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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.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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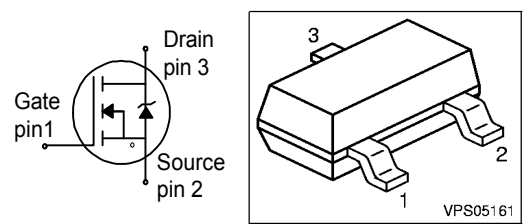
SIPMOS[®] Small-Signal-Transistor
Feature

- N-Channel
- Enhancement mode
- Logic Level
- dv/dt rated
- Pb-free lead plating; RoHS compliant
- Qualified according to AEC Q101
- Halogen-free according to IEC61249-2-21


Product Summary

V_{DS}	60	V
$R_{DS(on)}$	5	Ω
I_D	0.2	A

PG-SOT-23



Type	Package	Pb-free	Tape and Reel Information	Marking
SN7002N	PG-SOT-23	Yes	H6327: 3000 pcs/reel	sSN
SN7002N	PG-SOT-23	Yes	H6433: 10000 pcs/reel	sSN

Maximum Ratings, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current	I_D		A
$T_A=25^\circ\text{C}$		0.2	
$T_A=70^\circ\text{C}$		0.16	
Pulsed drain current	$I_{D \text{ puls}}$	0.8	
$T_A=25^\circ\text{C}$			
Reverse diode dv/dt	dv/dt	6	kV/ μs
$I_S=0.2\text{A}$, $V_{DS}=48\text{V}$, $di/dt=200\text{A}/\mu\text{s}$, $T_{jmax}=150^\circ\text{C}$			
Gate source voltage	V_{GS}	± 20	V
ESD Class (JESD22-A114-HBM)		0 (<250V)	
Power dissipation	P_{tot}	0.36	W
$T_A=25^\circ\text{C}$			
Operating and storage temperature	T_j, T_{stg}	-55... +150	$^\circ\text{C}$
IEC climatic category; DIN IEC 68-1		55/150/56	

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - ambient at minimal footprint	R_{thJA}	-	-	350	K/W

Electrical Characteristics, at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

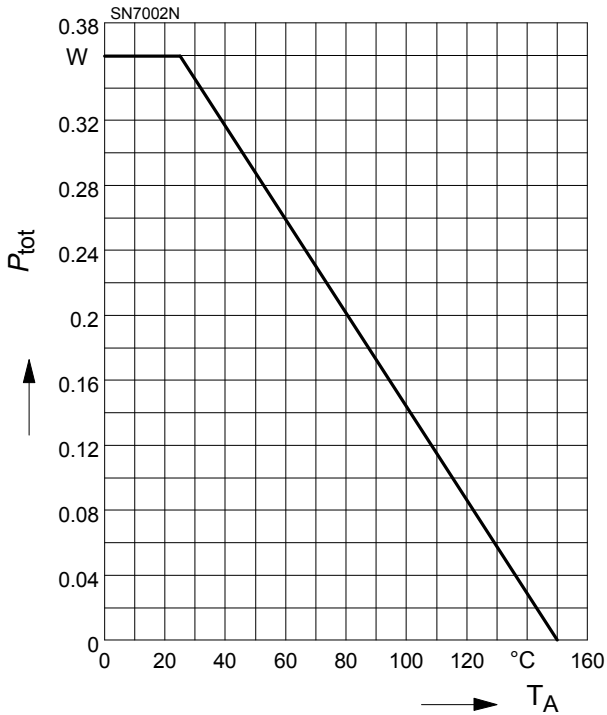
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain-source breakdown voltage $V_{GS}=0, I_D=250\mu\text{A}$	$V_{(BR)DSS}$	60	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ $I_D=26\mu\text{A}$	$V_{GS(th)}$	0.8	1.4	1.8	
Zero gate voltage drain current $V_{DS}=60\text{V}, V_{GS}=0, T_j=25^\circ\text{C}$ $V_{DS}=60\text{V}, V_{GS}=0, T_j=150^\circ\text{C}$	I_{DSS}	-	-	0.1 5	μA
Gate-source leakage current $V_{GS}=20\text{V}, V_{DS}=0$	I_{GSS}	-	-	10	nA
Drain-source on-state resistance $V_{GS}=4.5\text{V}, I_D=0.17\text{A}$	$R_{DS(on)}$	-	3.9	7.5	Ω
Drain-source on-state resistance $V_{GS}=10\text{V}, I_D=0.5\text{A}$	$R_{DS(on)}$	-	2.5	5	

Electrical Characteristics, at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic Characteristics						
Transconductance	g_{fs}	$V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$, $I_D = 0.16\text{A}$	0.09	0.17	-	S
Input capacitance	C_{iss}	$V_{GS} = 0$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$	-	34	45	pF
Output capacitance	C_{oss}		-	7.2	9.6	
Reverse transfer capacitance	C_{rss}		-	2.8	4.2	
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 0.5\text{A}$, $R_G = 6\Omega$	-	2.4	3.6	ns
Rise time	t_r		-	3.2	4.8	
Turn-off delay time	$t_{d(off)}$		-	5.3	8	
Fall time	t_f		-	3.6	5.4	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	$V_{DD} = 48\text{V}$, $I_D = 0.5\text{A}$	-	0.14	0.21	nC
Gate to drain charge	Q_{gd}		-	0.42	0.63	
Gate charge total	Q_g	$V_{DD} = 48\text{V}$, $I_D = 0.5\text{A}$, $V_{GS} = 0$ to 10V	-	1	1.5	
Gate plateau voltage	$V_{(plateau)}$	$V_{DD} = 48\text{V}$, $I_D = 0.5\text{A}$	-	4.5	-	V
Reverse Diode						
Inverse diode continuous forward current	I_S	$T_A = 25^\circ\text{C}$	-	-	0.2	A
Inv. diode direct current, pulsed	I_{SM}		-	-	0.8	
Inverse diode forward voltage	V_{SD}	$V_{GS} = 0$, $I_F = I_S$	-	0.83	1.2	V
Reverse recovery time	t_{rr}	$V_R = 30\text{V}$, $I_F = I_S$, $di_F/dt = 100\text{A}/\mu\text{s}$	-	14.2	21.3	ns
Reverse recovery charge	Q_{rr}		-	5.9	8.8	

1 Power dissipation

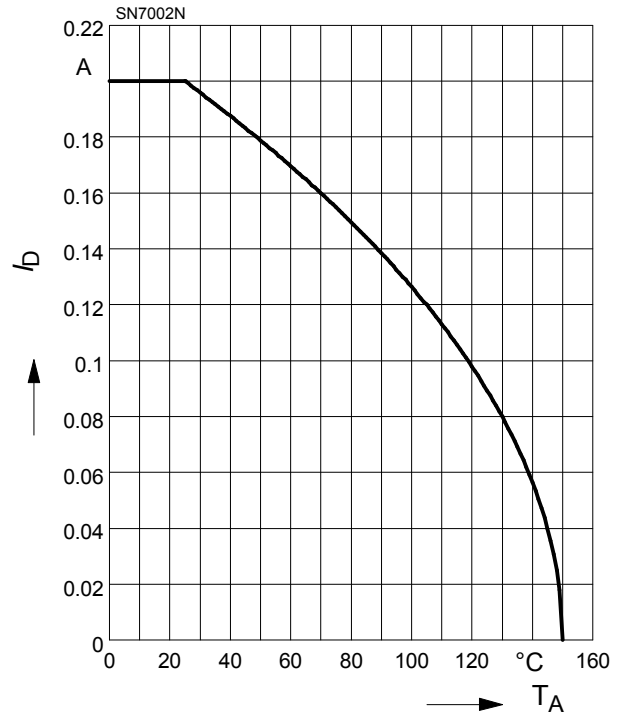
$$P_{tot} = f(T_A)$$



2 Drain current

$$I_D = f(T_A)$$

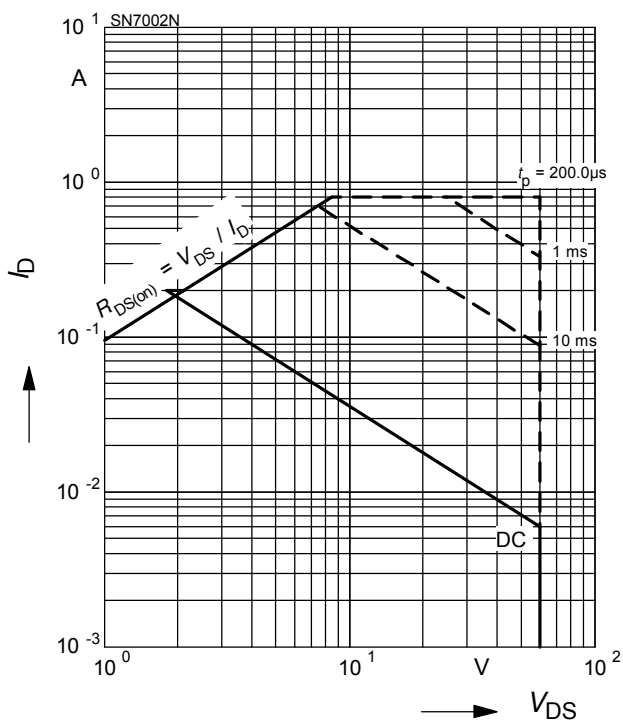
parameter: $V_{GS} \geq 10\text{ V}$



3 Safe operating area

$$I_D = f(V_{DS})$$

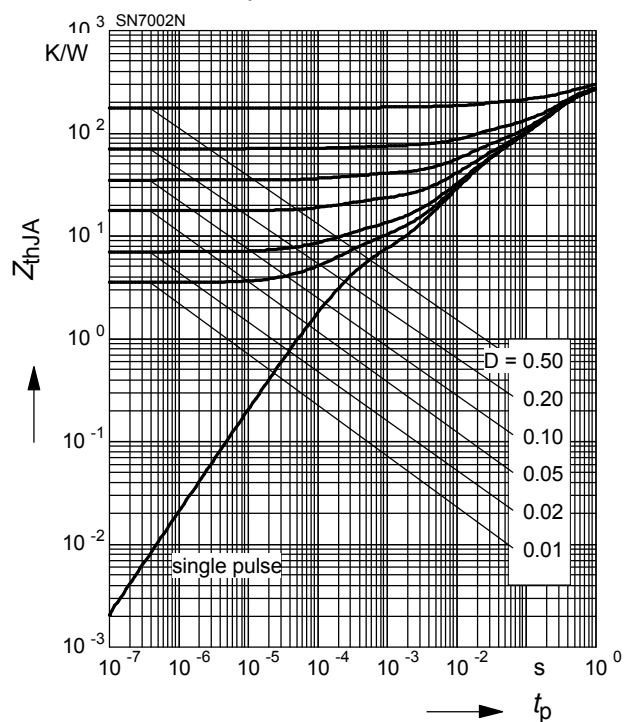
parameter: $D = 0$, $T_A = 25\text{ °C}$



4 Transient thermal impedance

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

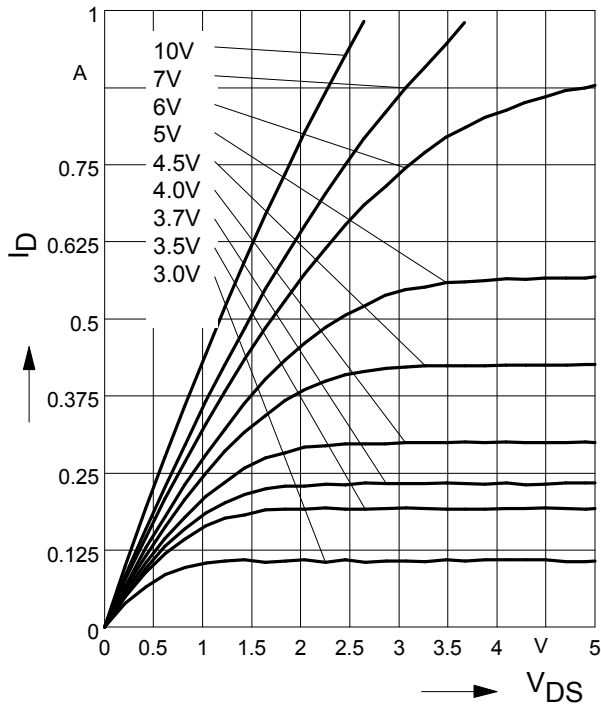
parameter: $D = t_p/T$



5 Typ. output characteristic

$$I_D = f(V_{DS})$$

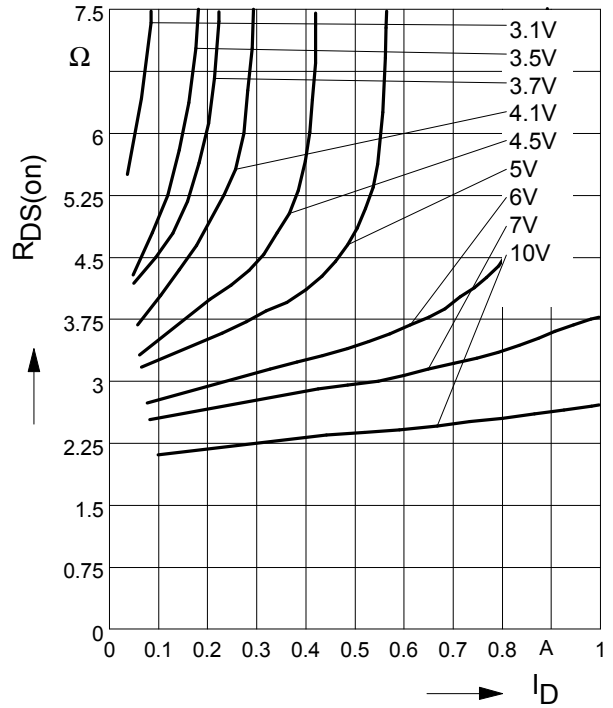
parameter: $T_j = 25\text{ }^\circ\text{C}$, V_{GS}



6 Typ. drain-source on resistance

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

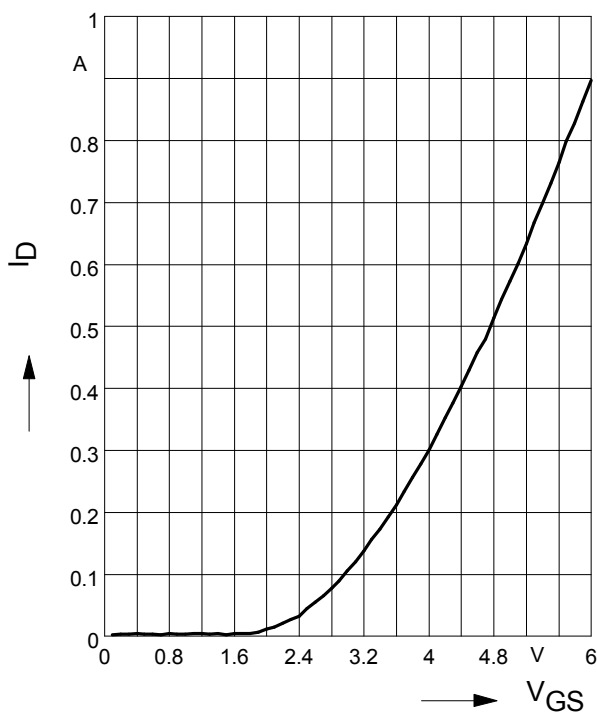
parameter: $T_j = 25\text{ }^\circ\text{C}$, V_{GS}



