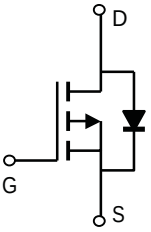
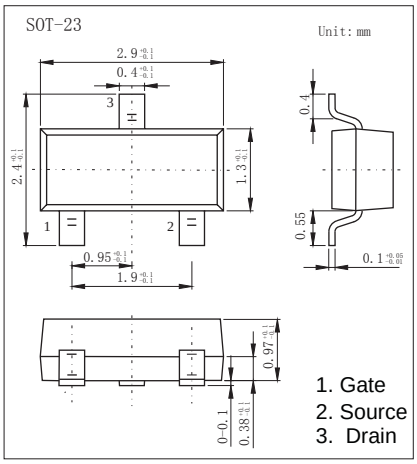
P-Channel MOSFET

SI2305

■ Features

- $V_{DS\ (V)}$ = -20V
- $R_{DS(ON)}$＜0.052 Ω (V_{GS} = -4.5V)
- $R_{DS(ON)}$＜0.071 Ω (V_{GS} = -2.5V)
- $R_{DS(ON)}$＜0.108 Ω (V_{GS} = -1.8V)





■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-source voltage		V_{DS}	-20	V
Gate-source voltage		V_{GS}	±10	V
Continuous drain current	T_A=25℃ T_A=70℃	I_D	-3.5 -2.8	A
Pulsed drain current		I_{DM}	-12	A
Power dissipation	T_A=25℃ T_A=70℃	P_D	1.25 0.8	W
Thermal Resistance.Junction-to-Ambient		$R_{\theta JA}$	130	℃/W
Operating junction and storage temperature range		T_j,T_{stg}	-55 to +150	℃

SI2305

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	V_{DSS}	V_{GS} = 0 V, I_D = -250μA	-20			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 μA	-0.45		-0.8	V
Zero gate voltage drain current	I_{DSS}	V_{DS} = -20 V , V_{GS} = 0 V			-1	μA
		V_{DS} = -20V , V_{GS} = 0 V, T_J = 55 ℃			-10	
Gate-body leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±10 V			±100	nA
Drain-source on-state resistance	$r_{DS(on)}$	V_{GS} = -4.5 V, I_D = -3.5 A		0.044	0.052	Ω
		V_{GS} = -2.5 V, I_D = -3.0 A		0.060	0.071	
		V_{GS} = -2 V , I_D = -2.0 A		0.087	0.108	
On-state drain current	$I_{D(on)}$	V_{DS} ≤ -5 V, V_{GS} = -4.5 V	-6			A
		V_{DS} ≤ -5 V, V_{GS} = -2.5 V	-3			
Forward transconductance	g_{fs}	V_{DS} = -5 V, I_D = -3.5 A		8.5		S
Input capacitance *	C_{iss}	V_{DS} = -10V , V_{GS} = 0 , f = 1 MHz		1245		pF
Output capacitance *	C_{oss}			375		
Reverse transfer capacitance *	C_{rss}			210		
Total gate charge *	Q_g	V_{DS} = -10V ,V_{GS} = -4.5 V , I_D= -3.5 A		10	15	nC
Gate-source charge *	Q_{gs}			2		
Gate-drain charge *	Q_{gd}			2		
Turn-on Delay time	$t_{d(on)}$	V_{DD} = -5V , R_L = 4Ω , I_D = -1A , V_{GEN} =- 4.5V , R_G = 6Ω		13	20	ns
Turn-on Reise time	t_r			25	40	
Turn-off Dealy time	$t_{d(off)}$			55	80	
Turn-off Fall time	t_f			19	35	
Continuous source current (diode conduction) *	I_S			-1.6		A
Diode forward voltage	V_{SD}	I_S = -1.6 A, V_{GS} = 0 V			-1.2	V

