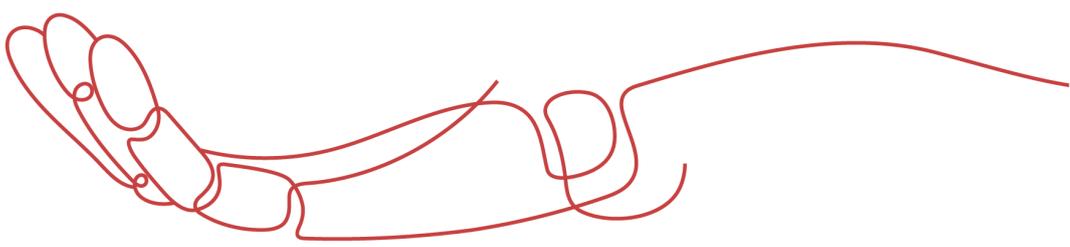


## PRODUCT DATA SHEET



To learn more about JGSEMI, please visit our website at



**Datasheet**



**Resources**



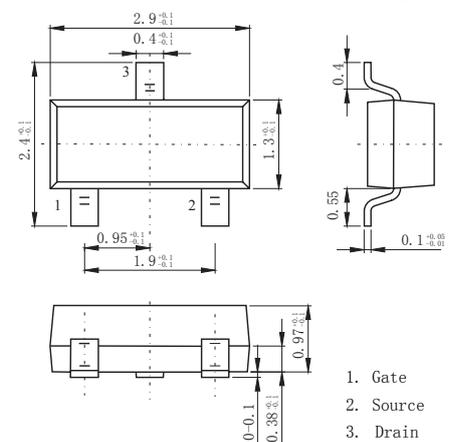
**Samples**

Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at [www.jg-semi.cn](http://www.jg-semi.cn). Please email any questions regarding the system integration to [JINGAO\\_questions@jgsemi.com](mailto:JINGAO_questions@jgsemi.com).

### ■ Features

- $V_{DS} (V) = 20V$
- $I_D = 3.2 A (V_{GS} = 4.5V)$
- $R_{DS(ON)} < 70m\Omega (V_{GS} = 4.5V)$
- $R_{DS(ON)} < 85m\Omega (V_{GS} = 2.5V)$
- Leading Planar Technology for Low Gate Charge / Fast Switching
- 2.5 V Rated for Low Voltage Gate Drive

SOT-23



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain Current (Note.1)	$I_D$	$T_A=25^\circ C$	3.2
		$T_A=85^\circ C$	2.4
Pulsed Drain Current @ $t_P=10\mu s$	$I_{DM}$	10	A
Power Dissipation (Note.1)	$P_D$	1.25	W
Thermal Resistance.Junction- to-Ambient (Note.1) (Note.2)	$R_{thJA}$	100	$^\circ C/W$
		300	
Lead Temperature for Soldering Purposes (Note.3)	$T_L$	260	$^\circ C$
Junction Temperature	$T_J$	150	
Storage Temperature Range	$T_{stg}$	-55 to 150	

Note.1: Surface-mounted on FR4 board using 1 in sq pad size.

Note.2: Surface-mounted on FR4 board using the minimum recommended pad size.

Note.3: 1/8" from case for 10 s.

**■ 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 (Note.1)	20	24.5		V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C			1.5	μA
		V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C			10	
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA (Note.1)	0.65		1.2	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.6A		70	80	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3.1A		85	105	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =3.6A		9		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =10V, f=1MHz		200		pF
Output Capacitance	C <sub>oss</sub>			80		
Reverse Transfer Capacitance	C <sub>rss</sub>			50		
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =3.6A		2.4	6	nC
Gate Source Charge	Q <sub>gs</sub>			0.5		
Gate Drain Charge	Q <sub>gd</sub>			0.6		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =3.6A, R <sub>G</sub> =6Ω (Note.2)		6.5		ns
Turn-On Rise Time	t <sub>r</sub>			12		
Turn-Off DelayTime	t <sub>d(off)</sub>			12		
Turn-Off Fall Time	t <sub>f</sub>			3		
Body Diode Reverse Recovery Time	t <sub>rr</sub>			7.1		
Charge Time	t <sub>a</sub>		I <sub>S</sub> = 1.6A, di/dt= 100A/μs, V <sub>GS</sub> =0		5	
Discharge Time	t <sub>b</sub>			1.9		
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			3		nC
Maximum Body-Diode Continuous Current	I <sub>S</sub>				1.6	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1.6A, V <sub>GS</sub> =0V		0.8	1.2	V

Note.1: Pulse Test: Pulse width ≤ 300 μs, duty cycle ≤ 2%.

Note.2: Switching characteristics are independent of operating junction temperatures.

