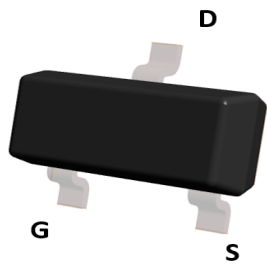
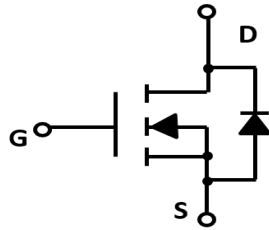
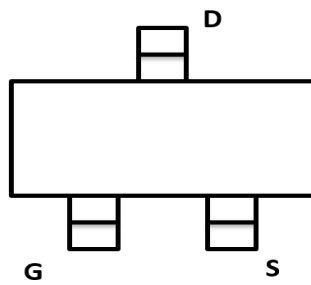


N-Channel Enhancement Mode Field Effect Transistor



Top View

SOT-23



Product Summary

- V_{DS} 100V
- I_D 5.0A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) < 180 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 300 mohm

General Description

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Applications

- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor
- Invertors

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^\circ C$ @ Steady State	I_D	5.0	A
	$T_A=70^\circ C$ @ Steady State		4.0	
Pulsed Drain Current ^A		I_{DM}	21	A
Total Power Dissipation @ $T_A=25^\circ C$		P_D	1.2	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	104	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.8	3.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =3.0A		110	180	mΩ
		V _{GS} = 4.5V, I _D =2.0A		160	300	
Diode Forward Voltage	V _{SD}	I _S =5.0A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				5.0	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =100V, V _{GS} =0V, f=1MHZ		206		pF
Output Capacitance	C _{oss}			29		
Reverse Transfer Capacitance	C _{rss}			1.4		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =5.0A		4.3		nC
Gate Source Charge	Q _{gs}			1.5		
Gate Drain Charge	Q _{gd}			1.1		
Reverse Recovery Charge	Q _{rr}	I _F =2A, di/dt=500A/us		39		
Reverse Recovery Time	t _{rr}			32		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, I _D =2A, R _L =1Ω R _{GEN} =3Ω		14.7		ns
Turn-on Rise Time	t _r			3.5		
Turn-off Delay Time	t _{D(off)}			20.9		
Turn-off Fall Time	t _f			2.7		

- A. Repetitive Rating: Pulse width limited by maximum junction temperature.
 B. Surface Mounted on FR4 Board, t ≤ 10 sec.

■ Typical Performance Characteristics

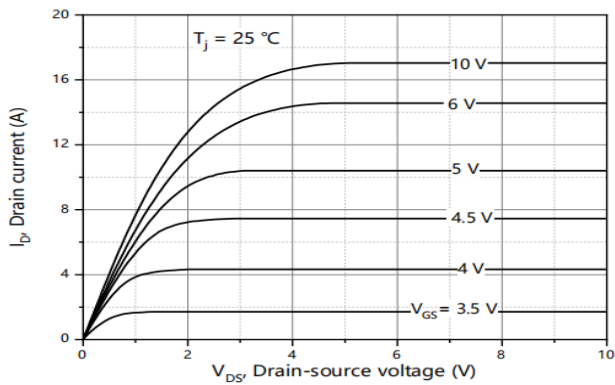


Figure1. Output Characteristics

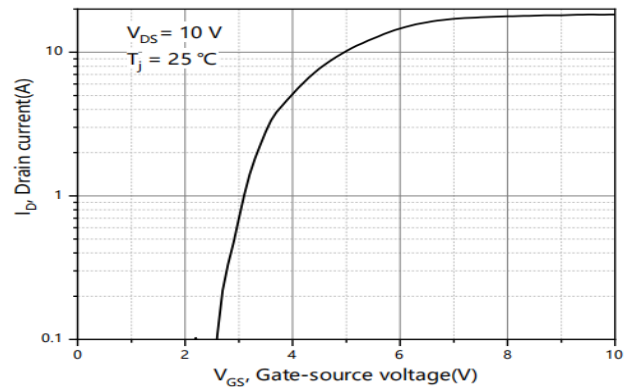


Figure2. Transfer Characteristics

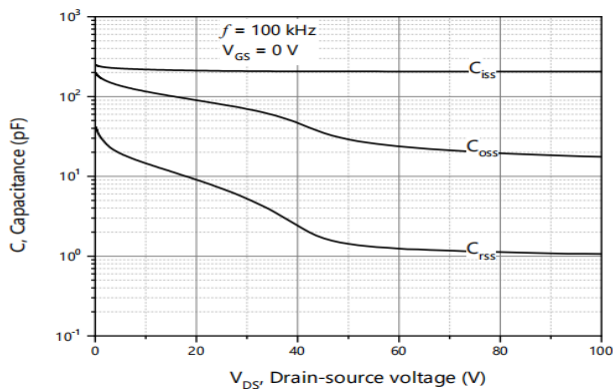


Figure3. Capacitance Characteristics

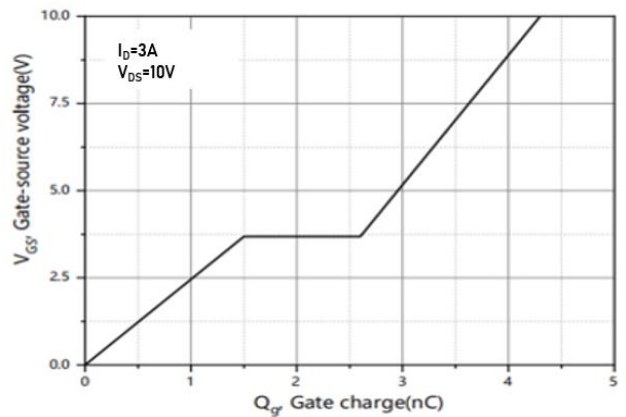


Figure4. Gate Charge

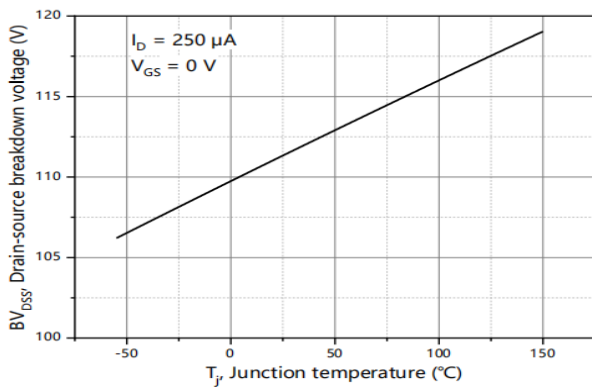


Figure5. Drain-Source breakdown voltage

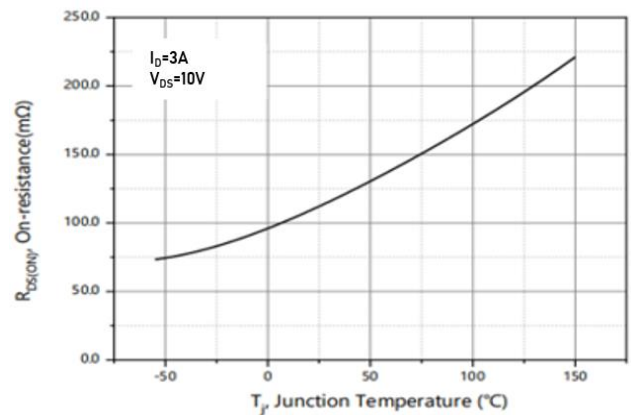


Figure6. Drain-Source on Resistance

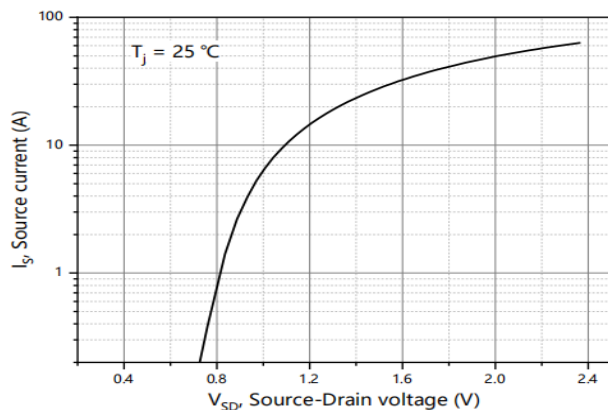


Figure7. Forward characteristic of body diode

