

Thermal Characteristics

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

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain-source breakdown voltage $V_{GS}=0, I_D=250\mu A$	$V_{(BR)DSS}$	100	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ $I_D=50\mu A$	$V_{GS(th)}$	1.3	1.8	2.3	
Zero gate voltage drain current $V_{DS}=100V, V_{GS}=0, T_j=25^{\circ}C$ $V_{DS}=100V, V_{GS}=0, T_j=150^{\circ}C$	I_{DSS}	- -	0.05 0.5	0.1 5	μA
Gate-source leakage current $V_{GS}=20V, V_{DS}=0$	I_{GSS}	-	10	100	nA
Drain-source on-state resistance $V_{GS}=4.5V, I_D=0.13 A$	$R_{DS(on)}$	-	4.9	10	Ω
Drain-source on-state resistance $V_{GS}=10V, I_D=0.17A$	$R_{DS(on)}$	-	3.4	6	

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

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

Dynamic Characteristics

Transconductance	g_{fs}	$V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$, $I_D = 0.13\text{A}$	0.08	0.17	-	S
Input capacitance	C_{iss}	$V_{GS} = 0$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$	-	60	78	pF
Output capacitance	C_{oss}		-	8.6	11.2	
Reverse transfer capacitance	C_{rss}		-	3.1	4.1	
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 50\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 0.17\text{A}$, $R_G = 6\Omega$	-	2.7	4	ns
Rise time	t_r		-	3.1	4.6	
Turn-off delay time	$t_{d(off)}$		-	9.3	14	
Fall time	t_f		-	27	40	

Gate Charge Characteristics

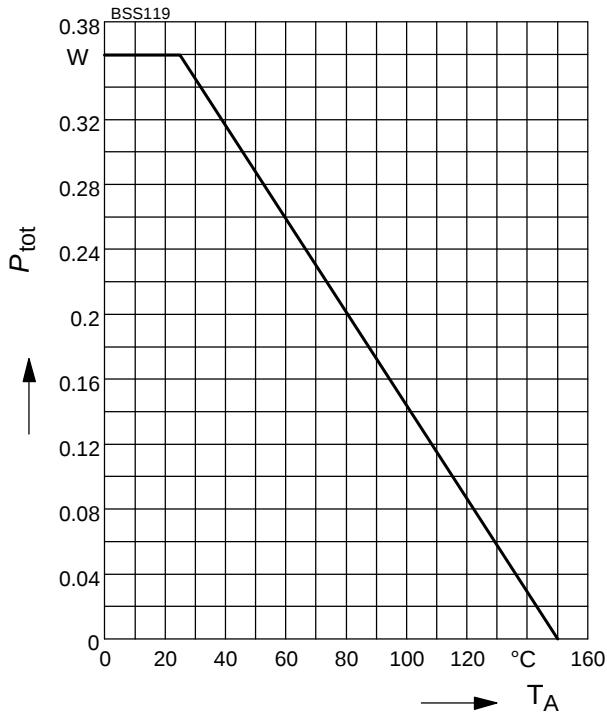
Gate to source charge	Q_{gs}	$V_{DD} = 80\text{V}$, $I_D = 0.17\text{A}$	-	0.08	0.12	nC
Gate to drain charge	Q_{gd}		-	0.76	1.1	
Gate charge total	Q_g	$V_{DD} = 80\text{V}$, $I_D = 0.17\text{A}$, $V_{GS} = 0$ to 10V	-	1.67	2.5	
Gate plateau voltage	$V_{(plateau)}$	$V_{DD} = 80\text{V}$, $I_D = 0.17\text{A}$	-	3.4	-	V

Reverse Diode

Inverse diode continuous forward current	I_S	$T_A = 25^\circ\text{C}$	-	-	0.17	A
Inv. diode direct current, pulsed	I_{SM}		-	-	0.68	
Inverse diode forward voltage	V_{SD}	$V_{GS} = 0$, $I_F = I_S$	-	0.8	1.2	V
Reverse recovery time	t_{rr}	$V_R = 50\text{V}$, $I_F = I_S$, $di_F/dt = 100\text{A}/\mu\text{s}$	-	21.7	32.5	ns
Reverse recovery charge	Q_{rr}		-	10	15	nC