■ Typical Characteristics

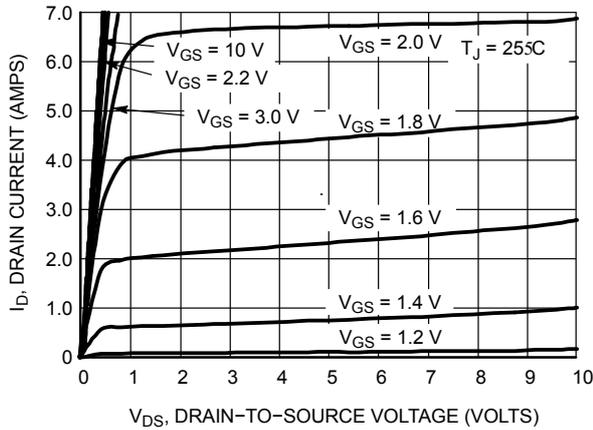


Figure 1. On-Region Characteristics

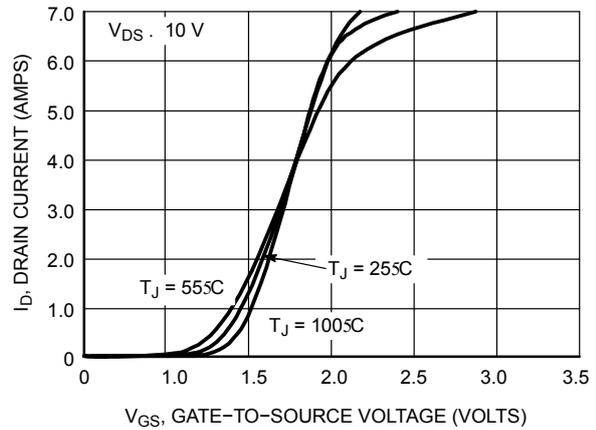


Figure 2. Transfer Characteristics

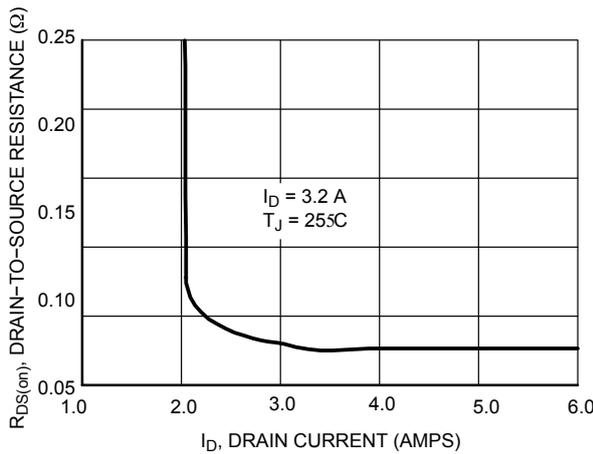


Figure 3. On-Resistance versus Gate-to-Source Voltage

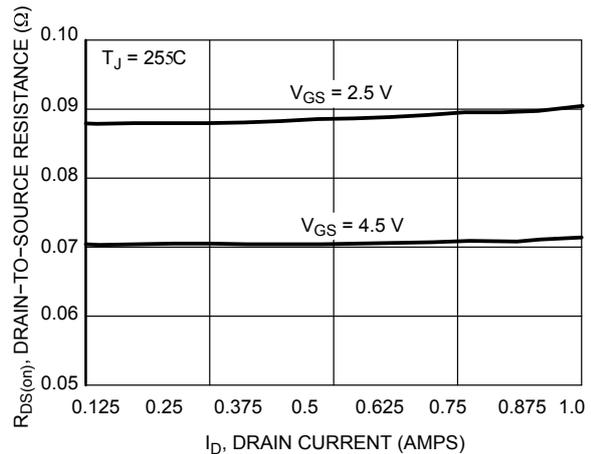


Figure 4. On-Resistance versus Drain Current and Gate Voltage

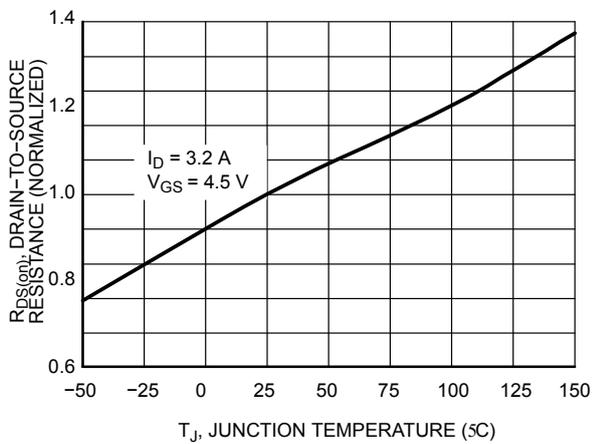


Figure 5. On-Resistance Variation with Temperature

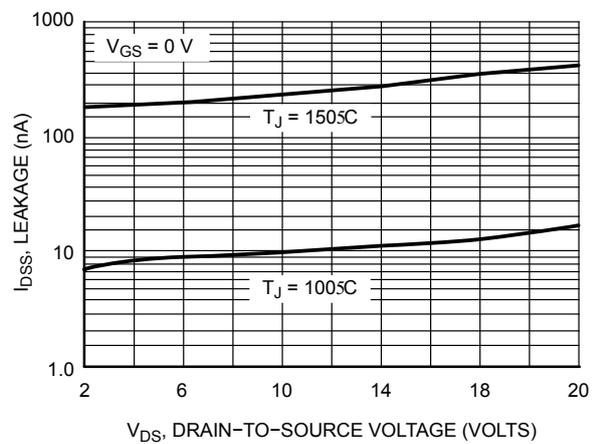