7 Typ. transfer characteristics

$$I_D = f(V_{GS}); V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$$

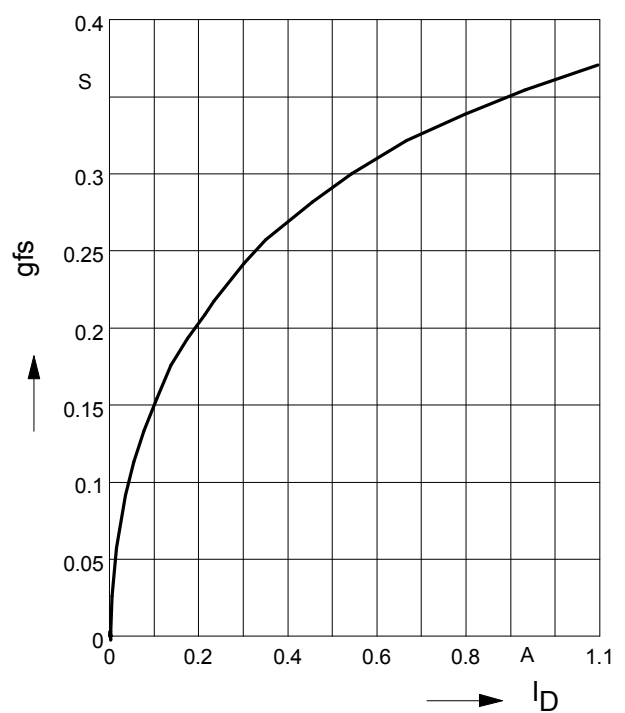
parameter: $T_j = 25\text{ }^\circ\text{C}$



8 Typ. forward transconductance

$$g_{fs} = f(I_D)$$

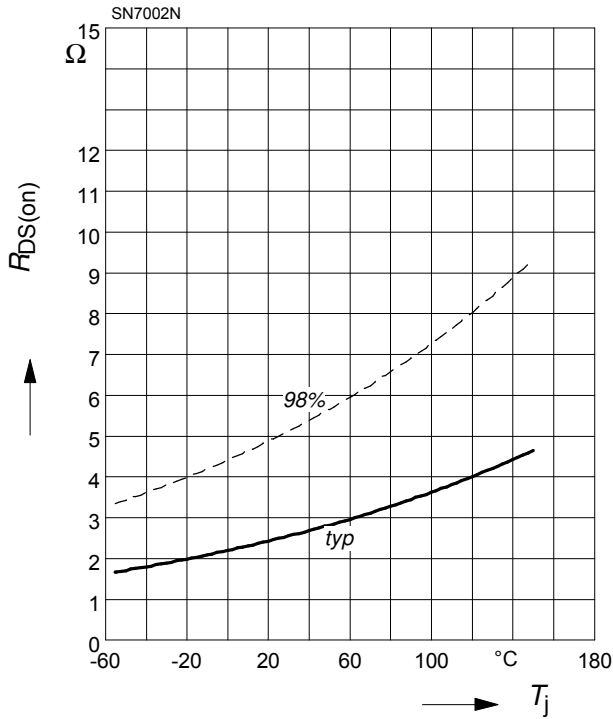
parameter: $T_j = 25\text{ }^\circ\text{C}$



9 Drain-source on-state resistance

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

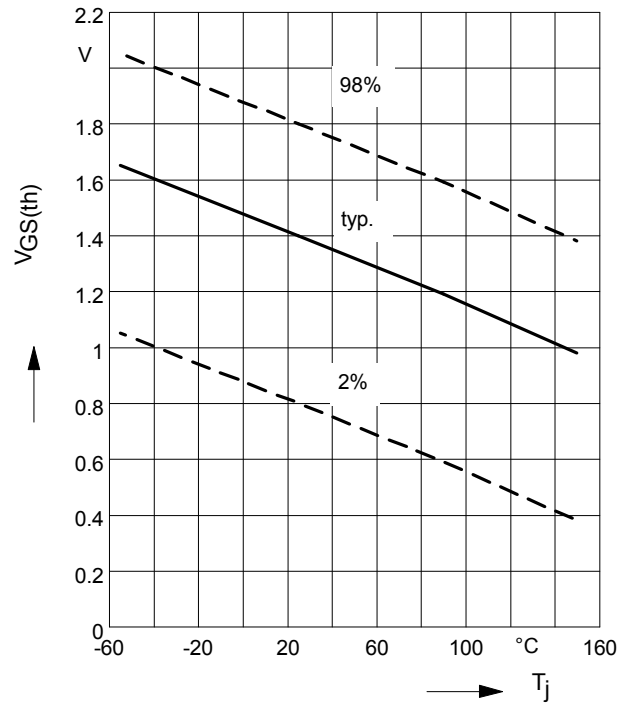
parameter : $I_D = 0.5 \text{ A}$, $V_{GS} = 10 \text{ V}$



10 Typ. gate threshold voltage

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

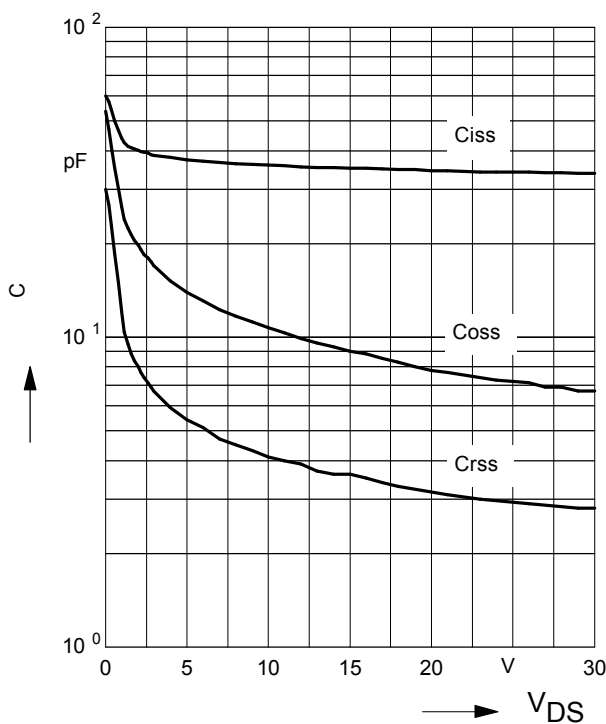
parameter: $V_{GS} = V_{DS}$; $I_D = 26\mu\text{A}$



11 Typ. capacitances

$$C = f(V_{DS})$$

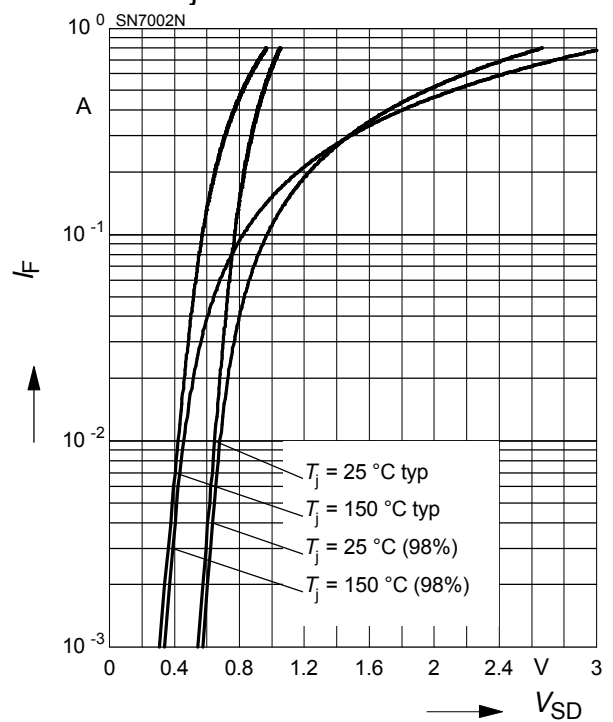
parameter: $V_{GS}=0$, $f=1 \text{ MHz}$, $T_j = 25 \text{ }^\circ\text{C}$



12 Forward character. of reverse diode

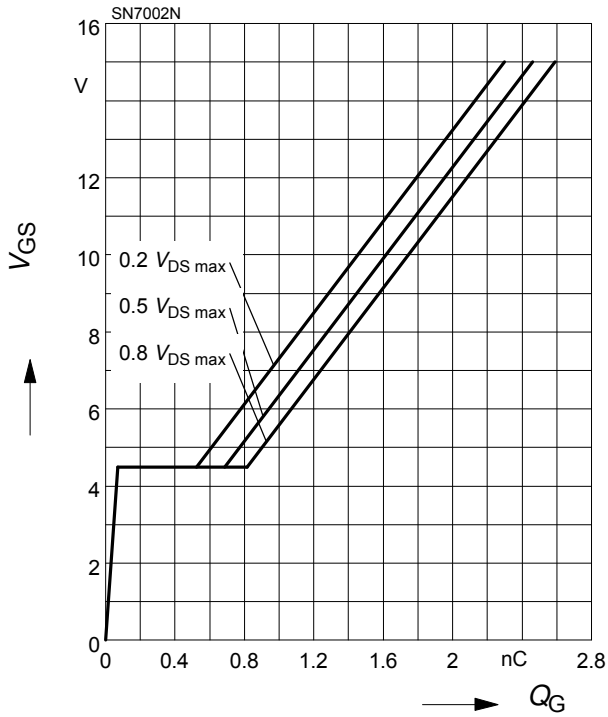
$$I_F = f(V_{SD})$$

parameter: T_j



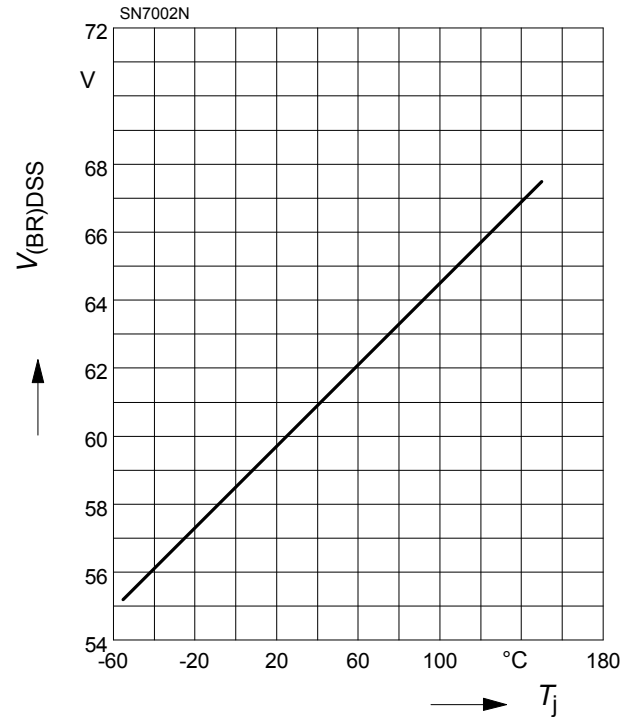
13 Typ. gate charge

$V_{GS} = f(Q_G)$; parameter: V_{DS} ,
 $I_D = 0.2 \text{ A pulsed}$, $T_j = 25 \text{ }^\circ\text{C}$



