

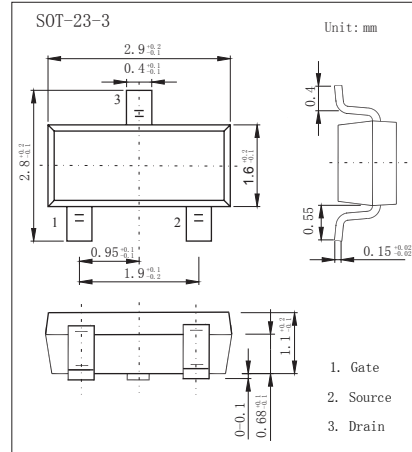
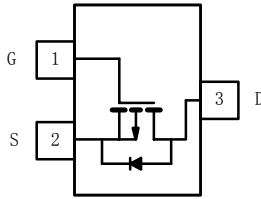


**SOT-23-3 Plastic-Encapsulate MOSFETS**

**SI2301 P-Channel Enhancement MOSFET**

■ Features

- $V_{DS} (V) = -20V$
- $R_{DS(ON)} < 100m\Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 150m\Omega$  ( $V_{GS} = -2.5V$ )



■ Absolute Maximum Ratings  $T_a = 25^\circ C$

Parameter	Symbol	5 sec	Steady State	Unit
Drain-Source Voltage	$V_{DS}$	-20		V
Gate-Source Voltage	$V_{GS}$	$\pm 8$		
Continuous Drain Current ( $T_J = 150^\circ C$ )*1	$I_D$	$T_a = 25^\circ C$	-2.4	A
		$T_a = 70^\circ C$	-1.9	
Pulsed Drain Current *2	$I_{DM}$	-10		
Power Dissipation *1	$P_D$	$T_a = 25^\circ C$	0.9	W
		$T_a = 70^\circ C$	0.57	
Thermal Resistance.Junction- to-Ambient *1 *3	$R_{thJA}$		120	$^\circ C/W$
			140	
Junction Temperature	$T_J$	150		$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to 150		

\*1 Surface Mounted on FR4 Board,  $t \leq 5$  sec.

\*2 Pulse width limited by maximum junction temperature.

\*3 Surface Mounted on FR4 Board.

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =-250 μA, V <sub>GS</sub> =0V	-20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	μA
		V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			-10	
Gate-Body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250 μA	-0.45		-0.95	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.8A		80	100	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.0A		110	150	
On state drain current *1	I <sub>D(ON)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> ≤ -5V	-6			A
		V <sub>GS</sub> =-2.5V, V <sub>DS</sub> ≤ -5V	-3			
Forward Transconductance *1	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-2.8A		6.5		S
Input Capacitance *2	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-6V, f=1MHz		375		pF
Output Capacitance *2	C <sub>oss</sub>			95		
Reverse Transfer Capacitance *2	C <sub>rss</sub>			65		
Total Gate Charge *2	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-6V, I <sub>D</sub> =-2.8A		4.5	10	nC
Gate Source Charge *2	Q <sub>gs</sub>			0.7		
Gate Drain Charge *2	Q <sub>gd</sub>			1.1		
Turn-On DelayTime *3	t <sub>d(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-6V, R <sub>L</sub> =6 Ω, R <sub>GEN</sub> =6 Ω I <sub>D</sub> =-1.0A		20	30	ns
Turn-On Rise Time *3	t <sub>r</sub>			40	60	
Turn-Off DelayTime *3	t <sub>d(off)</sub>			30	45	
Turn-Off Fall Time *3	t <sub>f</sub>			20	30	
Maximum Body-Diode Continuous Current	I <sub>S</sub>	5 sec			-0.72	A
		Steady State			-0.6	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-0.75A, V <sub>GS</sub> =0V		-0.8	-1.2	V

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

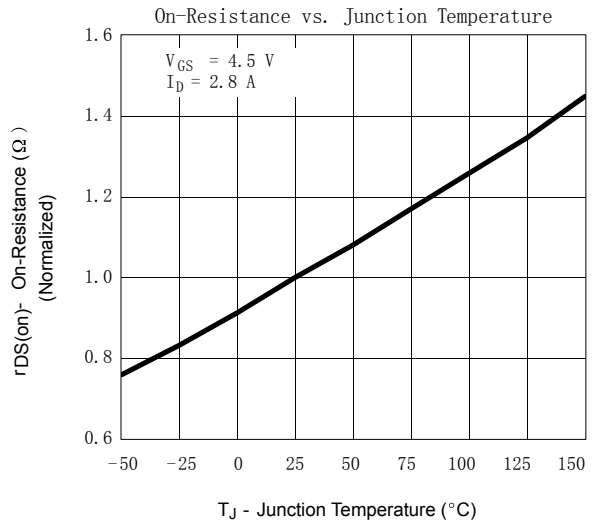
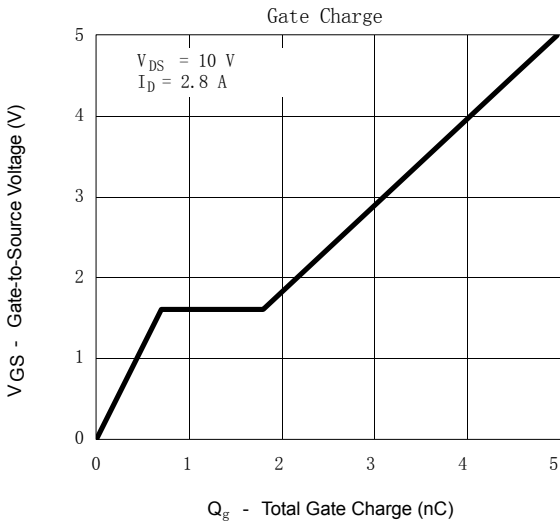
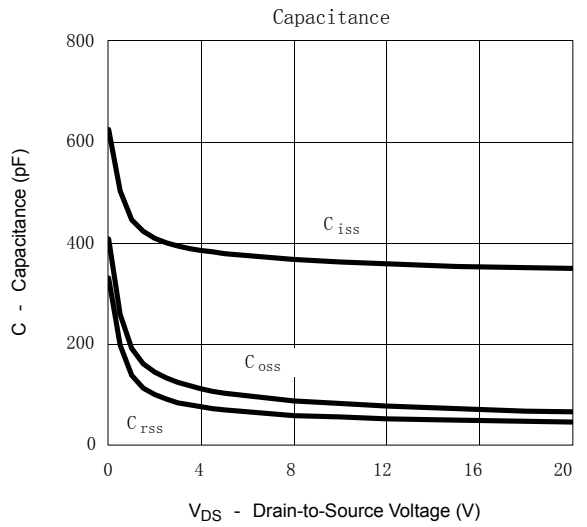
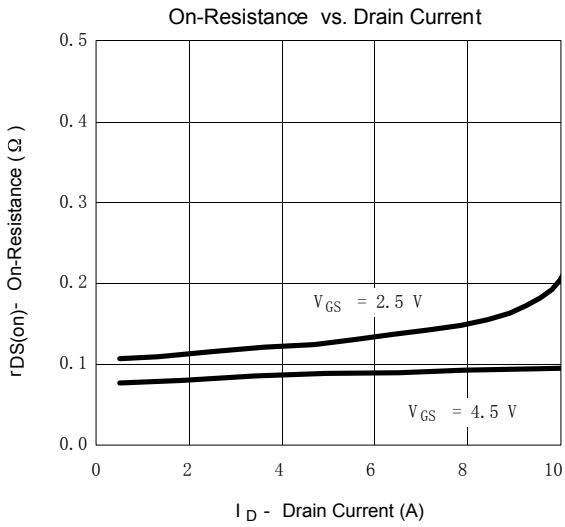
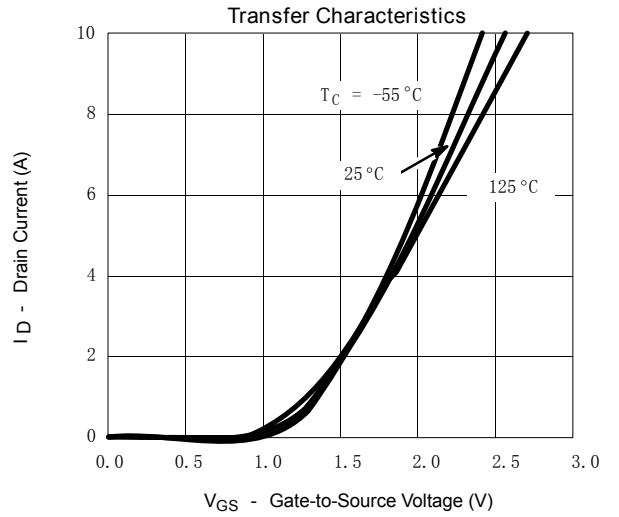
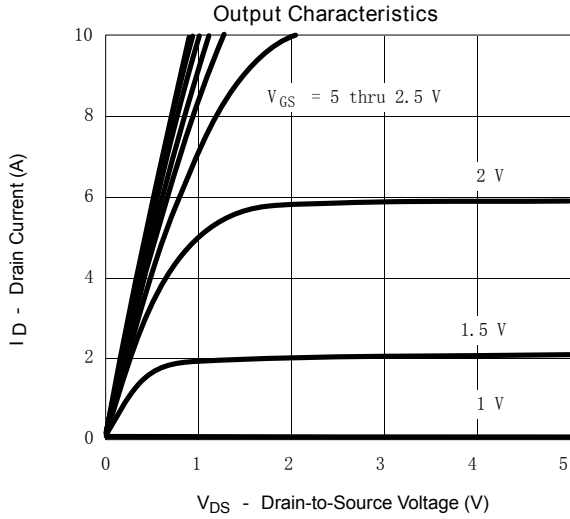
\*2 For DESIGN AID ONLY, not subject to production testing.

\*3 Switching time is essentially independent of operating temperature.

■ Marking

Marking	A1*
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### Typical Characteristics



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