Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics[2]						
Thermal resistance, junction - case	R_{thJC}	-	-	-	2.0	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}	-	-	-	62	
SMD version, device on PCB	R_{thJA}	minimal footprint	-	-	62	
		6 cm^2 cooling area[2]	-	-	40	
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D= -1mA	-40	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-120µA	-1.2	-1.7	-2.2	
Zero gate voltage drain current	I_{DSS}	V_{DS}=-32V, V_{GS}=0V, T_j=25°C	-	-0.05	-1	µA
		V_{DS}=-32V, V_{GS}=0V, T_j=125°C[2]	-	-20	-200	
Gate-source leakage current	I_{GSS}	V_{GS}=-16V, V_{DS}=0V	-	-	-100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-40A	-	9.9	13.3	mΩ
		V_{GS}=-4.5V, I_D=-40A, SMD version	-	9.6	13	
		V_{GS}=-10V, I_D=-80A	-	6.8	8.2	
		V_{GS}=-10V, I_D=-80A, SMD version	-	6.5	7.9	

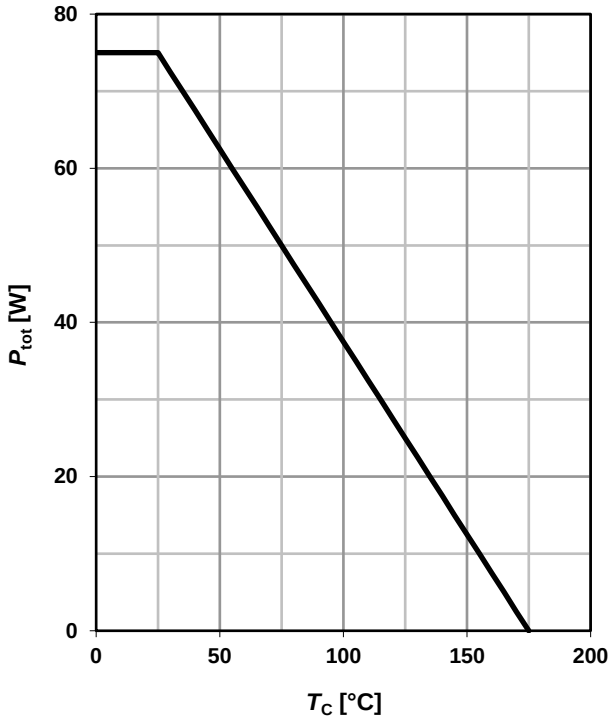
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics[2]						
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-25V, f=1MHz	-	4177	5430	pF
Output capacitance	C_{oss}		-	1185	1778	
Reverse transfer capacitance	C_{rss}		-	45	90	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-20V, V_{GS}=-10V, I_D=-80A, R_G=3.5Ω	-	12	-	ns
Rise time	t_r		-	11	-	
Turn-off delay time	$t_{d(off)}$		-	42	-	
Fall time	t_f		-	35	-	
Gate Charge Characteristics[2]						
Gate to source charge	Q_{gs}	V_{DD}=-32V, I_D=-80A, V_{GS}=0 to -10V	-	14	18	nC
Gate to drain charge	Q_{gd}		-	10	20	
Gate charge total	Q_g		-	71	92	
Gate plateau voltage	$V_{plateau}$		-	-3.7	-	V
Reverse Diode						
Diode continous forward current[2]	I_S	T_C=25°C	-	-	-80	A
Diode pulse current[2]	$I_{S,pulse}$		-	-	-320	
Diode forward voltage	V_{SD}	V_{GS}=0V, I_F=-80A, T_j=25°C	-	-1	-1.3	V
Reverse recovery time[2]	t_{rr}	V_R=-20V, I_F=-50A, di_F/dt=-100A/µs	-	46	-	ns
Reverse recovery charge[2]	Q_{rr}		-	43	-	nC

[1] Defined by design. Not subject to production test.

[2] Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm^2 (one layer, 70 µm thick) copper area for drain connection. PCB is vertical in still air.

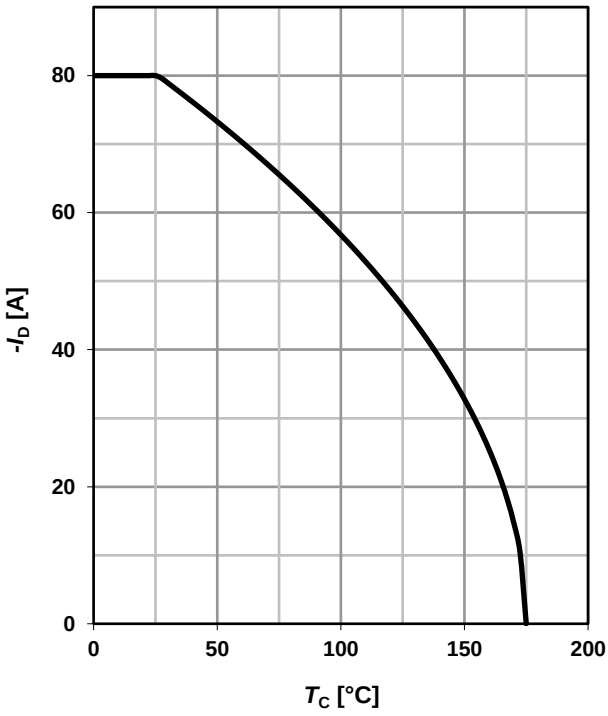
1 Power dissipation

$P_{tot} = f(T_C)$; $V_{GS} \leq -6V$



2 Drain current

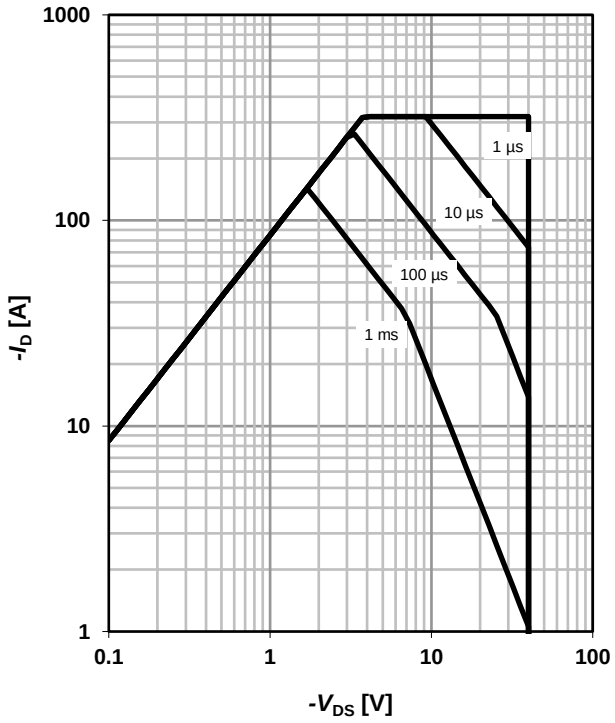
$I_D = f(T_C)$; $V_{GS} \leq -6V$; SMD



3 Safe operating area

$I_D = f(V_{DS})$; $T_C = 25$ °C; $D = 0$; SMD

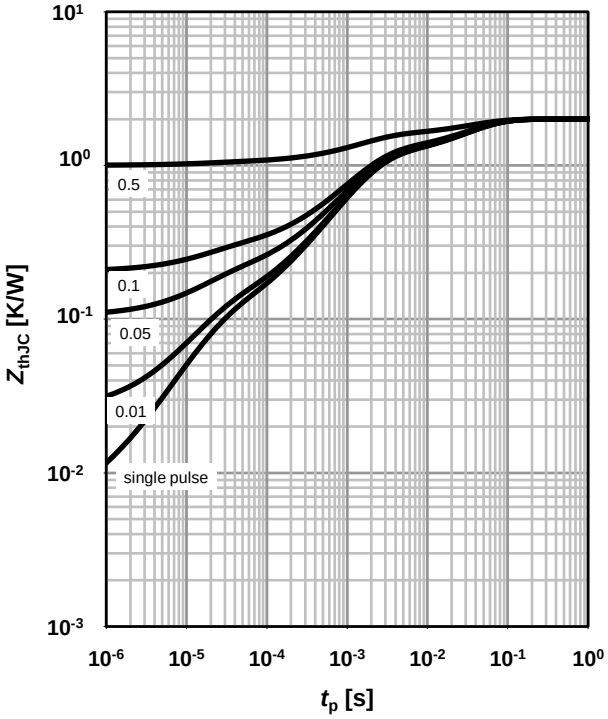
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJC} = f(t_p)$

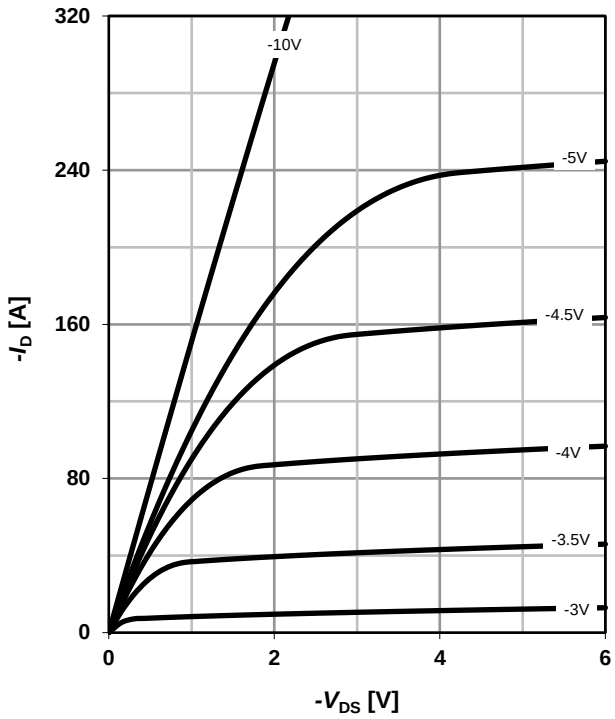
parameter: $D = t_p/T$



5 Typ. output characteristics

$I_D = f(V_{DS})$; $T_j = 25$ °C; SMD

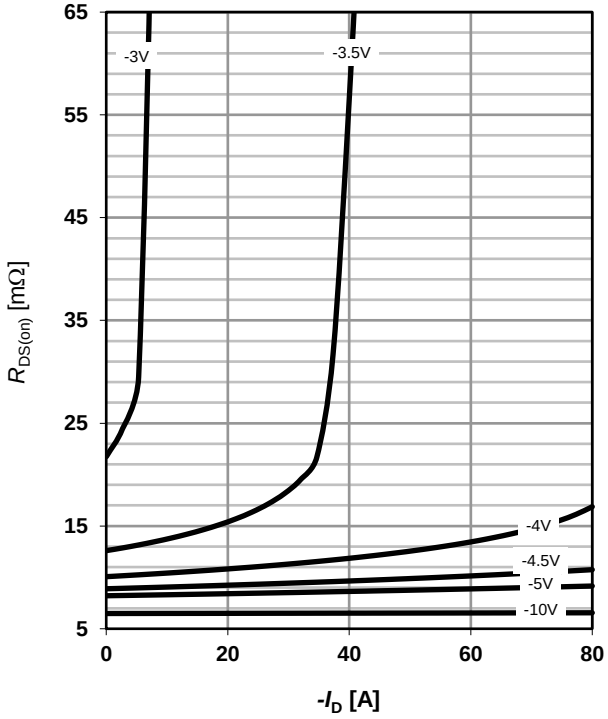
parameter: V_{GS}



6 Typ. drain-source on-state resistance

$R_{DS(on)} = (I_D)$; $T_j = 25$ °C; SMD

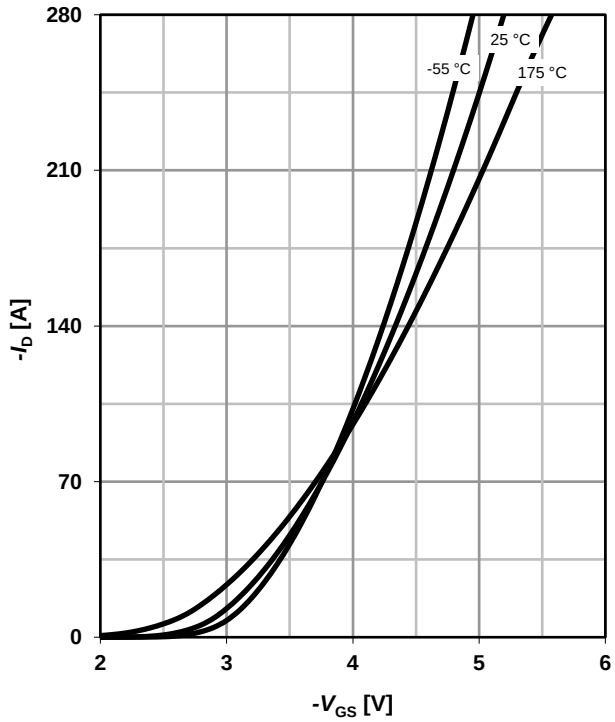
parameter: V_{GS}



7 Typ. transfer characteristics

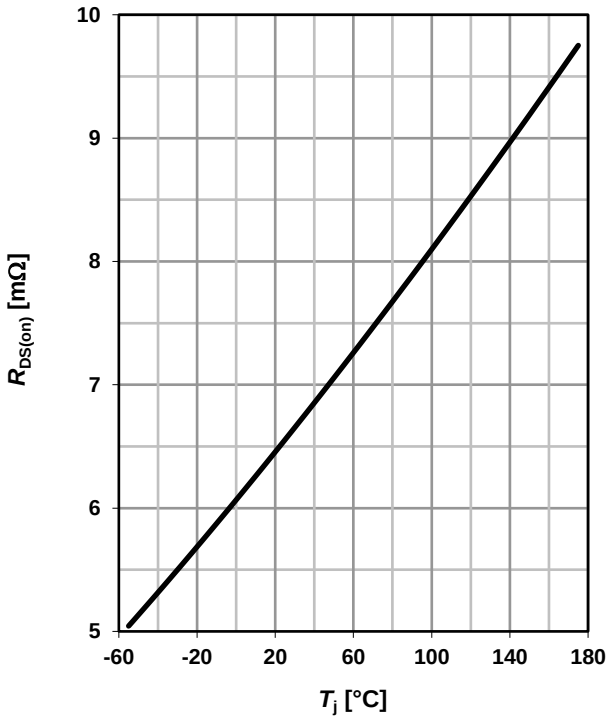
$I_D = f(V_{GS})$; $V_{DS} = -6$V

parameter: T_j



8 Typ. drain-source on-state resistance

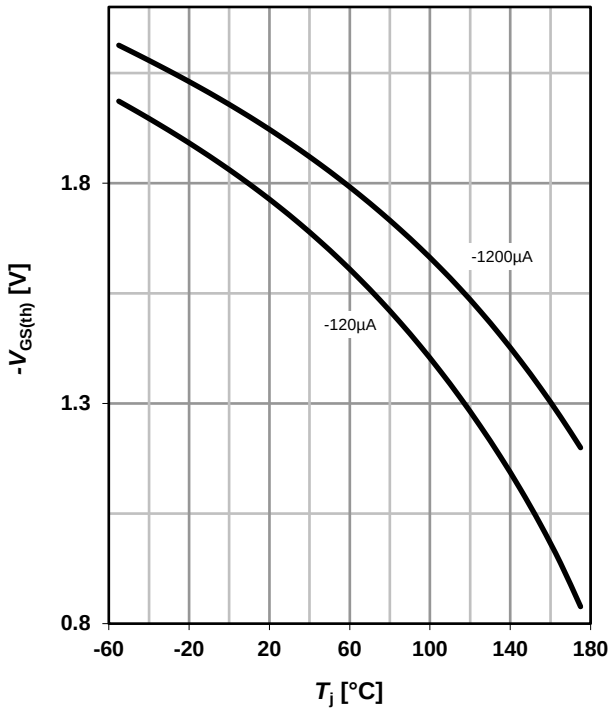
$R_{DS(on)} = f(T_j)$; $I_D = -80$ A; $V_{GS} = -10$ V; SMD



9 Typ. gate threshold voltage

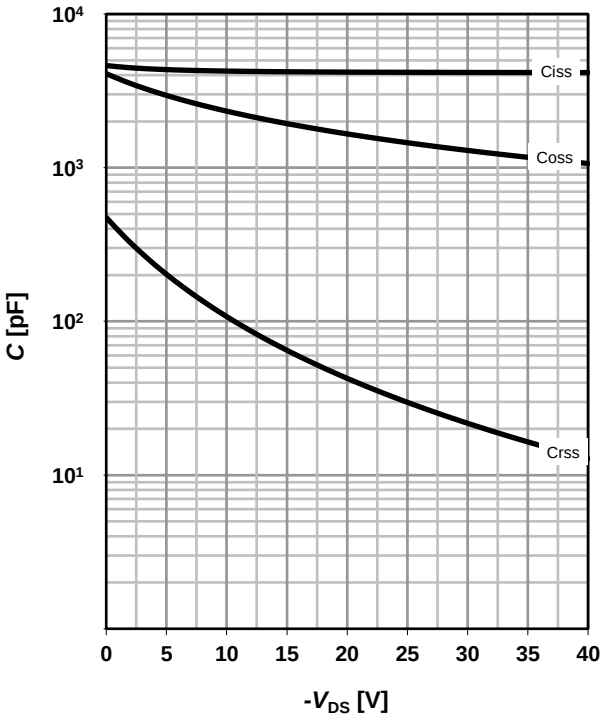
$V_{GS(th)} = f(T_j)$; $V_{GS} = V_{DS}$

parameter: I_D



10 Typ. capacitances

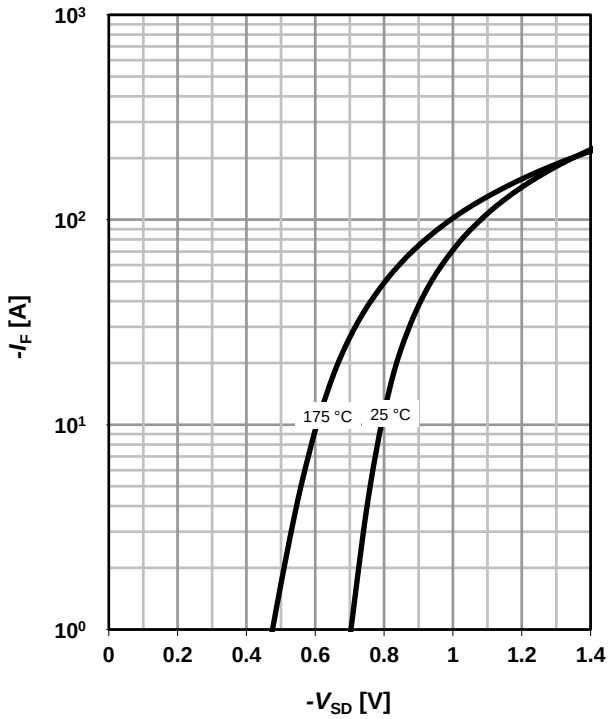
$C = f(V_{DS})$; $V_{GS} = 0$ V; f = 1 MHz



11 Typical forward diode characteristicis

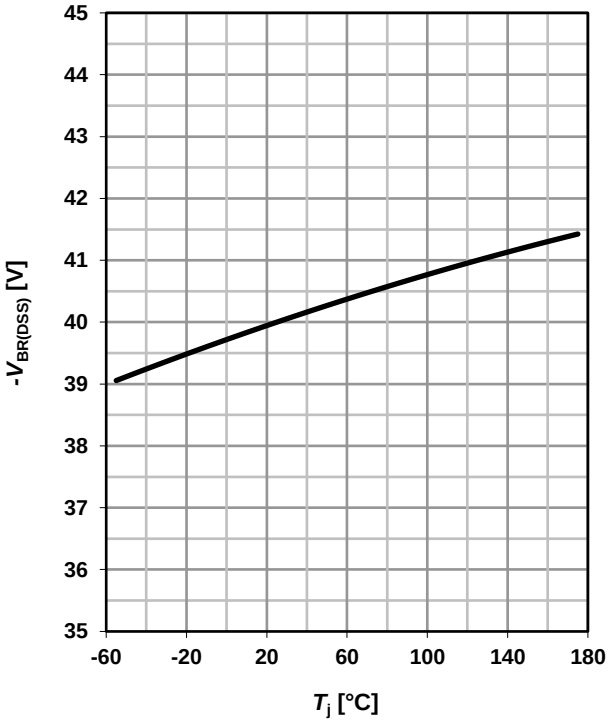
$I_F = f(V_{SD})$

parameter: T_j



12 Drain-source breakdown voltage

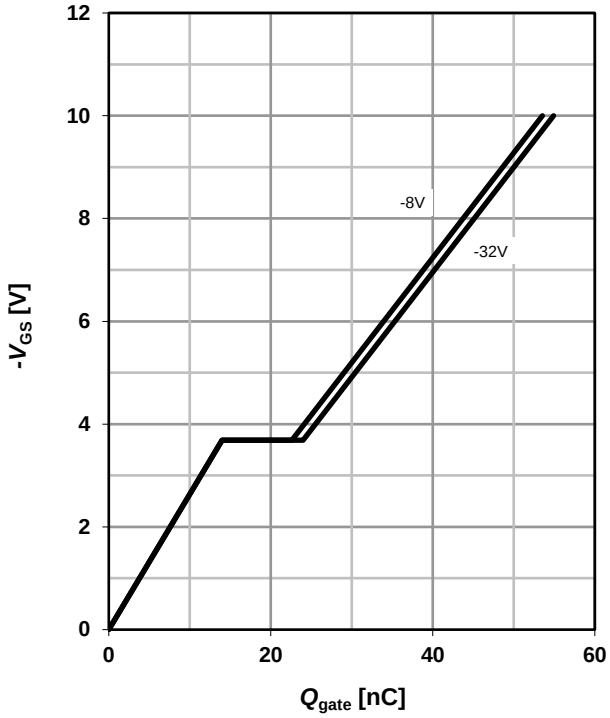
$V_{BR(DSS)} = f(T_j)$; $I_D = -1$ mA



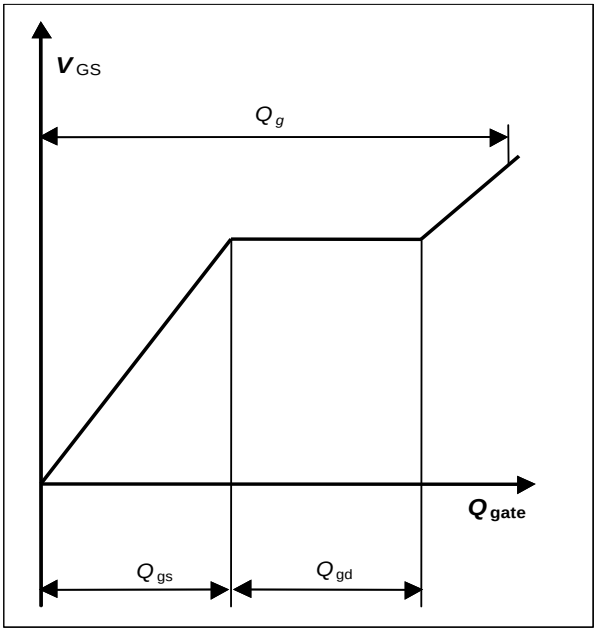
13 Typ. gate charge

V_{GS} = f(Q_{gate}); I_D = -80 A pulsed

parameter: V_{DD}



14 Gate charge waveforms



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Revision History

Version	Date	Changes
1.0	27.04.2011	Final Data Sheet
1.1	03.07.2019	V_{GS} changed