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

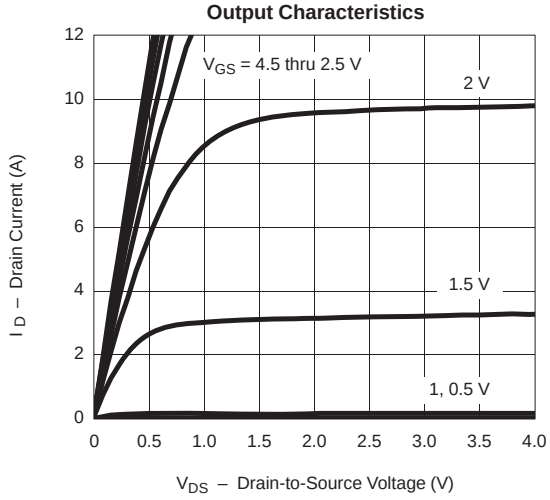
■ Marking

Marking	A5*

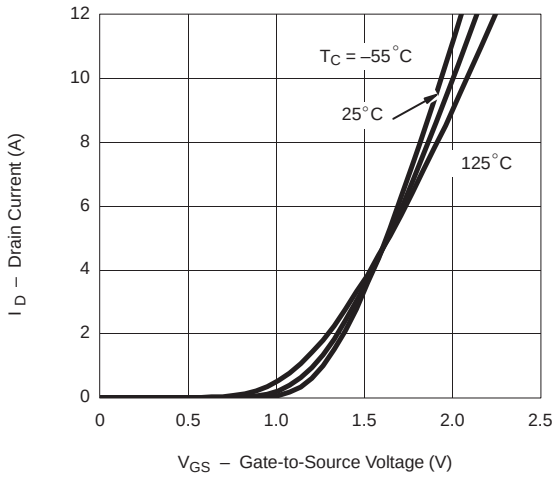
SI2305

■ Typical Characteristics

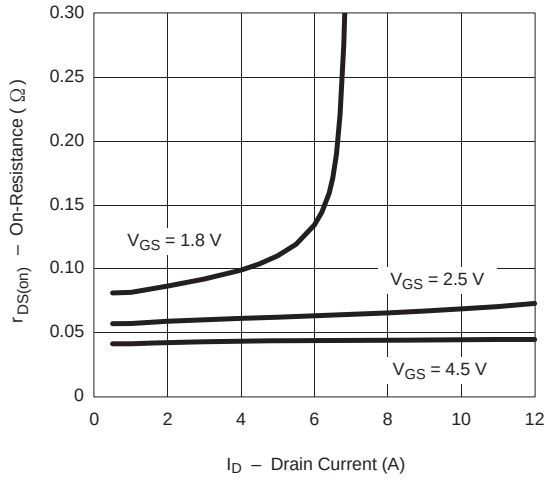
Output Characteristics



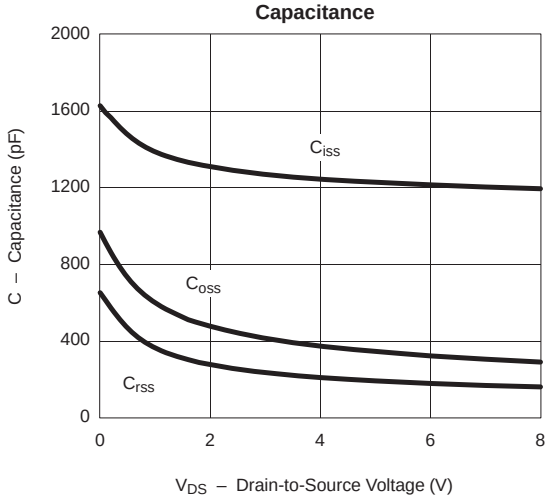
Transfer Characteristics



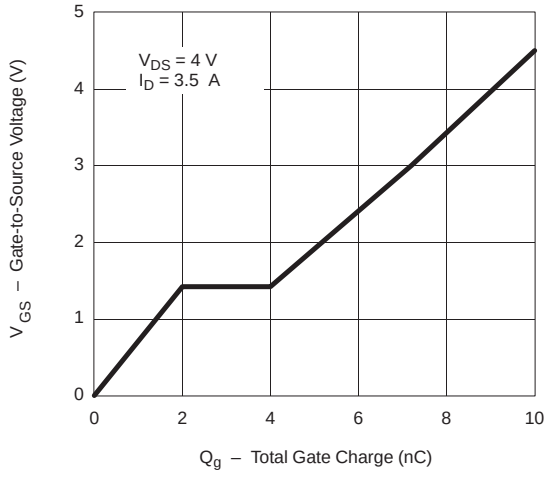
On-Resistance vs. Drain Current