1 Power dissipation

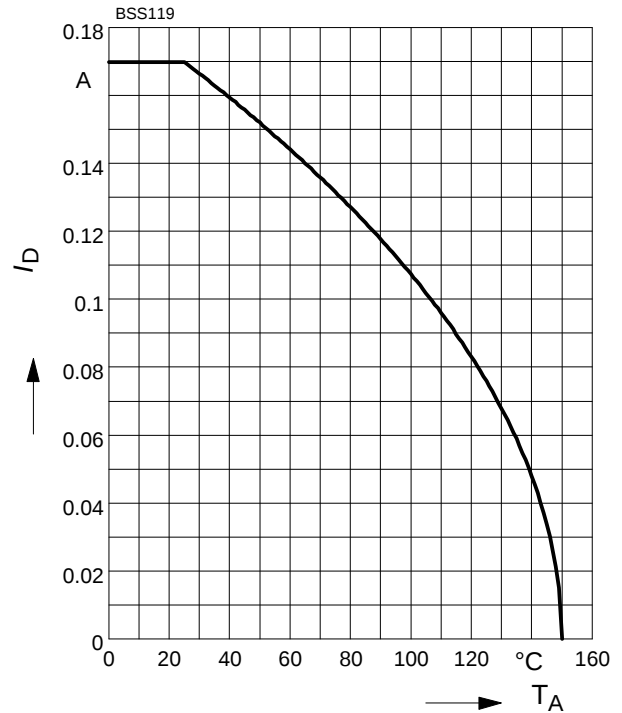
$$P_{\text{tot}} = f(T_A)$$



2 Drain current

$$I_D = f(T_A)$$

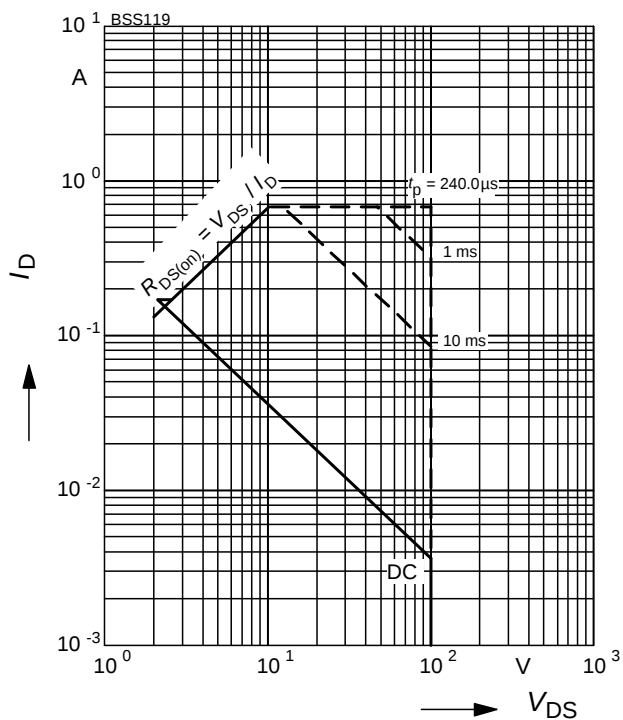
parameter: $V_{GS} \geq 10$ V



3 Safe operating area

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

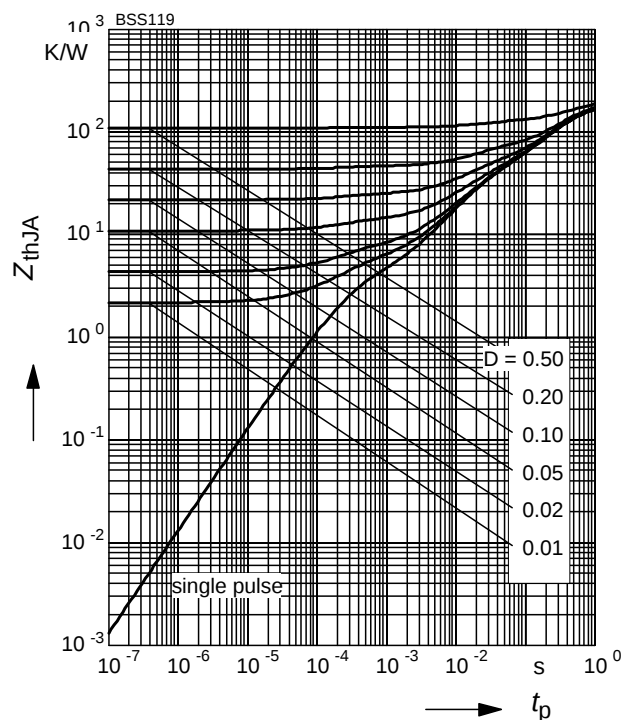
parameter: $D = 0$, $T_A = 25$ °C



