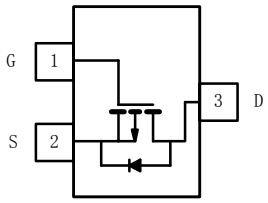
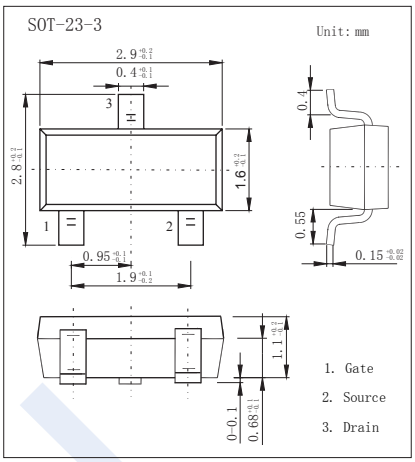
P-Channel Enhancement MOSFET

SI2319DS (KI2319DS)

■ Features

- V_{DS} (V) =-40V
- I_D =-3.0A (V_{GS} =-10V)
- $R_{DS(ON)}$ < 82mΩ (V_{GS} =-10V)
- $R_{DS(ON)}$ < 130mΩ (V_{GS} =-4.5V)





■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	5 sec	Steady State	Unit
Drain-Source Voltage		V_{DS}	-40		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J = 150℃) *1	Ta = 25℃	I_D	-3.0	-2.3	A
	Ta = 70℃		-2.4	-1.85	
Pulsed Drain Current		I_{DM}	-12		
Power Dissipation *1	Ta = 25℃	P_D	1.25	0.75	W
	Ta = 70℃		0.8	0.48	
Thermal Resistance.Junction- to-Ambient *1		R_{thJA}	100		℃/W
Thermal Resistance.Junction- to-Ambient *2			166		
Thermal Resistance.Junction- to-Foot		R_{thJF}	50		
Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{stg}	-55 to 150		

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

*2 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	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V, V_{GS}=0V			-1	μA
		V_{DS}=-40V, V_{GS}=0V, T_J=55℃			-10	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-1		-3	V
Static Drain-Source On-Resistance *1	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-3.0A		65	82	mΩ
		V_{GS}=-4.5V, I_D=-2.4A		100	130	
On state drain current *1	$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V	-6			A
Forward Transconductance *1	g_{FS}	V_{DS}=-5V, I_D=-3.0A		7		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-20V, f=1MHz		470		pF
Output Capacitance	C_{oss}			85		
Reverse Transfer Capacitance	C_{rss}			65		
Total Gate Charge	Q_g	V_{GS}=-10V, V_{DS}=-20V, I_D=-3A		11.3	17	nC
Gate Source Charge	Q_{gs}			1.7		
Gate Drain Charge	Q_{gd}			3.3		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-20V, R_L=20Ω,R_{GEN}=6Ω I_D=-1.0A		7	15	ns
Turn-On Rise Time	t_r			15	25	
Turn-Off DelayTime	$t_{d(off)}$			25	40	
Turn-Off Fall Time	t_f			25	40	
Maximum Body-Diode Continuous Current	I_S				-1.25	A
Diode Forward Voltage	V_{SD}	I_S=-1.25A,V_{GS}=0V		-0.8	-1.2	V

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

■ Marking

Marking	C9*

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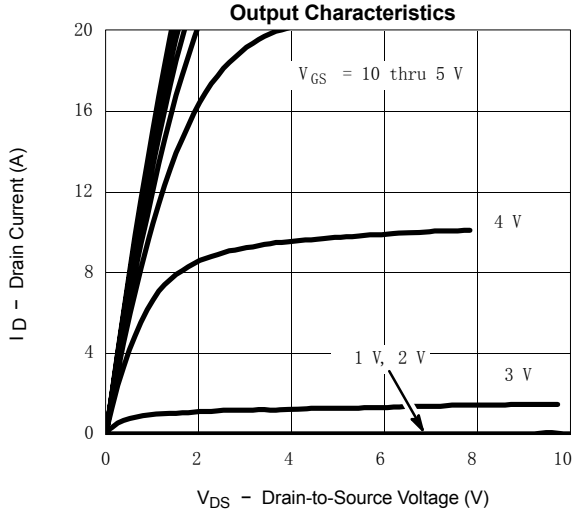
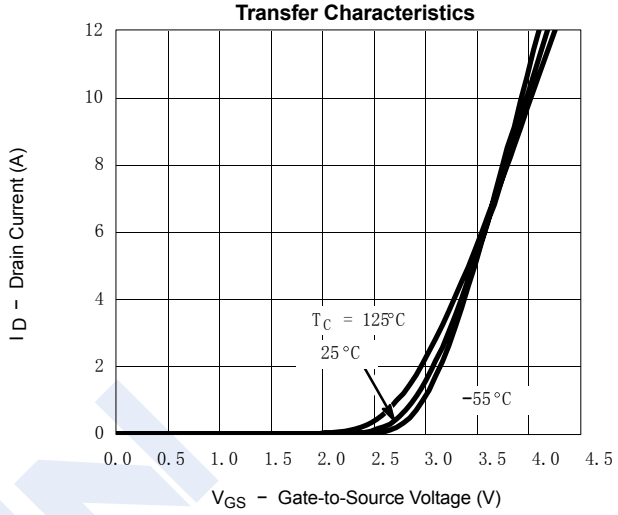
■ Typical Characterisitics

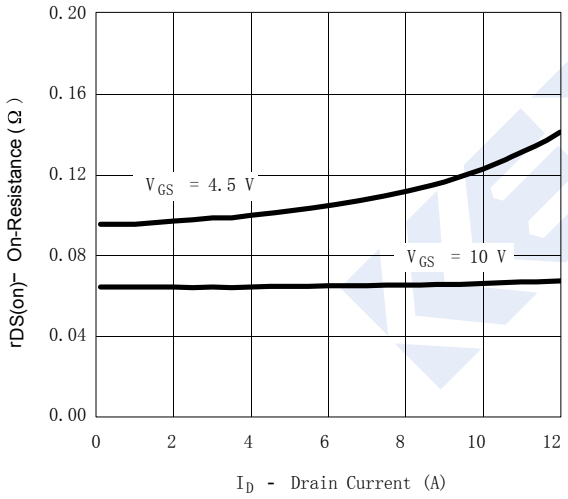
Output Characteristics



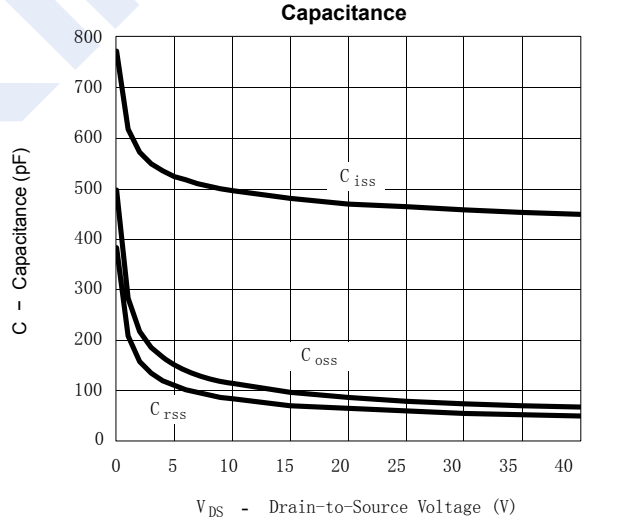
Transfer Characteristics



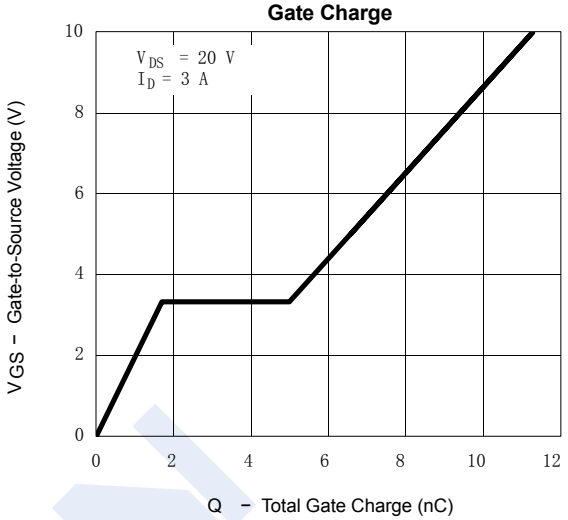
On-Resistance vs. Drain Current



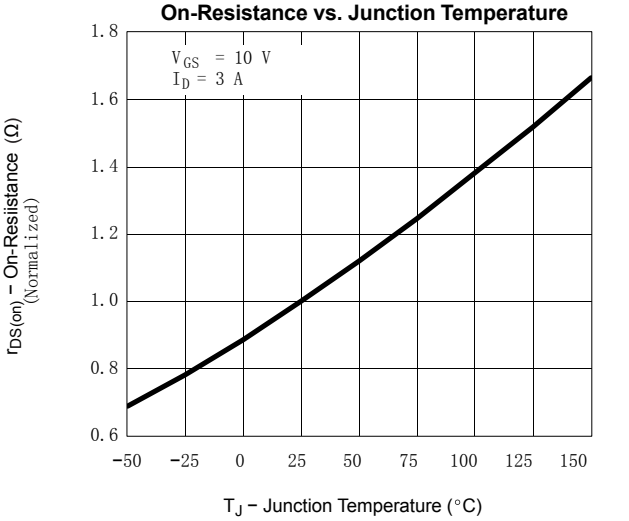
Capacitance



Gate Charge



On-Resistance vs. Junction Temperature



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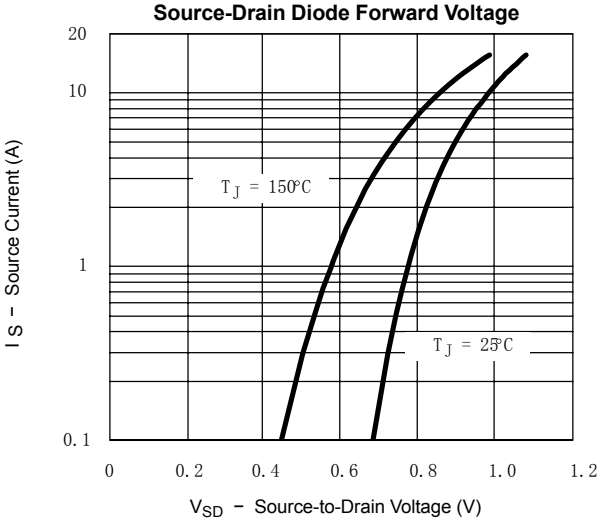
