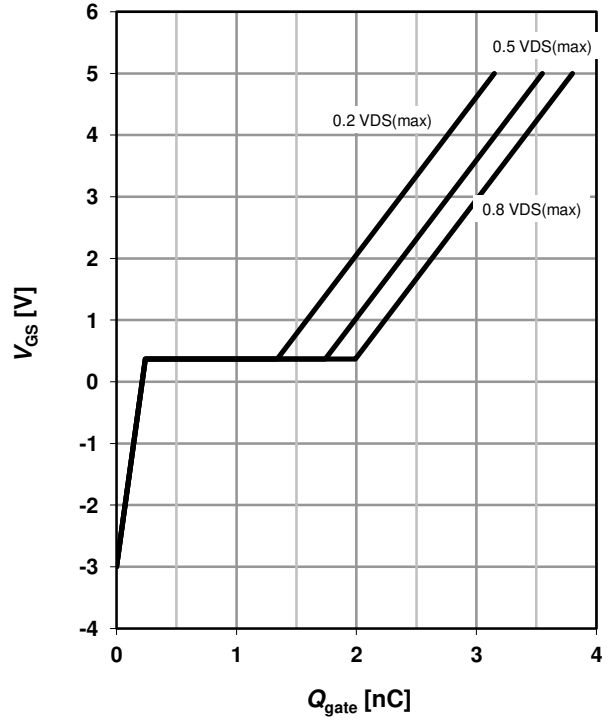
parameter: T_j



15 Typ. gate charge

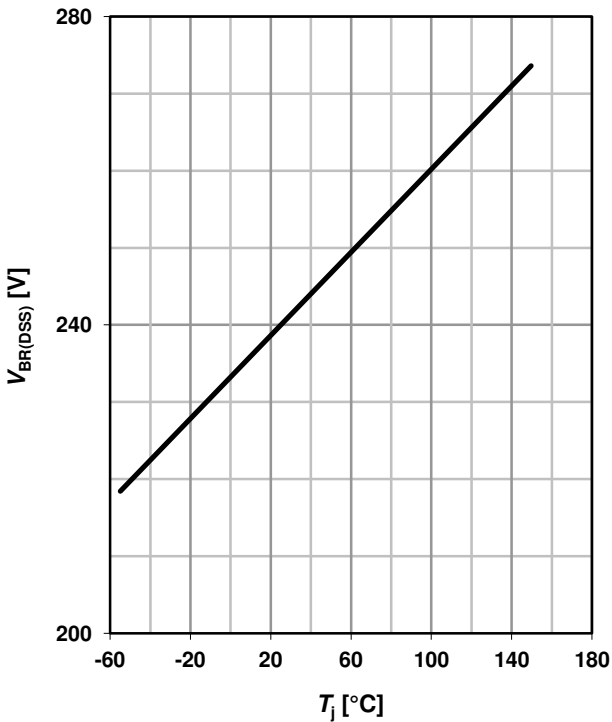
$V_{GS}=f(Q_{gate}); I_D=0.2\text{ A pulsed}$

parameter: V_{DD}

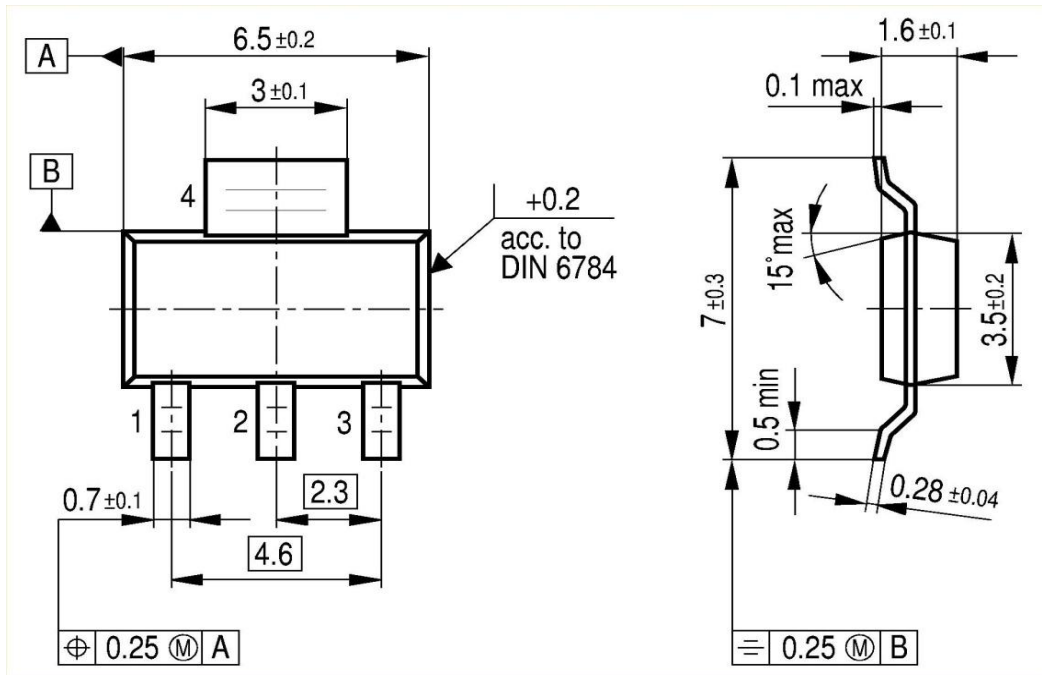


16 Drain-source breakdown voltage

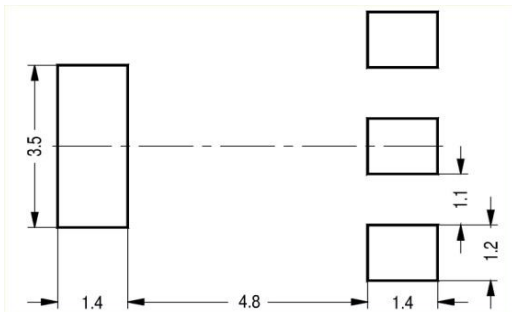
$V_{BR(DSS)}=f(T_j); I_D=250\ \mu\text{A}$



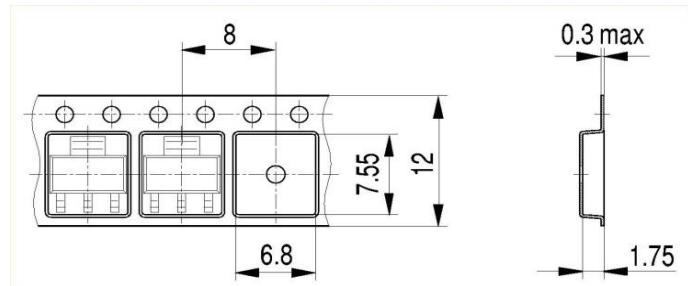
Package Outline:



Footprint:



Packaging:



Dimensions in mm

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