4 Transient thermal impedance

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

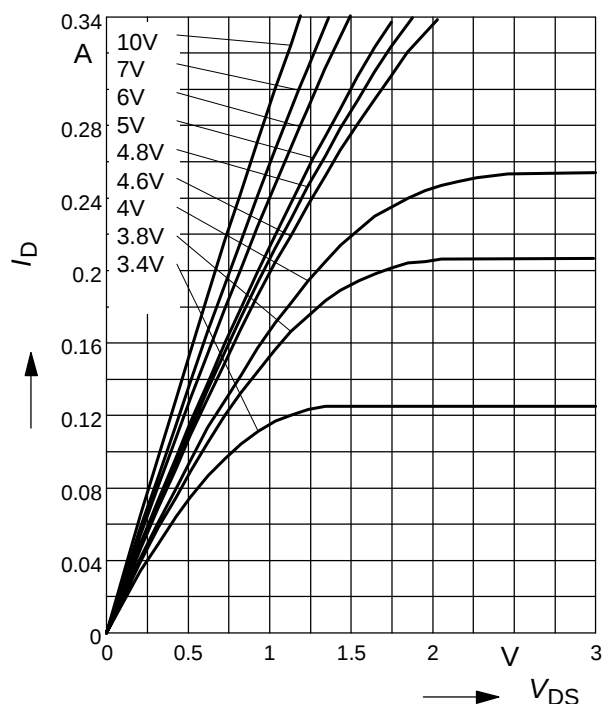
parameter: $D = t_p/T$



5 Typ. output characteristic

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

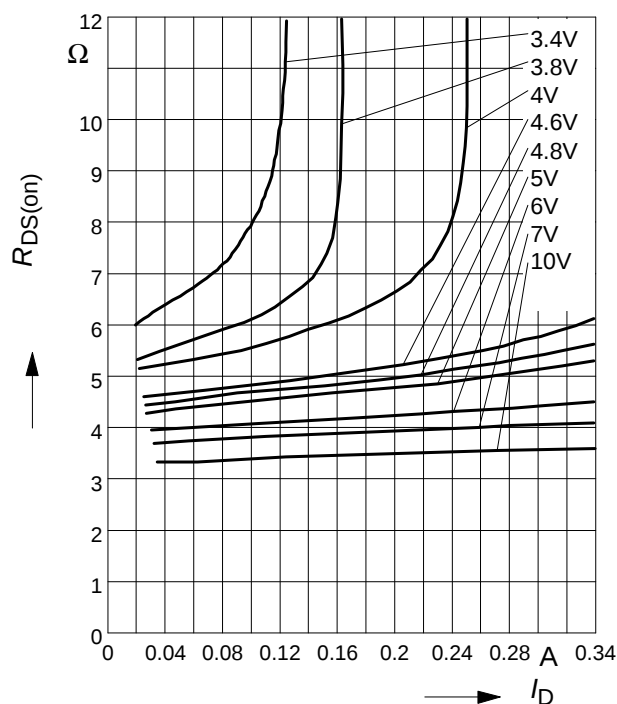
parameter: $T_j = 25\text{ }^{\circ}\text{C}$, V_{GS}



6 Typ. drain-source on resistance

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

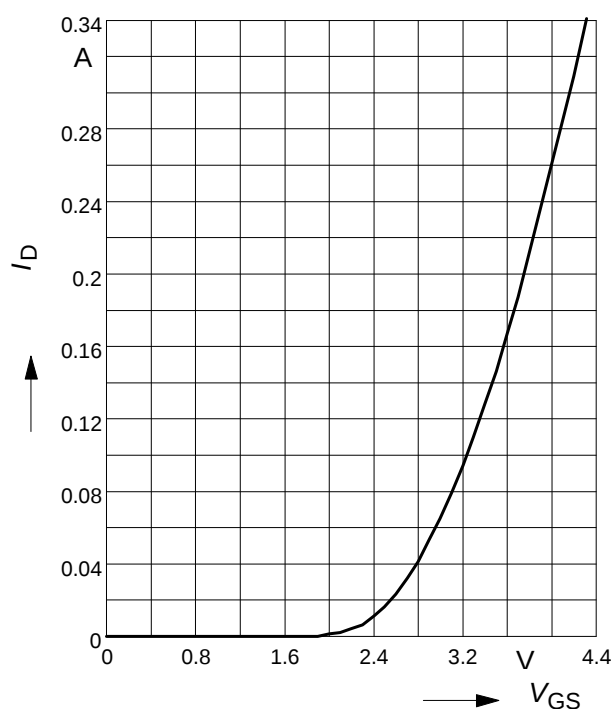
parameter: $T_j = 25\text{ }^{\circ}\text{C}$, V_{GS}



7 Typ. transfer characteristics

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

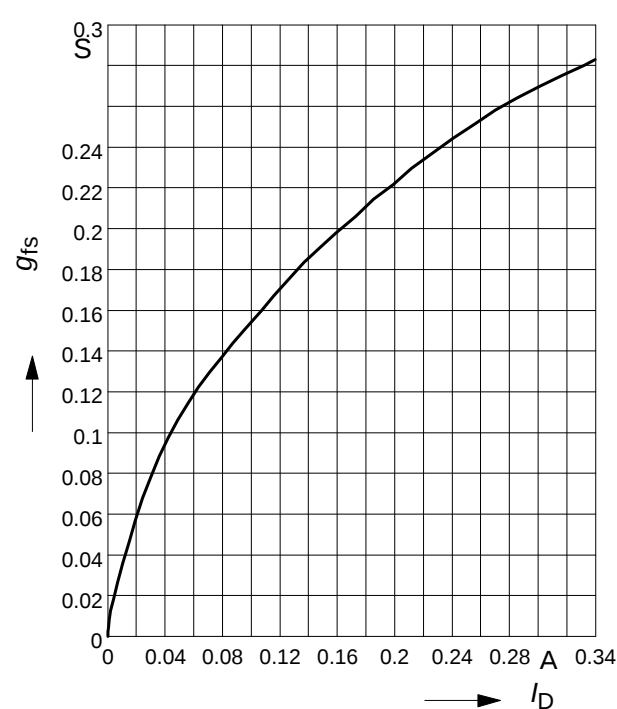
parameter: $T_j = 25\text{ }^{\circ}\text{C}$



8 Typ. forward transconductance

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

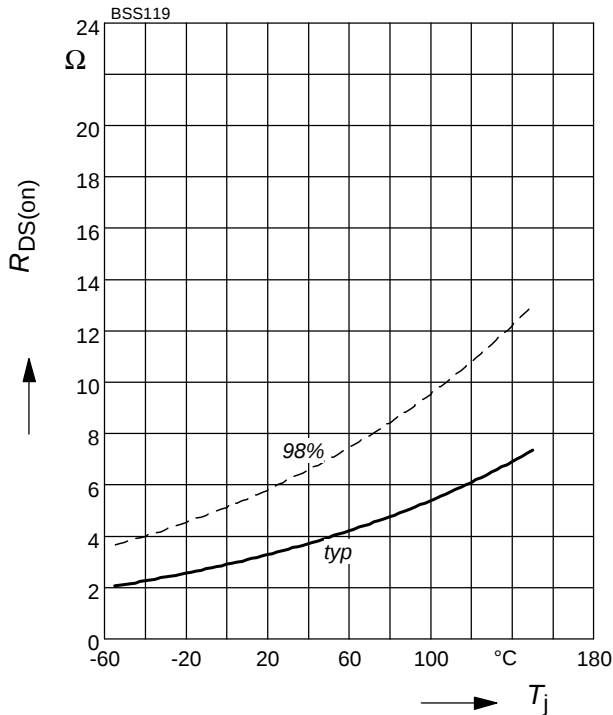
parameter: $T_j = 25\text{ }^{\circ}\text{C}$



9 Drain-source on-state resistance

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

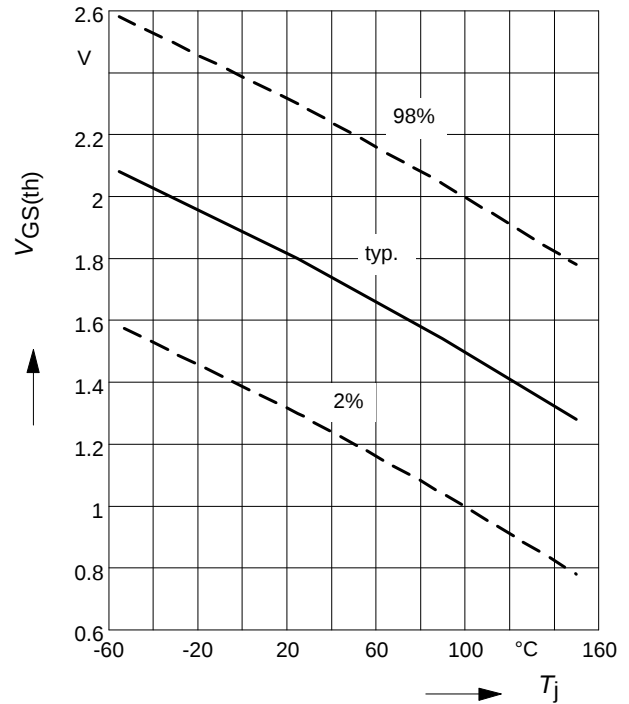
parameter: $I_D = 0.17 \text{ A}$, $V_{GS} = 10 \text{ V}$



10 Typ. gate threshold voltage

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

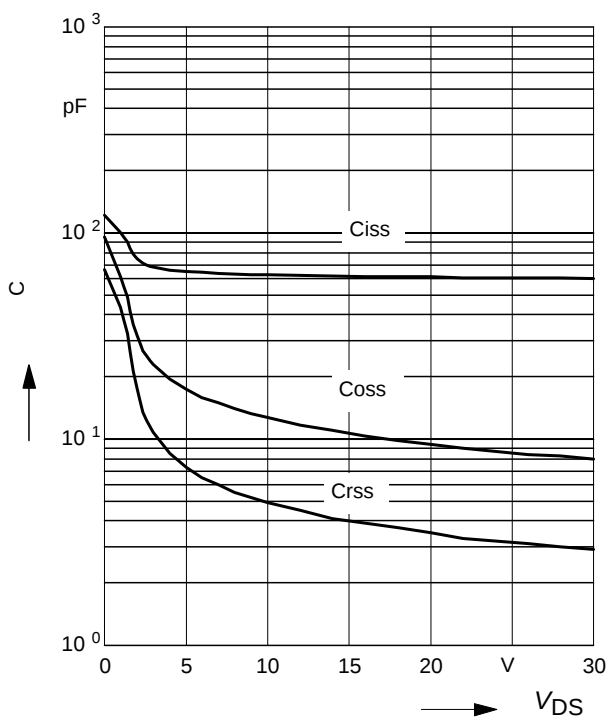
parameter: $V_{GS} = V_{DS}$; $I_D = 50 \mu\text{A}$



11 Typ. capacitances

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

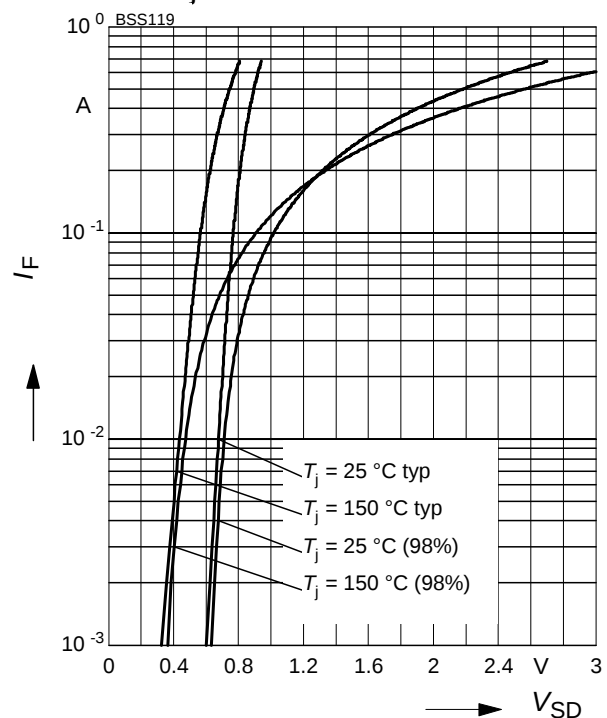
parameter: $V_{GS}=0$, $f=1 \text{ MHz}$, $T_j = 25^{\circ}\text{C}$



12 Forward character. of reverse diode

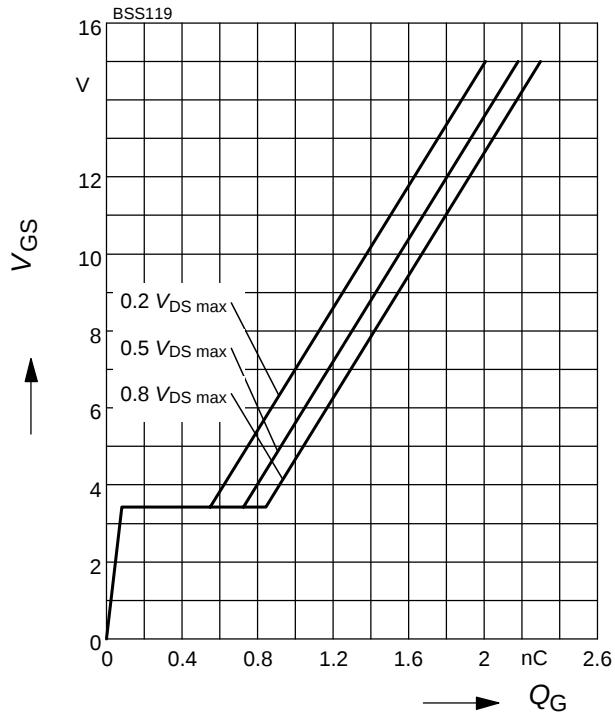
$$I_F = f(V_{SD})$$

parameter: T_j

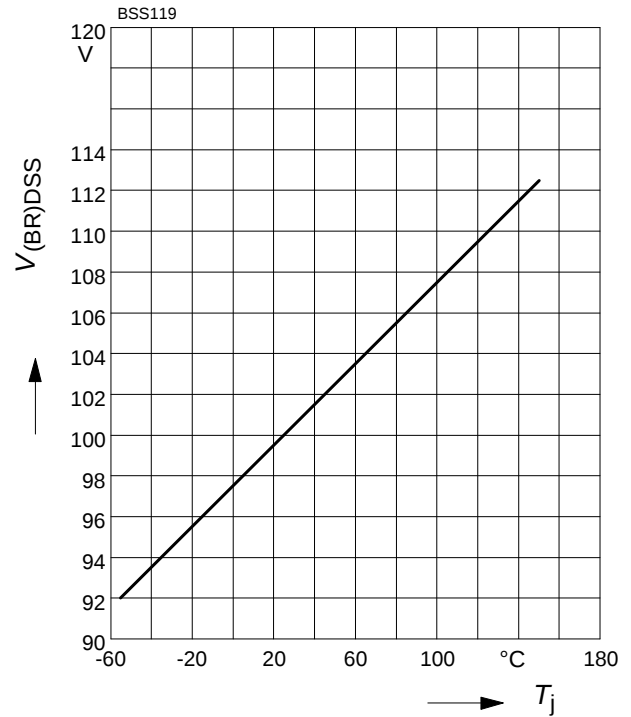


13 Typ. gate charge

 $V_{GS} = f(Q_G)$; parameter: V_{DS} ,

 $I_D = 0.17 \text{ A pulsed}, T_j = 25^\circ\text{C}$


14 Drain-source breakdown voltage

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


Published by
Infineon Technologies AG,
Bereichs Kommunikation
St.-Martin-Strasse 53,
D-81541 München
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