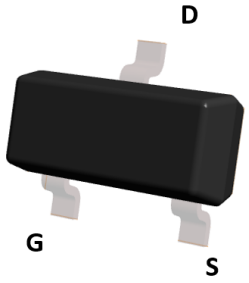
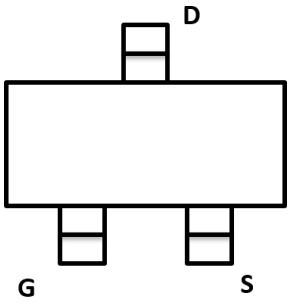
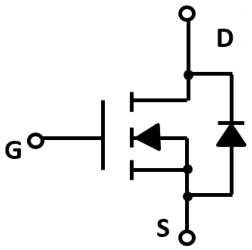
N-Channel Enhancement Mode Field Effect Transistor



Top View





SOT-23

Product Summary

- V_{DS} 100V
- I_D 2.0A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜310 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜350 mohm

General Description

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- MSL LEVEL1

Applications

- DC-DC Converters
- Power management functions

■ **Absolute Maximum Ratings** (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	2.0	A
	T_A=70℃		1.6	
Pulsed Drain Current [A]		I_{DM}	8	A
Total Power Dissipation @ T_A=25℃		P_D	1.2	W
Thermal Resistance Junction-to-Ambient [B]		$R_{\theta JA}$	105	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Electrical Characteristics (T_J=25℃ 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_{GSS1}	V_{GS}= ±20V, V_{DS}=0V			±100	nA
	I_{GSS2}	V_{GS}= ±10V, V_{DS}=0V			±50	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.1	1.8	3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=2.0A		240	310	mΩ
		V_{GS}= 4.5V, I_D=2.0A		250	350	
Diode Forward Voltage	V_{SD}	I_S=2A,V_{GS}=0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S				2.0	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,f=1MHZ		387		pF
Output Capacitance	C_{oss}			31		
Reverse Transfer Capacitance	C_{rss}			28		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=50V,I_D=2.0A		9.56		nC
Gate-Source Charge	Q_{gs}			1.81		
Gate-Drain Charge	Q_{gd}			1.97		
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=50V, I_D=1.3A,R_L=39Ω R_{GEN}=1Ω		4		ns
Turn-on Rise Time	t_r			17.8		
Turn-off Delay Time	$t_{D(off)}$			13.2		
Turn-off fall Time	t_f			28		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

■ Typical Performance Characteristics

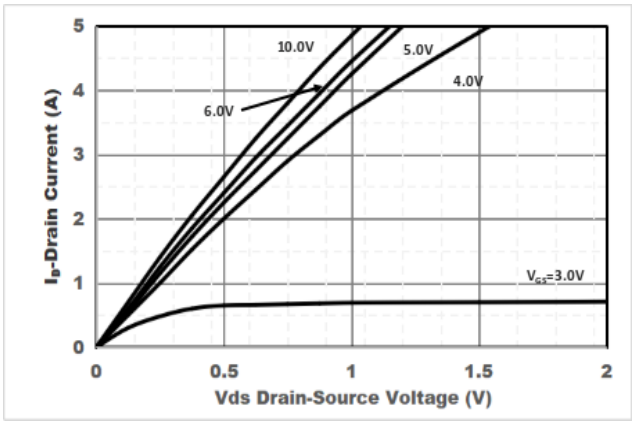


Figure1. Output Characteristics

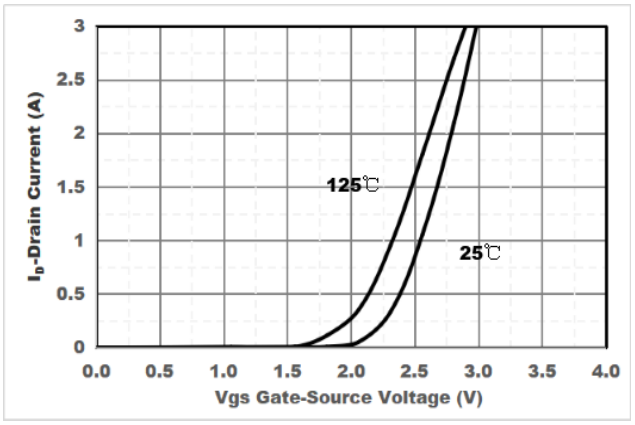


Figure2. Transfer Characteristics

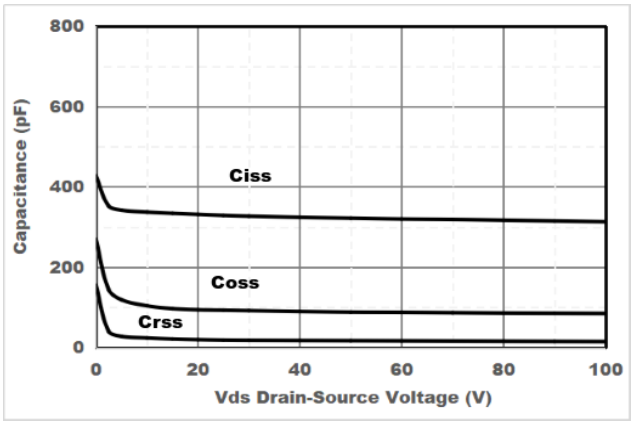


Figure3. Capacitance Characteristics

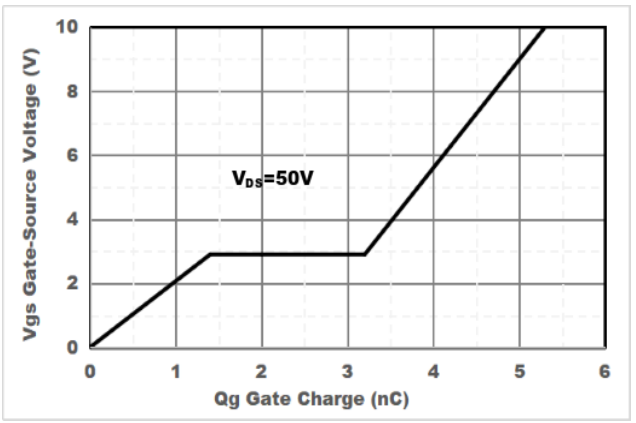


Figure4. Gate Charge

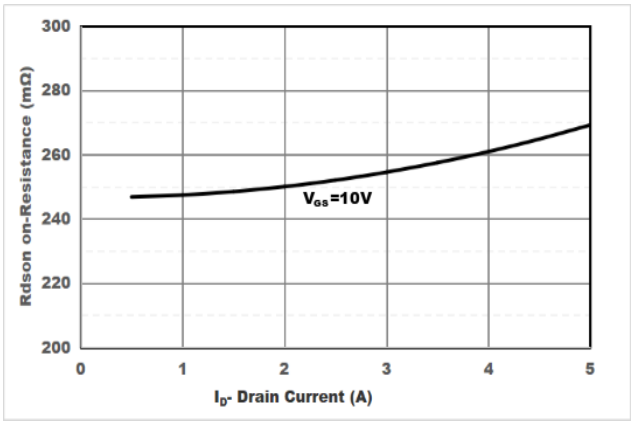


Figure5. Drain-Source on Resistance

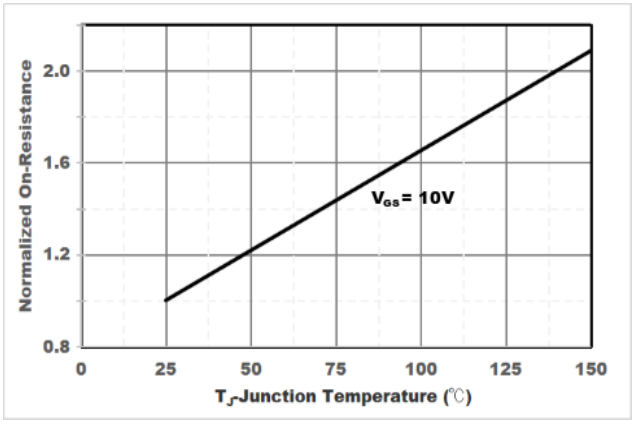


Figure6. Drain-Source on Resistance

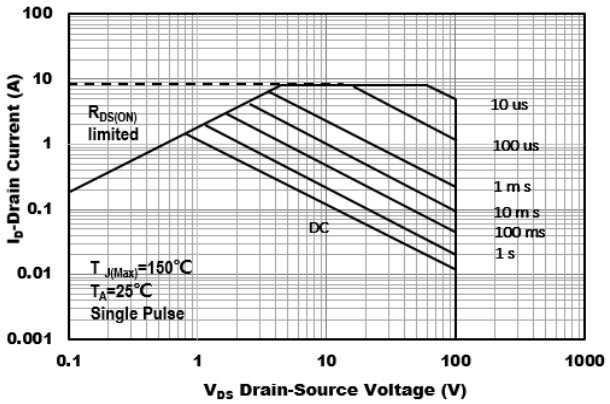


Figure7. Safe Operation Area

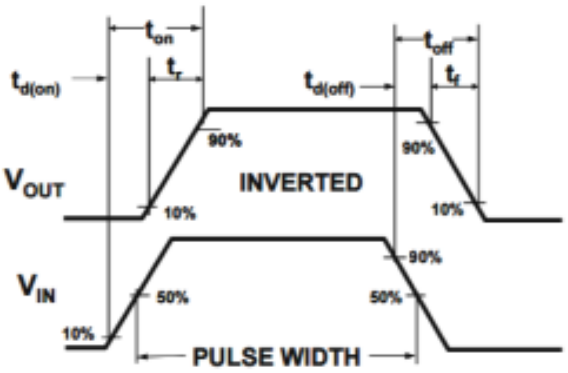
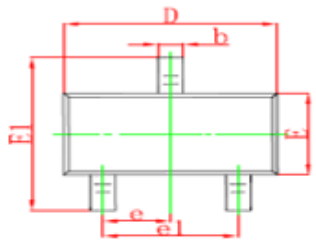
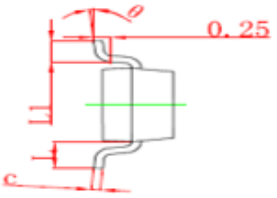
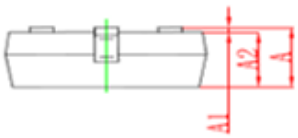


Figure8. Switching wave

■ SOT-23 Package information

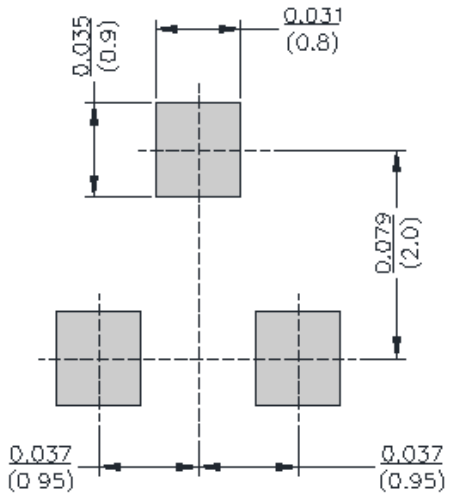






Symbol	Dimentions in Millimeter		Dimentions in Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
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



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