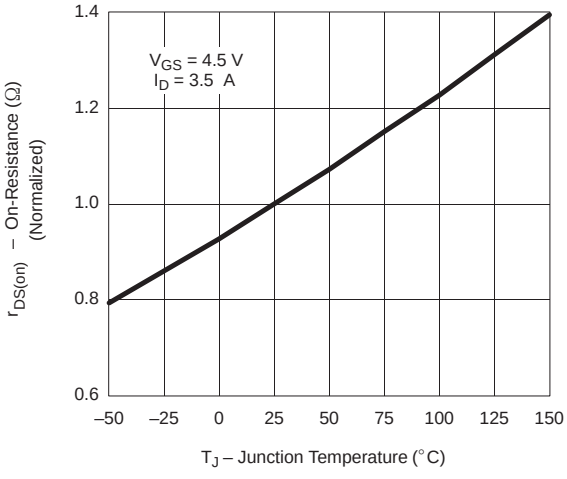
Capacitance



Gate Charge



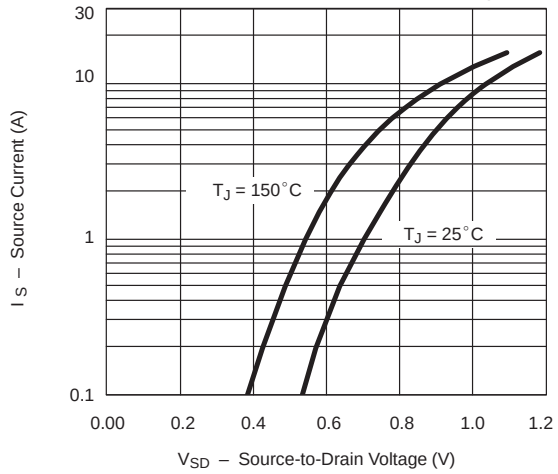
On-Resistance vs. Junction Temperature



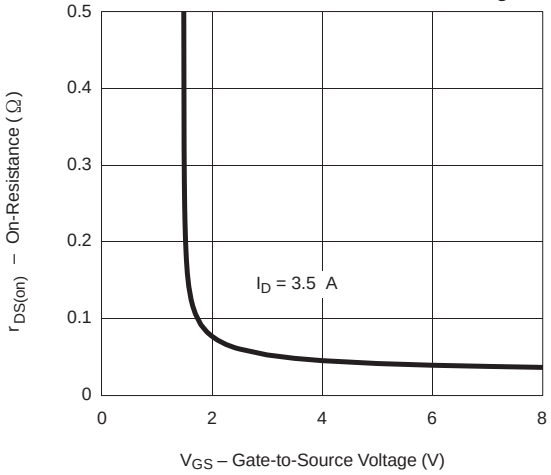
SI2305

■ Typical Characterisitics

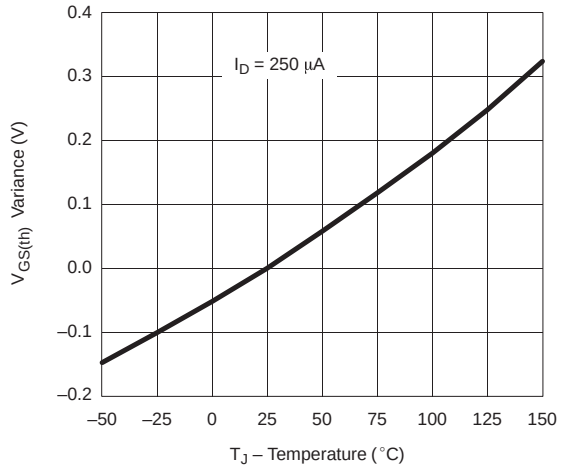
Source-Drain Diode Forward Voltage



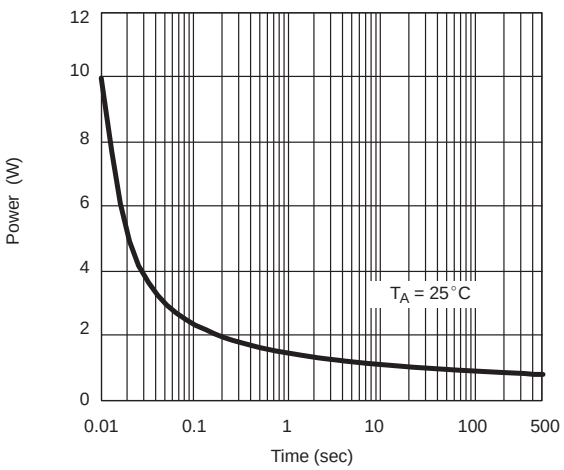
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient