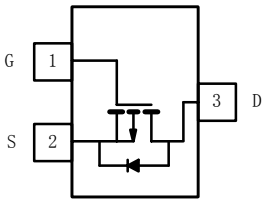
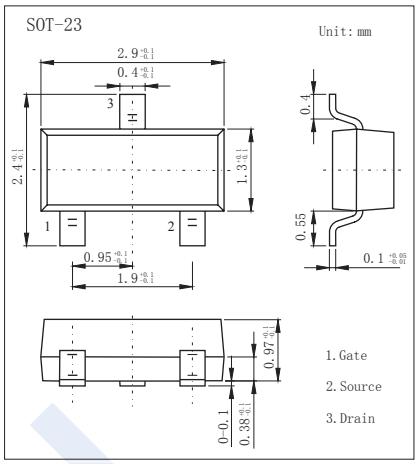
P-Channel Enhancement MOSFET

SI2321DS (KI2321DS)

■ Features

- V_{DS} (V) =-20V
- I_D =-3.3A (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 57mΩ (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 76mΩ (V_{GS} =-2.5V)
- $R_{DS(ON)}$ < 110mΩ (V_{GS} =-1.8V)





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	5 sec	Steady State	Unit
Drain-Source Voltage	V_{DS}	-20		V
Gate-Source Voltage	V_{GS}	±8		
Continuous Drain Current Ta = 25℃	I_D	-3.3	-2.9	A
Ta = 70℃		-2.6	-2.3	
Pulsed Drain Current	I_{DM}	-12		
Power Dissipation Ta = 25℃	P_D	0.89	0.71	W
Ta = 70℃		0.57	0.45	
Thermal Resistance.Junction- to-Ambient t≤5 sec	R_{thJA}	140		℃/W
Steady State		175		
Thermal Resistance.Junction- to-Foot	R_{thJF}	75		
Junction Temperature	T_J	150		℃
Storage Temperature Range	T_{stg}	-55 to 150		

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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}=-16V, V_{GS}=0V			-1	μA
		V_{DS}=-16V, 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	-0.4		-0.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-3.3A		44	57	mΩ
		V_{GS}=-2.5V, I_D=-2.8A		61	76	
		V_{GS}=-1.8V, I_D=-4A		84	110	
On state drain current	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS}=-5V	-6			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-3.3A		3		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-6V, f=1MHz *1		715		pF
Output Capacitance	C_{oss}			170		
Reverse Transfer Capacitance	C_{rss}			120		
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-6V, I_D=-3.3A *1		8	13	nC
Gate Source Charge	Q_{gs}			1.2		
Gate Drain Charge	Q_{gd}			2.2		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-6V, R_L=6Ω ,R_{GEN}=6Ω I_D=-1.0A *1		15	25	ns
Turn-On Rise Time	t_r			35	55	
Turn-Off DelayTime	$t_{d(off)}$			60	90	
Turn-Off Fall Time	t_f			40	60	
Maximum Body-Diode Continuous Current	I_S				-1.6	A
Diode Forward Voltage	V_{SD}	I_S=-1.6A,V_{GS}=0V			-1.2	V

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

■ Marking

Marking	D1*

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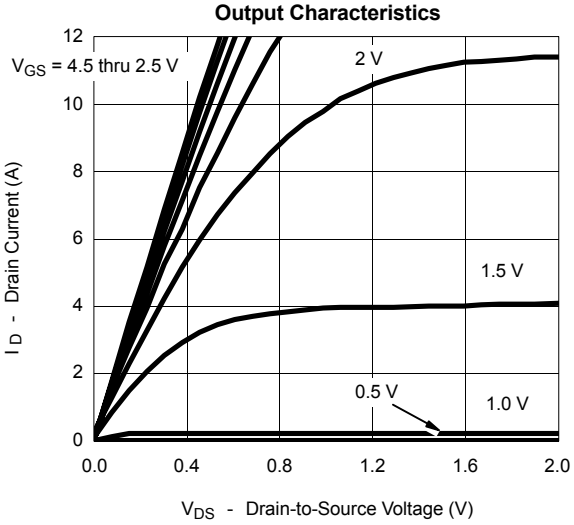
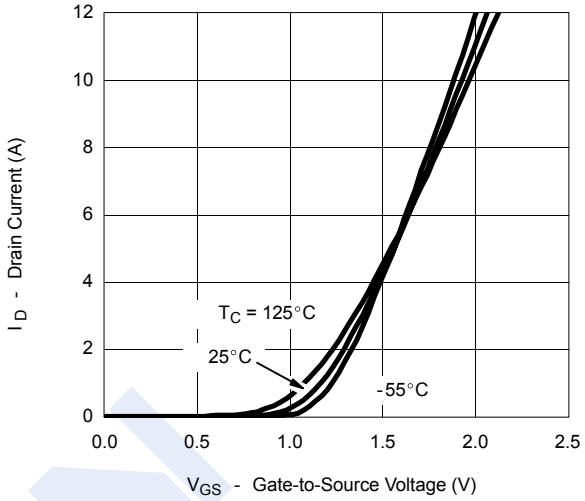
■ Typical Characterisitics

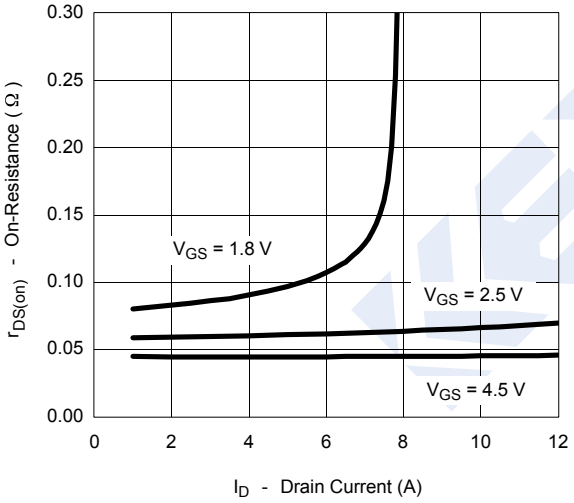
Output Characteristics



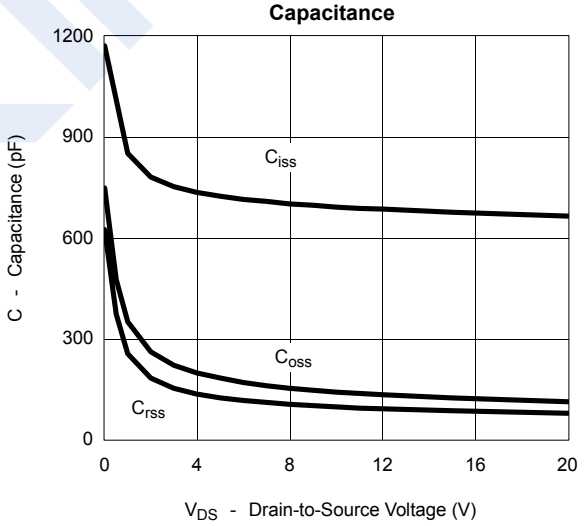
Transfer Characteristics



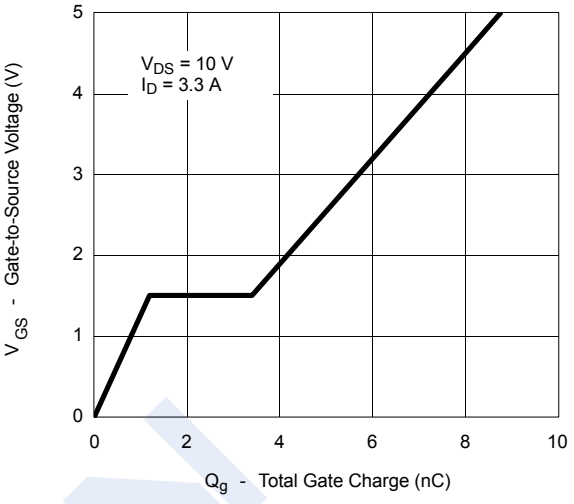
On-Resistance vs. Drain Current



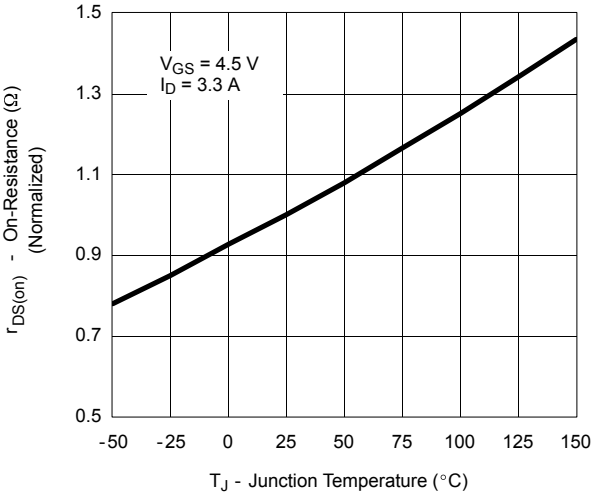
Capacitance



Gate Charge



Normalized On-Resistance vs. Junction Temperature



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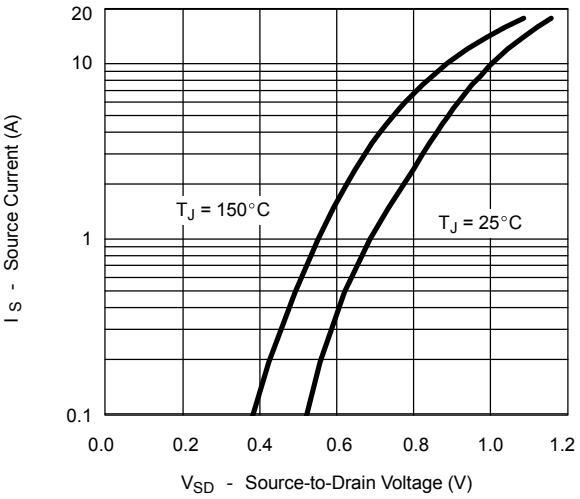
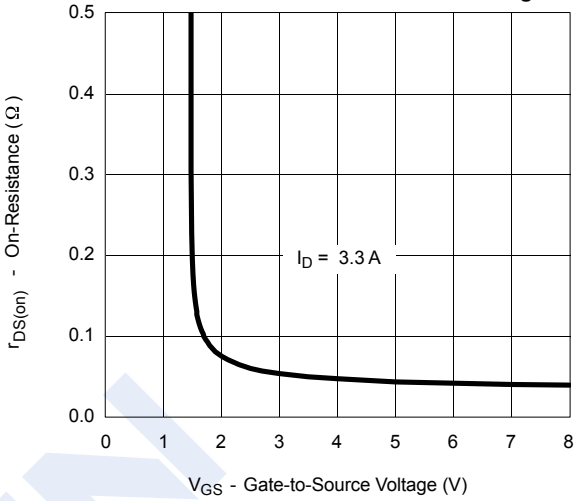
■ Typical Characterisitics

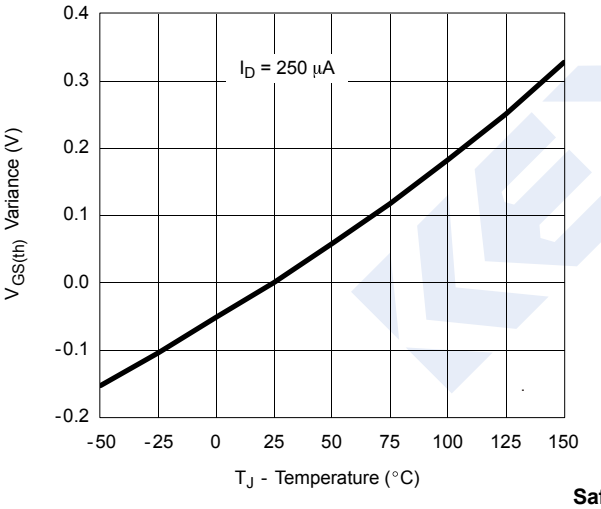
Source-Drain Diode Forward Voltage



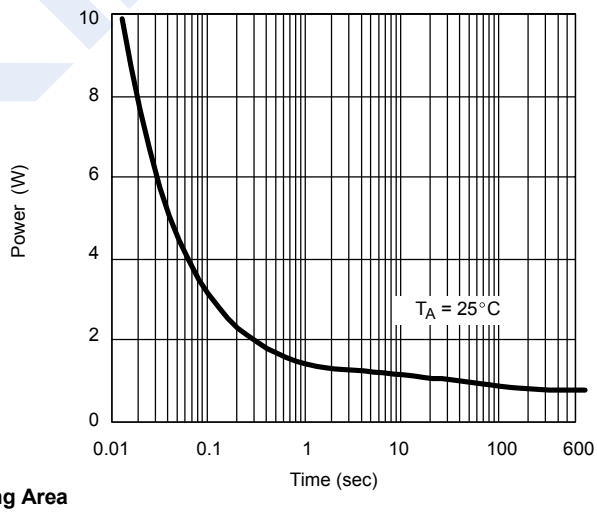
On-Resistance vs. Gate-to-Source Voltage



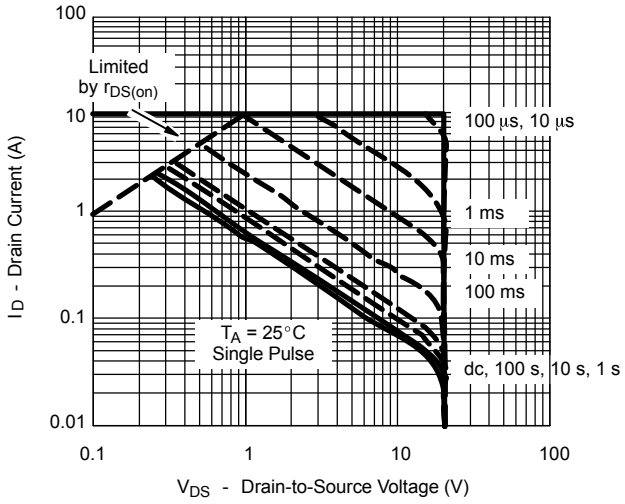
Threshold Voltage



Single Pulse Power



Safe Operating Area



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■ Typical Characterisitics