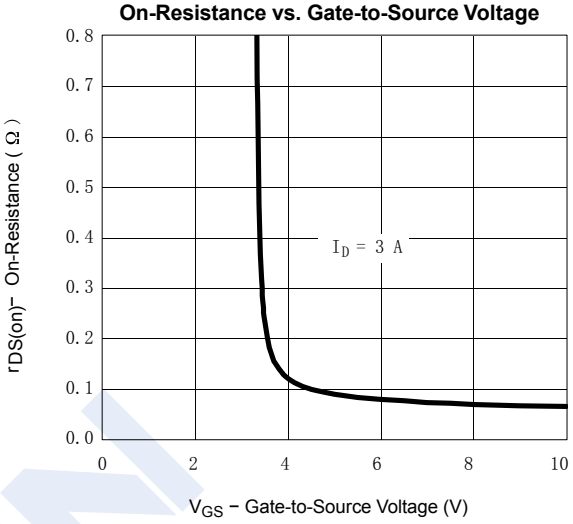
■ Typical Characterisitics

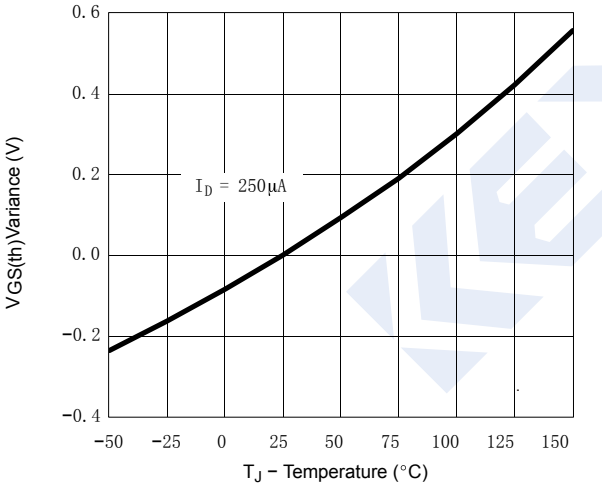
Source-Drain Diode Forward Voltage



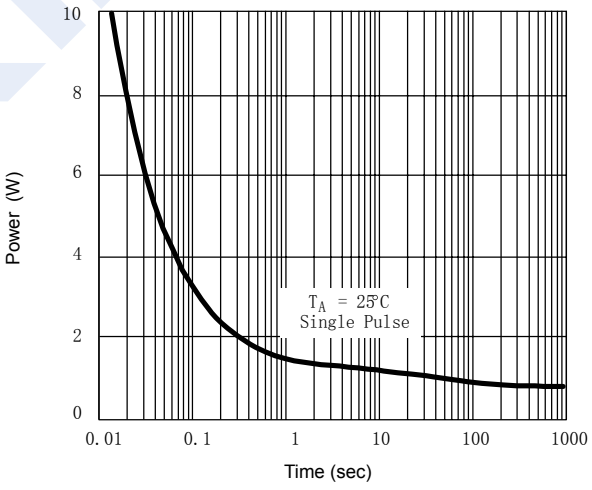
On-Resistance vs. Gate-to-Source Voltage



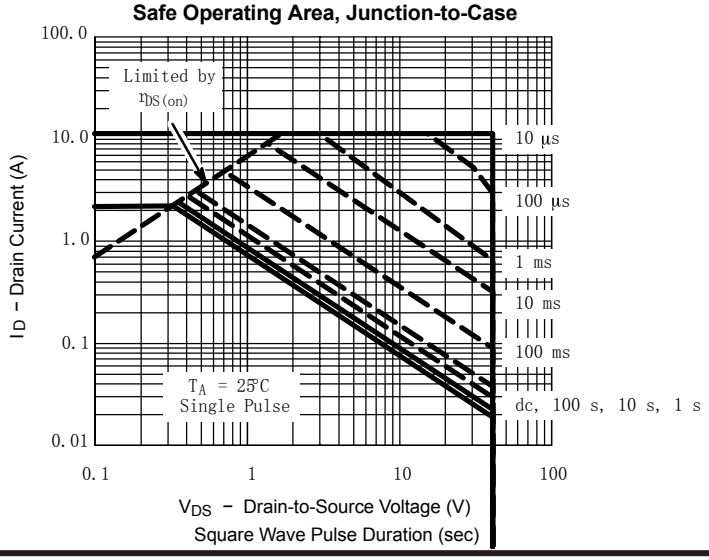
Threshold Voltage



Single Pulse Power



Safe Operating Area, Junction-to-Case



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■ Typical Characterisitics