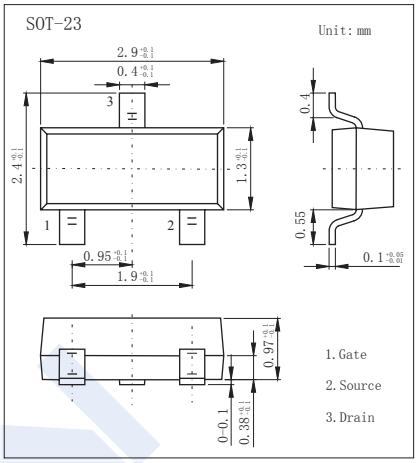
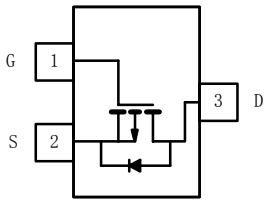
P-Channel MOSFET
SI2301DS-HF (KI2301DS-HF)

■ Features

- V_{DS} (V) =-20V
- $R_{DS(ON)}$ < 130mΩ (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 190mΩ (V_{GS} =-2.5V)
- Pb−Free Package May be Available. The G−Suffix Denotes a Pb−Free Lead Finish





■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current *1	Ta=25℃	I_D	-2.3	A
	Ta=70℃		-1.5	
Pulsed Drain Current *2		I_{DM}	-10	
Power Dissipation *1	Ta=25℃	P_D	1.25	W
	Ta=70℃		0.8	
Thermal Resistance.Junction- to-Ambient *1		R_{thJA}	100	℃/W
Thermal Resistance.Junction- to-Ambient *3			166	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

*1 Surface Mounted on FR4 Board, t ≤ 5 sec.

*2 Pulse width limited by maximum junction temperature.

*3 Surface Mounted on FR4 Board.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
		V_{DS}=-20V, V_{GS}=0V, T_J=55℃			-10	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-0.45		-1	V
Static Drain-Source On-Resistance *1	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2.8A			130	mΩ
		V_{GS}=-2.5V, I_D=-2.0A			190	
On state drain current *1	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS} ≤-5V	-6			A
		V_{GS}=-2.5V, V_{DS} ≤-5V	-3			
Forward Transconductance *1	g_{FS}	V_{DS}=-5V, I_D=-2.8A		6.5		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-6V, f=1MHz *2		415		pF
Output Capacitance	C_{oss}			223		
Reverse Transfer Capacitance	C_{rss}			87		
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-6V, I_D=-2.8A *2		5.8	10	nC
Gate Source Charge	Q_{gs}			0.85		
Gate Drain Charge	Q_{gd}			1.7		
Turn-On DelayTime	$t_{d(on)}$	V_{GEN}=-4.5V, V_{DS}=-6V, R_L=6Ω,R_G=6Ω I_D=1.0A *3		13	25	ns
Turn-On Rise Time	t_r			36	60	
Turn-Off DelayTime	$t_{d(off)}$			42	70	
Turn-Off Fall Time	t_f			34	60	
Continuous Source Current (Diode Conductio	I_S				-1.6	A
Diode Forward Voltage	V_{SD}	I_S=-1.6A,V_{GS}=0V		-0.8	-1.2	V

*1 Pulse test: PW ≤ 300us duty cycle ≤ 2%.

*2 For DESIGN AID ONLY, not subject to production testing.

*3 Switching time is essentially independent of operating temperature.

■ Marking

Marking	A1*F

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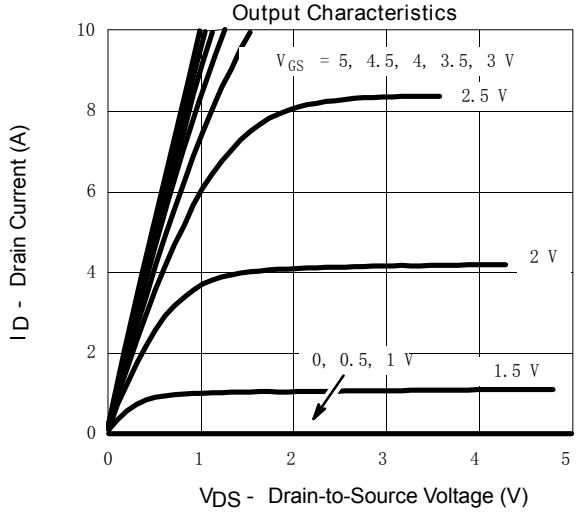
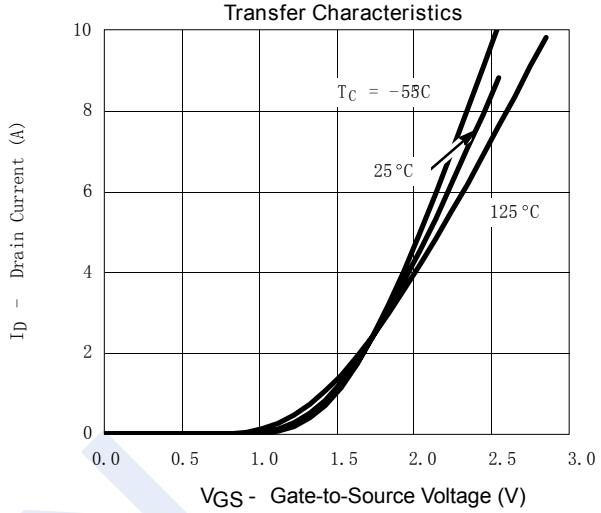
■ Typical Characterisitics

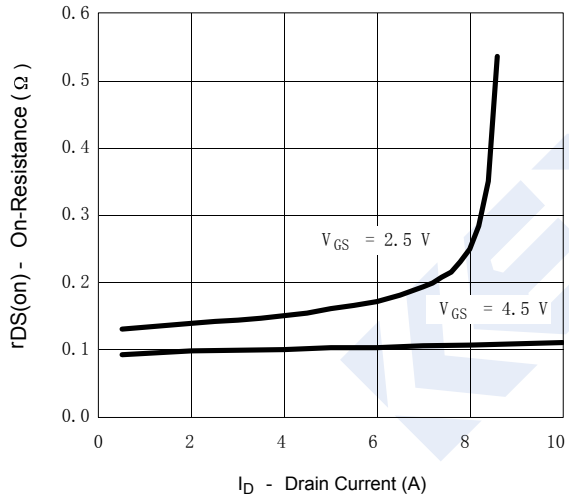
Output Characteristics



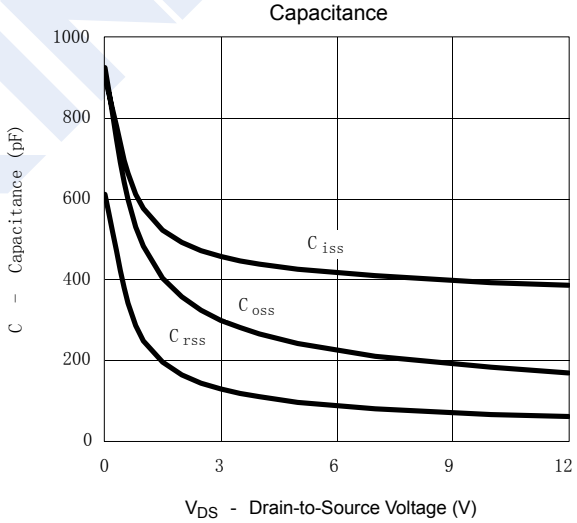
Transfer Characteristics



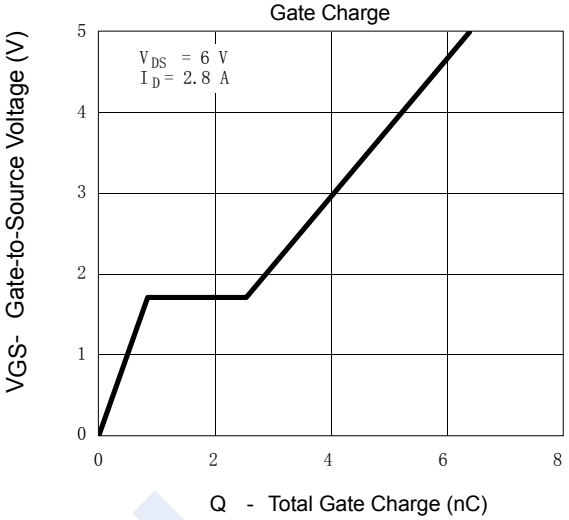
On-Resistance vs. Drain Current



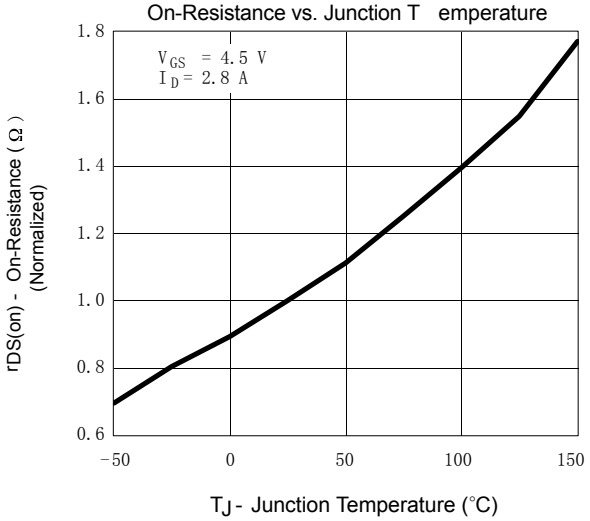
Capacitance



Gate Charge



On-Resistance vs. Junction T emperature



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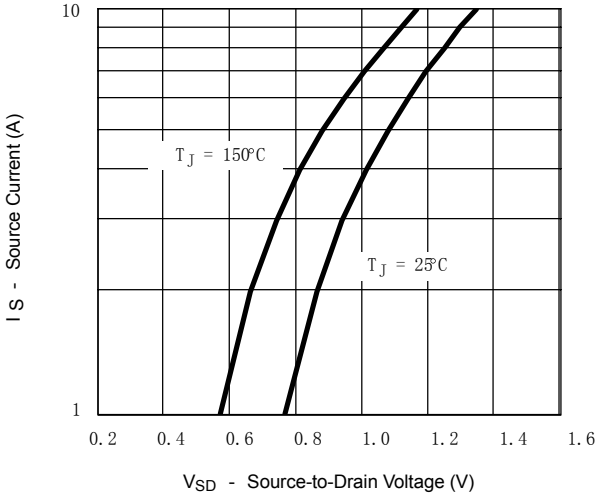
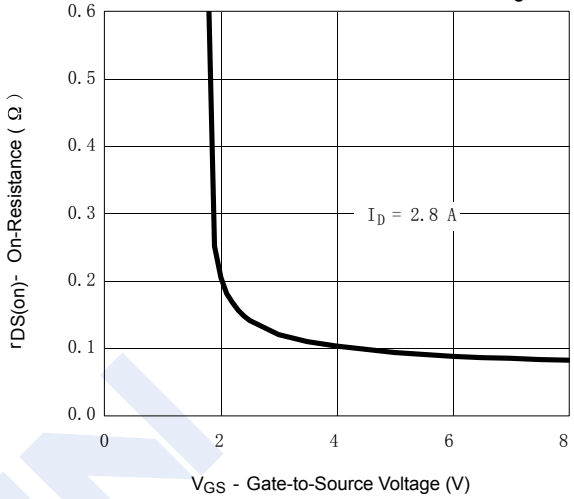
■ Typical Characterisitics

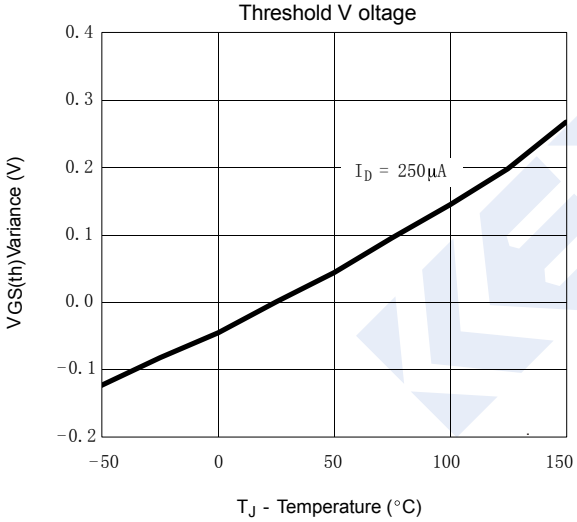
Source-Drain Diode Forward V oltage



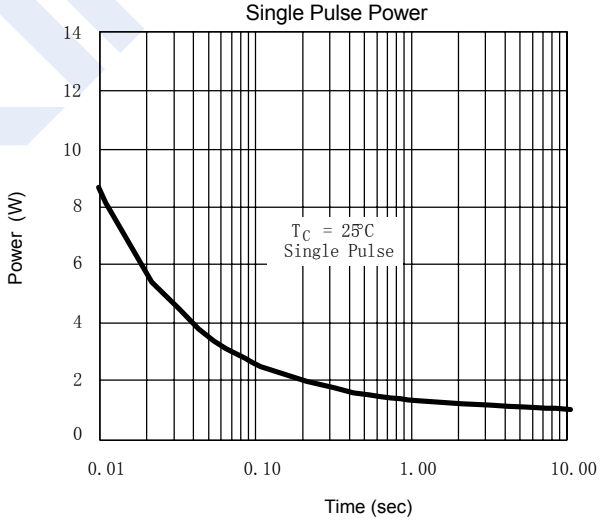
On-Resistance vs. Gate-to-Source Voltage



Threshold V oltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient