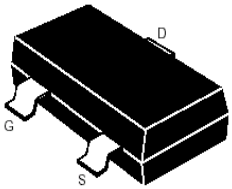
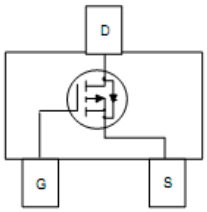
SOT-23





Features

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

Maximum Ratings & Thermal Characteristics

(Ratings at 25℃ ambient temperature unless otherwise specified.)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current		I_D	-4.1	A
Pulsed Drain Current [1]		I_{DM}	-15	
Maximum Power Dissipation [2]	TA = 25°	P_D	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) [2]		R_{thJA}	100	°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) [3]			166	

Notes
1) Pulse width limited by maximum junction temperature.
2) Surface Mounted on FR4 Board, t ≤ 5 sec. 3) Surface Mounted on FR4 Board.

Electrical Characteristics

(Ratings at 25℃ ambient temperature unless otherwise specified).

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250uA	-20			V
Drain-Source On-State Resistance [1]	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -4.1A		46	52	mΩ
		V_{GS} = -2.5V, I_D = -3.0A		60	75	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = -250uA	0.4		1	V
Zero Gate Voltage Drain Current 0	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	uA
		V_{DS} = -20V, V_{GS} = 0V TJ=55°C			-10	
Gate Body Leakage	I_{GSS}	V_{GS} = ± 12V, V_{DS} = 0V			±100	nA
Forward Transconductance [1]	g_{fs}	V_{DS} = -5V, I_D = -3.5A		6.5	—	S
Dynamic						
Total Gate Charge	Q_g	V_{DS} = -6V, I_D ≅ -3.5A, 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, RL=6Ω, I_D ≅ -1.A, V_{GEN} = -4.5V, R_G = 6Ω		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		
Source-Drain Diode						
Max. Diode Forward Current	I_S				-1.6	A
Diode Forward Voltage	V_{SD}	I_S = -1.6A, V_{GS} = 0V		-0.8	-1.2	V

