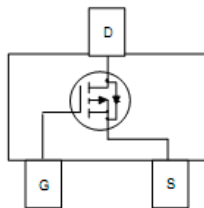
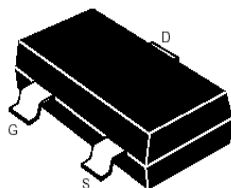


**SOT-23**

**Features**

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance

**Maximum Ratings & Thermal Characteristics**

(Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$V_{DS}$	-20	V	
Gate-Source Voltage	$V_{GS}$	±10		
Continuous Drain Current	$I_D$	-3	A	
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	-10		
Maximum Power Dissipation <sup>2)</sup>	$P_D$	TA = 25°	1.25	W
		TA = 75°C	0.8	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	°C	
Junction-to-Ambient Thermal Resistance (PCB mounted) <sup>2)</sup>	$R_{thJA}$		100	°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) <sup>3)</sup>			166	

**Notes**

- 1) Pulse width limited by maximum junction temperature.
- 2) Surface Mounted on FR4 Board,  $t \leq 5$  sec.
- 3) Surface Mounted on FR4 Board.

**Electrical Characteristics**

(Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Drain-Source On-State Resistance <sup>1)</sup>	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -3.0A$		64	110	mΩ
		$V_{GS} = -2.5V, I_D = -2.0A$		89	140	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	0.4		1	V
Zero Gate Voltage Drain Current 0	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -16V, V_{GS} = 0V, T_J = 55^\circ C$			-10	
Gate Body Leakage	$I_{GSS}$	$V_{GS} = \pm 10V, V_{DS} = 0V$			±100	nA
Forward Transconductance <sup>1)</sup>	$g_{fs}$	$V_{DS} = -5V, I_D = -2.8A$		6.5	—	S
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = -6V, I_D \cong -2.3A$ $V_{GS} = -4.5V$		5.8	10	nC
Gate-Source Charge	$Q_{gs}$			0.85		
Gate-Drain Charge	$Q_{gd}$			1.7		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -6V, R_L = 6\Omega$ $I_D \cong -1.0A, V_{GEN} = -4.5V$ $R_G = 6\Omega$		13	25	ns
Turn-On Rise Time	$t_r$			36	60	
Turn-Off Delay Time	$t_{d(off)}$			42	70	
Turn-Off Fall Time	$t_f$			34	60	
Input Capacitance	$C_{iss}$	$V_{DS} = -6V, V_{GS} = 0V$ $f = 1.0$ MHz		415		pF
Output Capacitance	$C_{oss}$			223		
Reverse Transfer Capacitance	$C_{rss}$			87		
<b>Source-Drain Diode</b>						
Max. Diode Forward Current	$I_S$				-1.6	A
Diode Forward Voltage	$V_{SD}$	$I_S = -1.0A, V_{GS} = 0V$		-0.8	-1.2	V

<sup>1)</sup> Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$

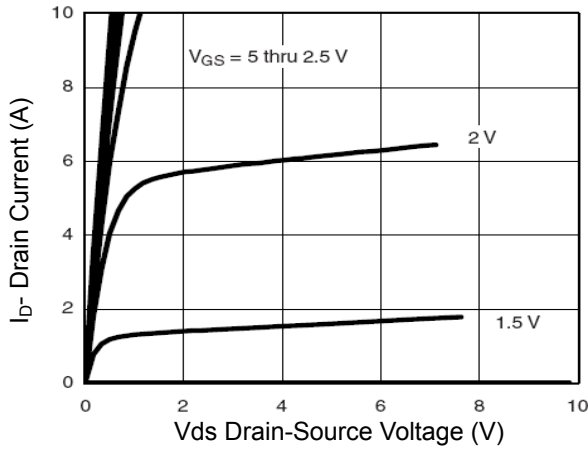


Figure 1 Output CHARACTERISTICS

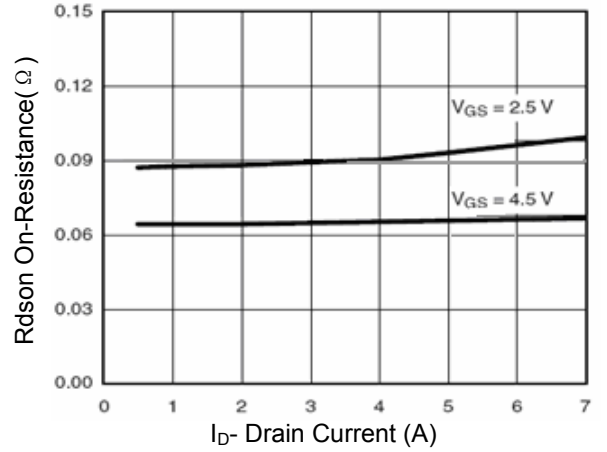


Figure 2 Drain-Source On-Resistance

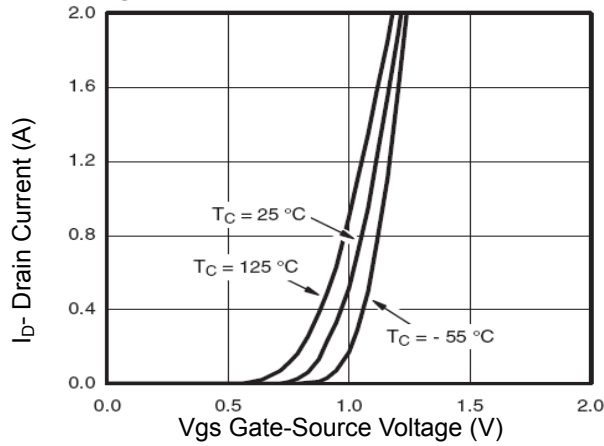


Figure 3 Transfer Characteristics

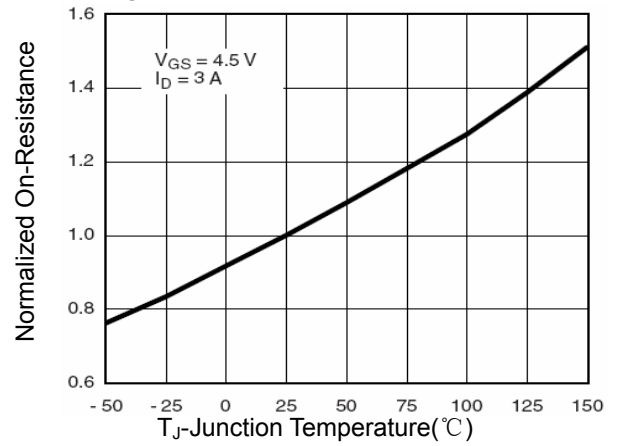


Figure 4 Drain-Source On-Resistance

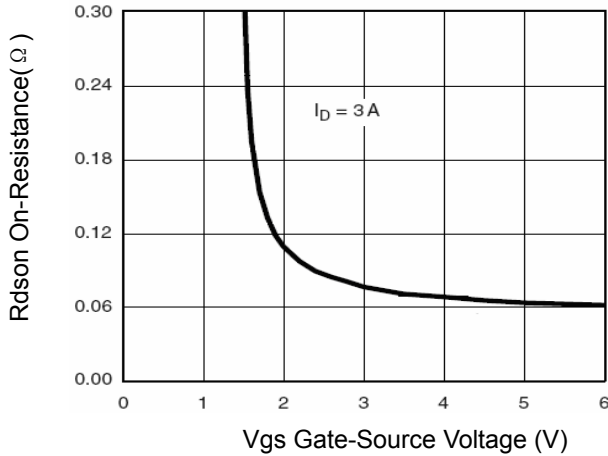


Figure 5 Rds(on) vs Vgs

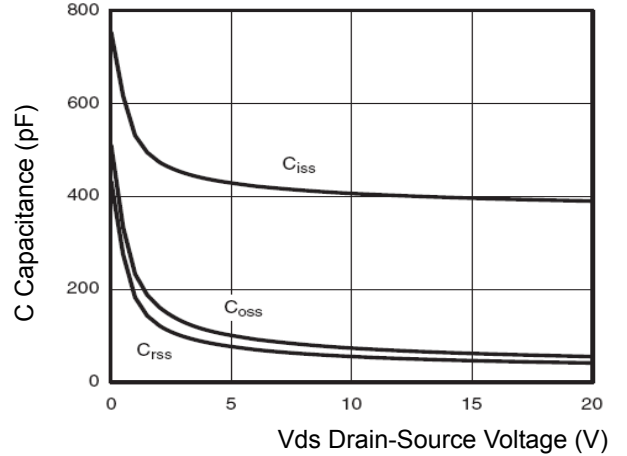


Figure 6 Capacitance vs Vds

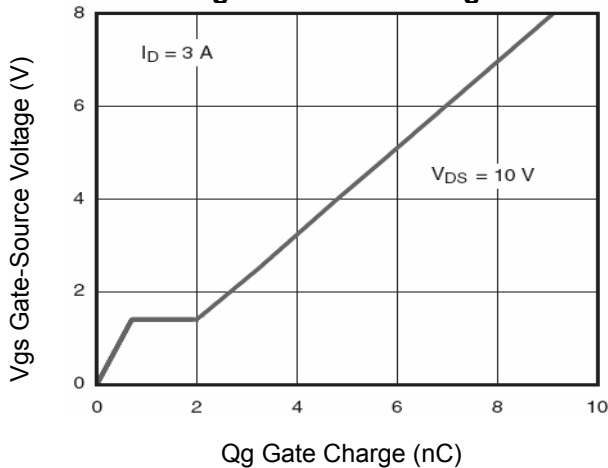


Figure 7 Gate Charge

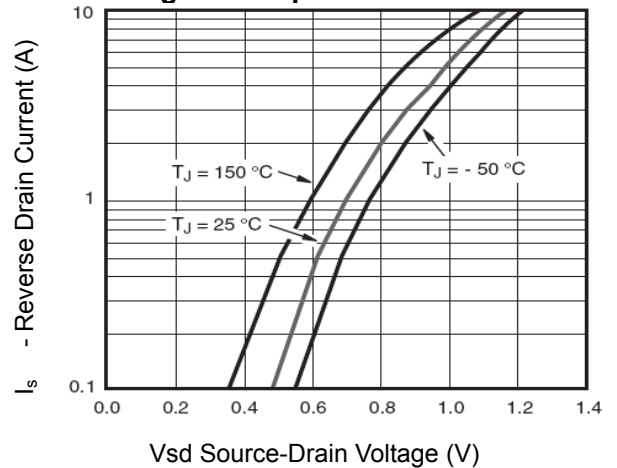
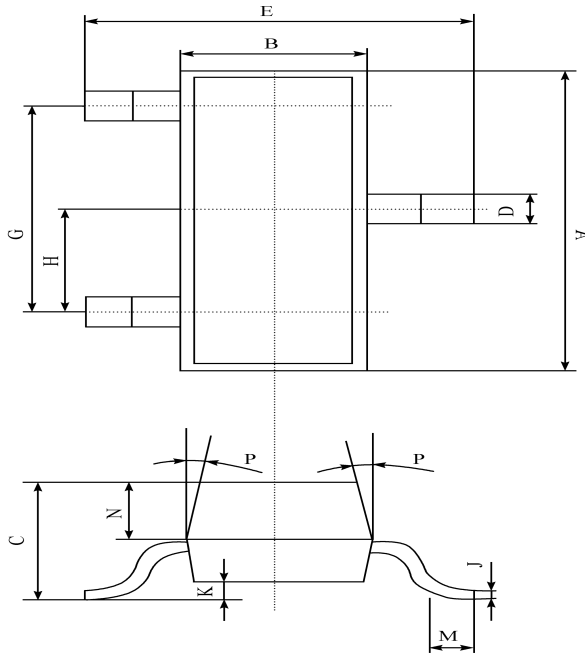


Figure 8 Source- Drain Diode Forward

**SOT-23 PACKAGE OUTLINE** Plastic surface mounted package



SOT-23	
A	2.90 ± 0.10
B	1.30 ± 0.10
C	1.00 ± 0.10
D	0.40 ± 0.10
E	2.40 ± 0.20
G	1.90 ± 0.10
H	0.95 ± 0.05
J	0.13 ± 0.05
K	0.00-0.10
M	≥ 0.2
N	0.60 ± 0.10
P	7 ± 2°

(UNIT): mm