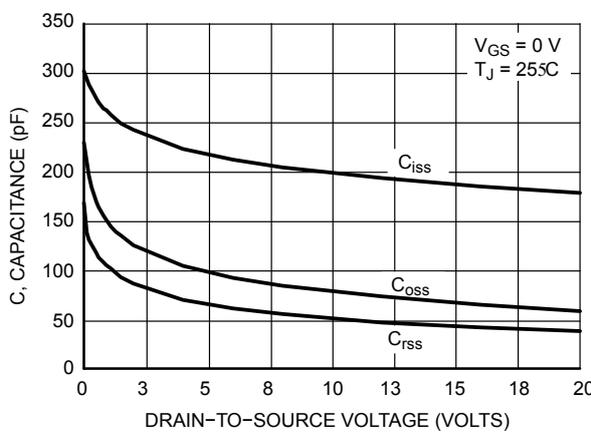
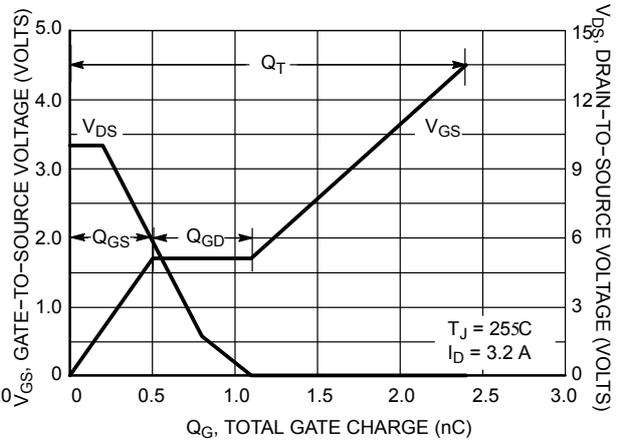


Figure 6. Drain-to-Source Leakage Current versus Voltage

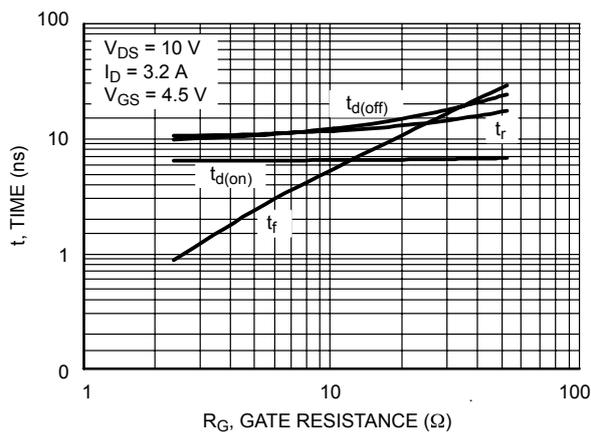
### ■ Typical Characteristics



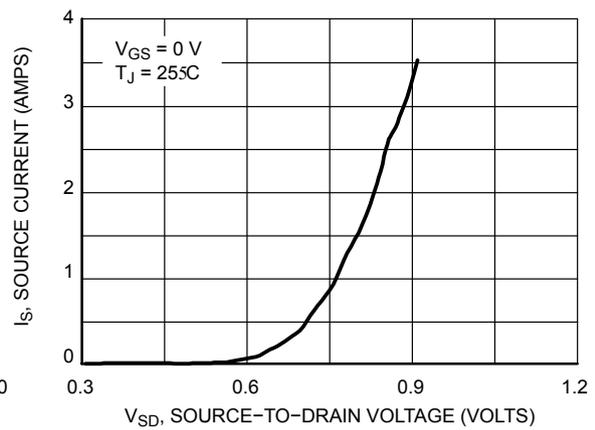
**Figure 7. Capacitance Variation**



**Figure 8. Gate-to-Source and Drain-to-Source Voltage versus Total Charge**



**Figure 9. Resistive Switching Time Variation versus Gate Resistance**



**Figure 10. Diode Forward Voltage versus Current**

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