1) Pulse test: pulse width <= 300us, duty cycle<= 2%

Typical Electrical and Thermal Characteristics

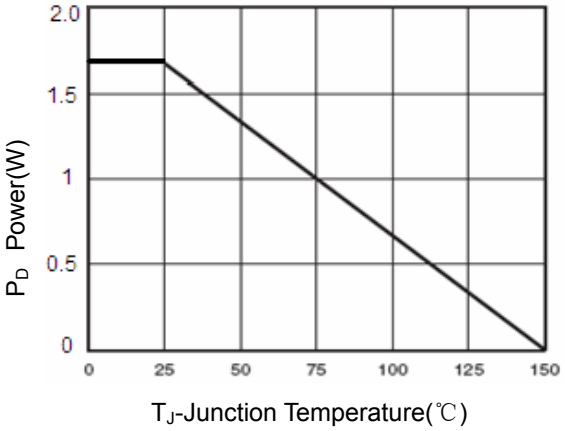


Figure 1 Power Dissipation

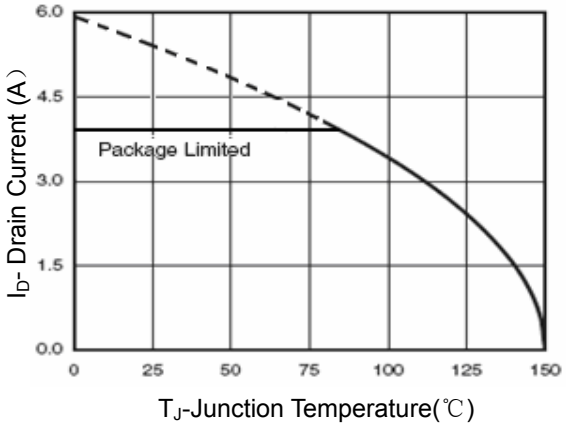


Figure 2 Drain Current

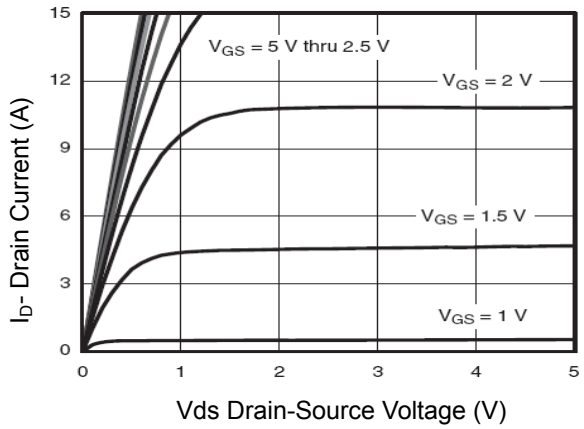


Figure 3 Output Characteristics

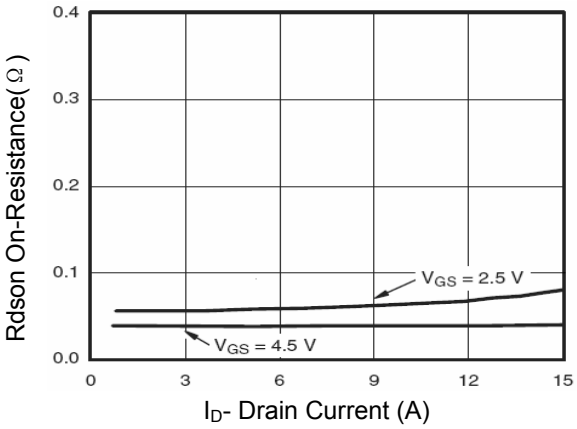


Figure 4 Drain-Source On-Resistance

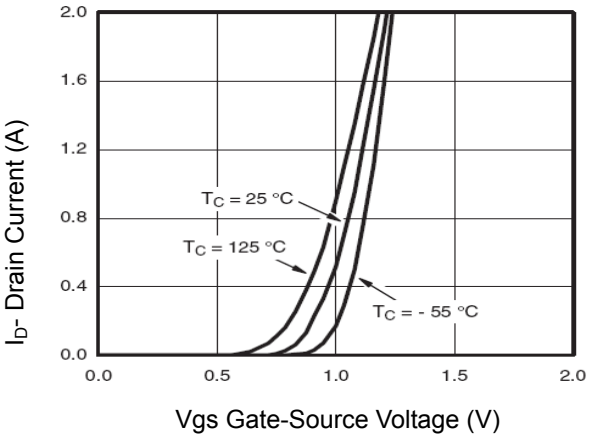


Figure 5 Transfer Characteristics

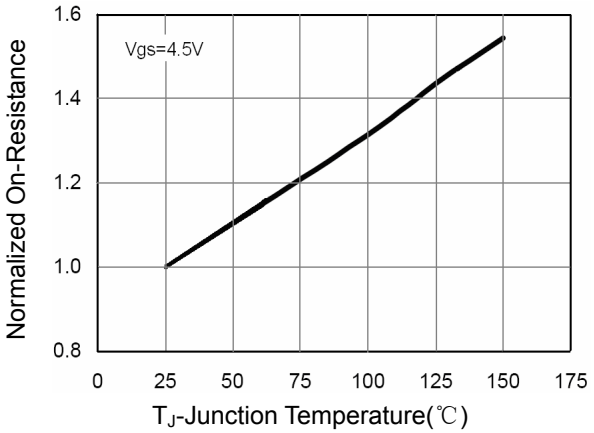


Figure 6 Drain-Source On-Resistance

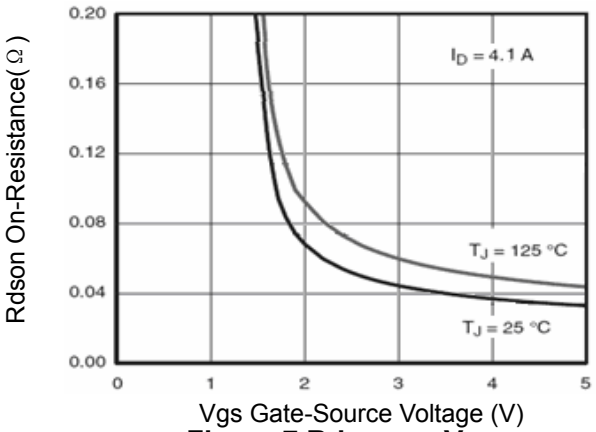


Figure 7 Rdson vs Vgs

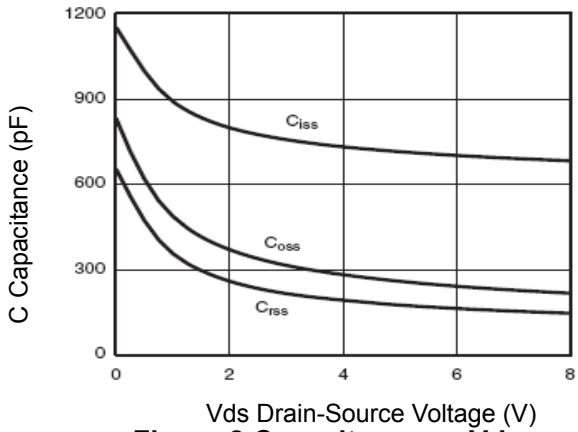


Figure 8 Capacitance vs Vds

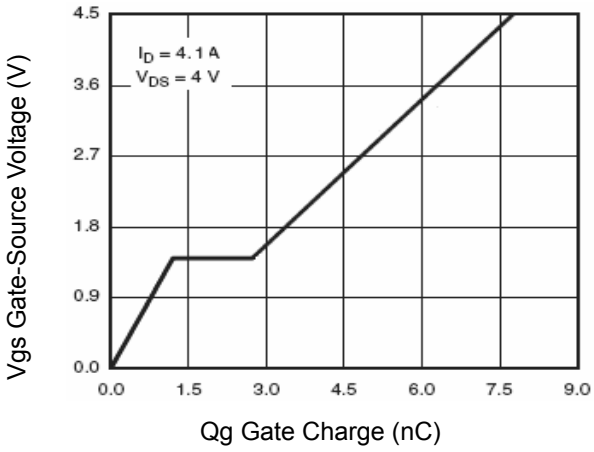


Figure 9 Gate Charge

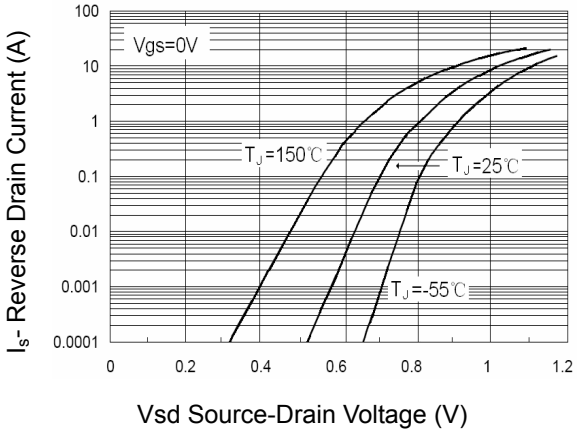


Figure 10 Source- Drain Diode Forward

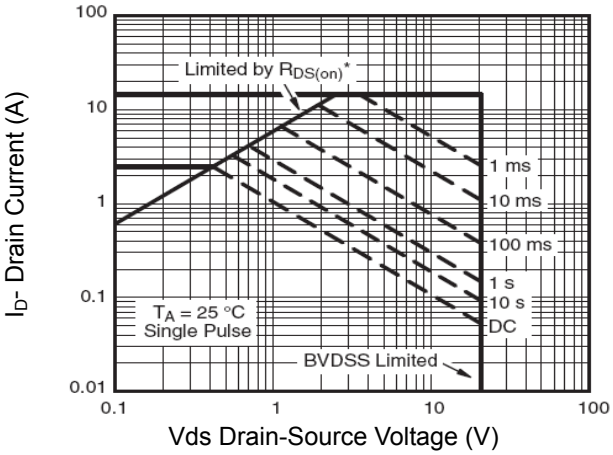
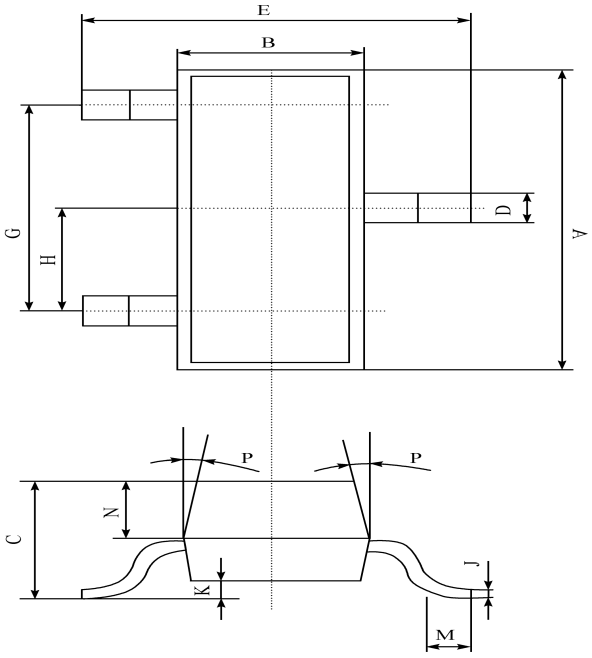


Figure 11 Safe Operation Area

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