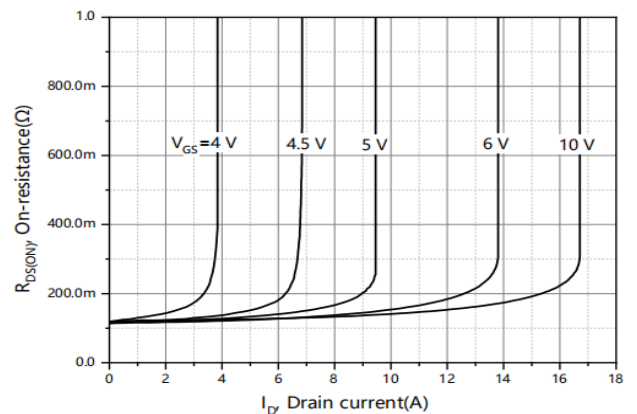


Figure8. Drain-source on-state resistance

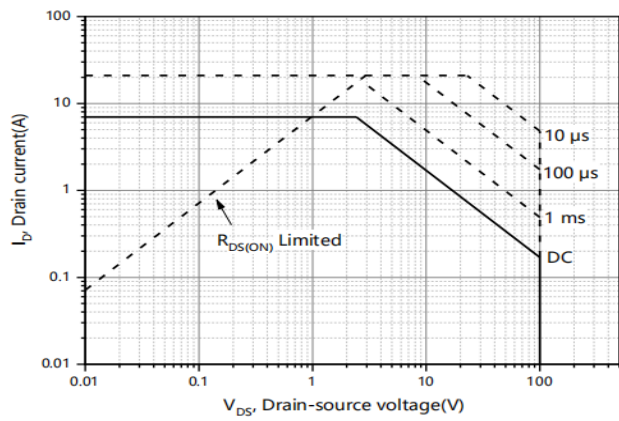


Figure9. Safe Operation Area $T_A=25^\circ\text{C}$

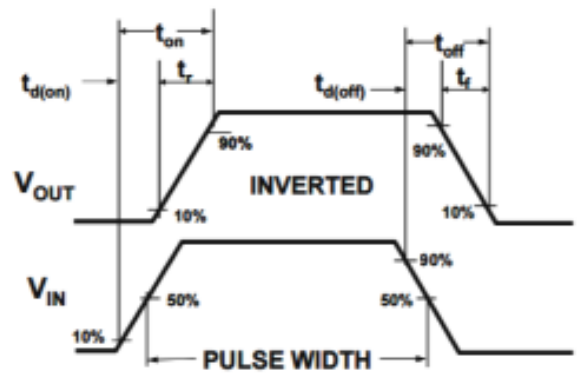
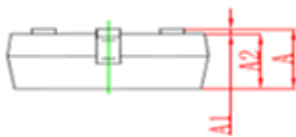
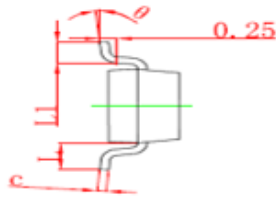
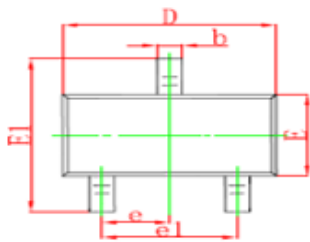


Figure10. Switching wave

■ SOT-23 Package information



Symbol	Dimensions in Millimeter		Dimensions in Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.220REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

■ SOT-23 Suggested Pad Layout