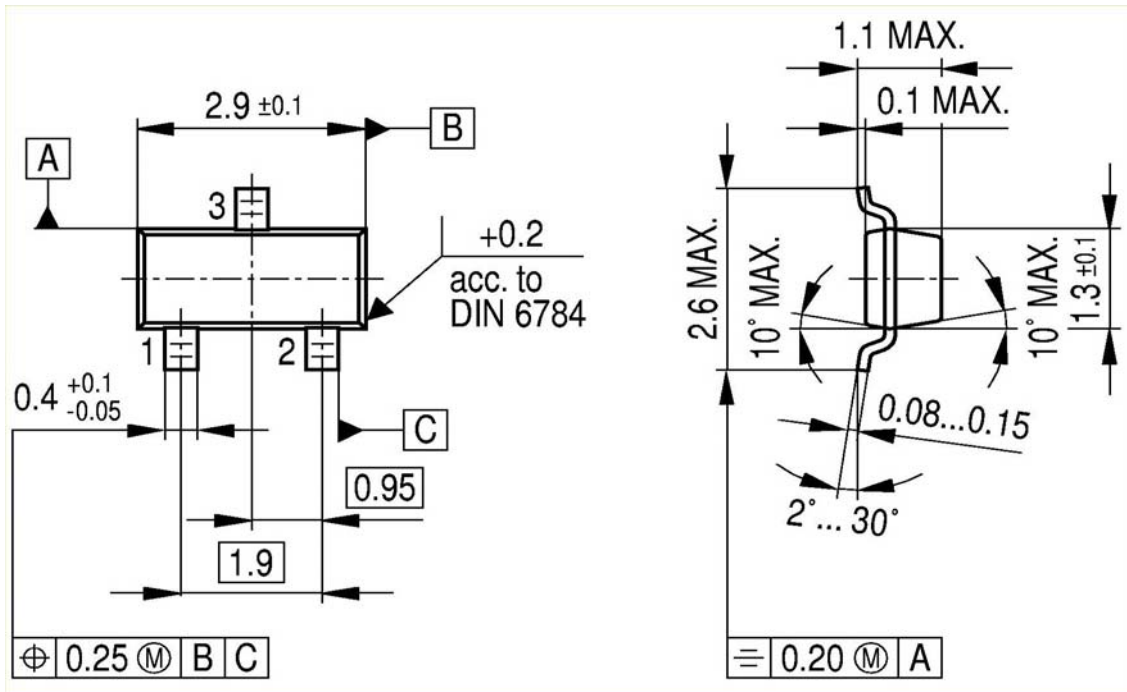
14 Drain-source breakdown voltage

$V_{(BR)DSS} = f(T_j)$

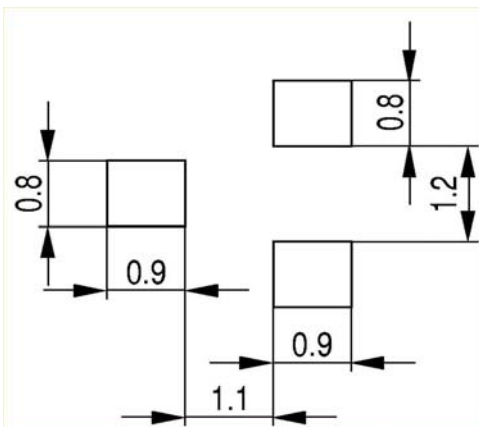


SOT23

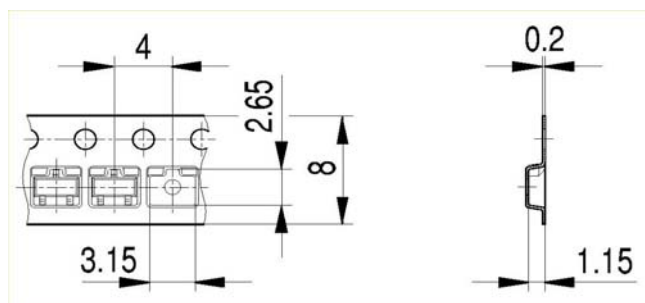
Package Outline:



Footprint:



Packaging:



Dimensions in mm

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