N-Channel Enhancement Mode Field Effect Transistor

D

Top View

SOT-523

D

G   **S**

G   **D**   **S**
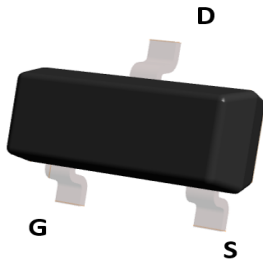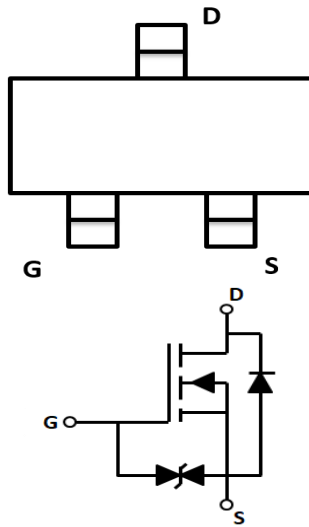
Product Summary

- V_{DS} 60V
- I_D 100mA
- $R_{DS(ON)}$(at V_{GS}=10V) ＜8.0 Ω
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜13.0 Ω
- ESD Protected Up to 2.0KV (HBM)

General Description

- Trench Power LV MOSFET technology
- High Power and current handing capability

Applications

- Load/Power Switching
- Interfacing Switching
- Logic Level Shift

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	60	V
Gate-source Voltage	V_{GS}	±20	V
Drain Current	I_D	100	mA
Pulsed Drain Current [A]	I_{DM}	1.5	A
Total Power Dissipation @ T_A=25℃	P_D	0.15	W
Thermal Resistance Junction-to-Ambient @ Steady State	$R_{\theta JA}$	357	℃/ 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	60			V
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$=60V,V$_{GS}$=0V			1	μA
Gate-Body Leakage Current	I$_{GSS}$	V$_{GS}$= ±20V, V$_{DS}$=0V			±10	μA
Gate Threshold Voltage	V$_{GS(th)}$	V$_{DS}$= V$_{GS}$, I$_D$=250μA	0.8	1.5	2.2	V
Static Drain-Source On-Resistance	R$_{DS(ON)}$	V$_{GS}$= 10V, I$_D$=100mA		2.5	8.0	Ω
		V$_{GS}$= 4.5V, I$_D$=10mA		3.0	13.0	
Diode Forward Voltage ^{C}	V$_{SD}$	I$_S$=100mA,V$_{GS}$=0V			1.2	V
Maximum Body-Diode Continuous Current	I$_S$				100	mA
Dynamic Parameters ^{B}						
Input Capacitance	C$_{iss}$				18	
Output Capacitance	C$_{oss}$	V$_{DS}$=30V,V$_{GS}$=0V,f=1MHZ			12	pF
Reverse Transfer Capacitance	C$_{rss}$				7	
Switching Parameters ^{B}						
Total Gate Charge	Q$_g$			1.7		
Gate Source Charge	Q$_{gs}$	V$_{GS}$=10V,V$_{DS}$=30V,I$_D$=0.1A		0.19		nC
Gate Drain Charge	Q$_{gd}$			0.27		
Turn-on Delay Time	t$_{D(on)}$	V$_{GS}$=10V,V$_{DD}$=30V,R$_G$=6Ω,I$_D$=0.1A		5		ns
Turn-off Delay Time	t$_{D(off)}$			17		

A. Repetitive Rating: Pulse width limited by maximum junction temperature.
B. These parameters have no way to verify.
C. Pulse Test: Pulse Width≤300us, Duty Cycle≤0.5%.
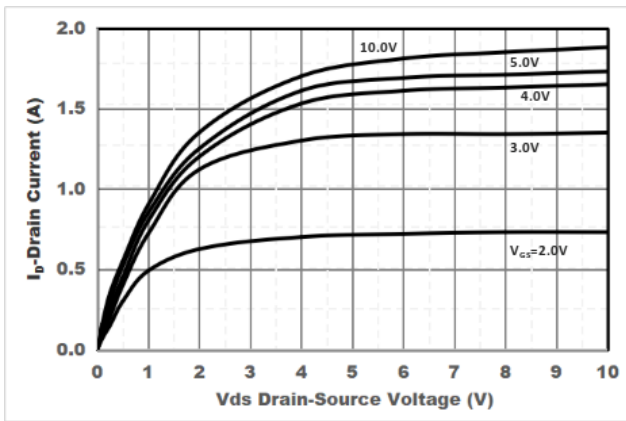
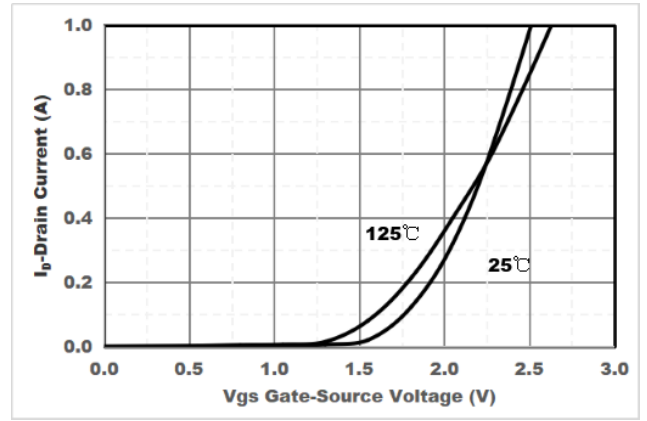## ■ Typical Performance Characteristics

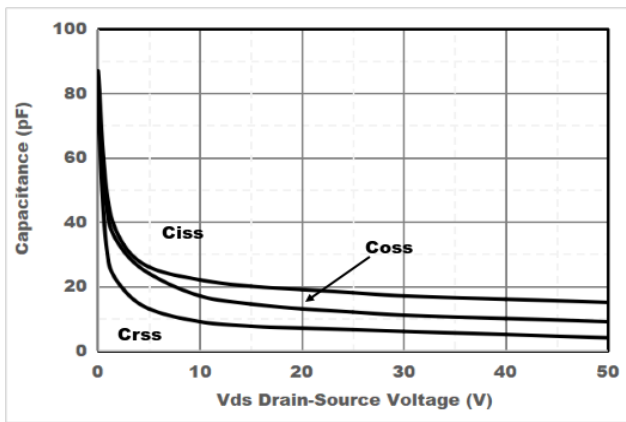Figure1. Output Characteristics

Figure2. Transfer Characteristics
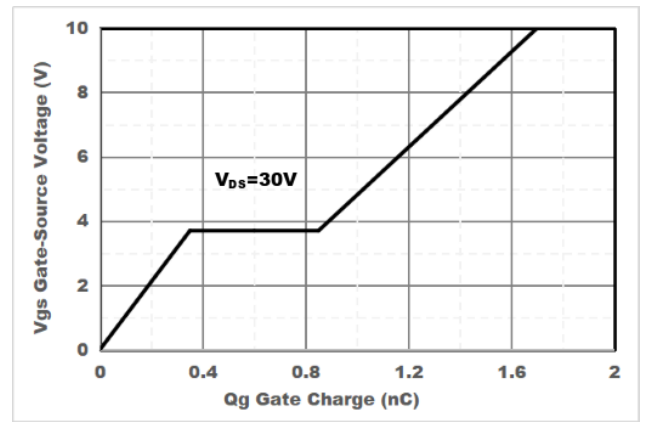

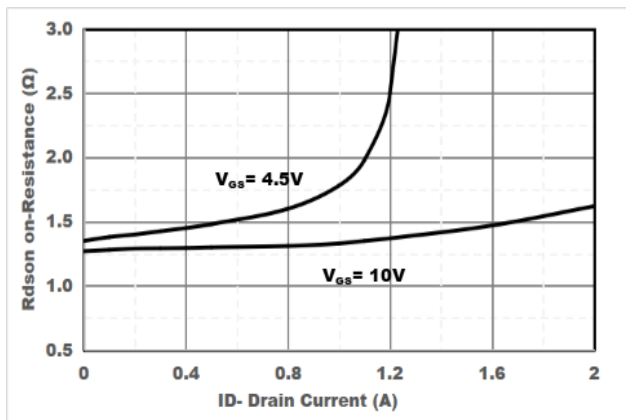Figure3. Capacitance Characteristics
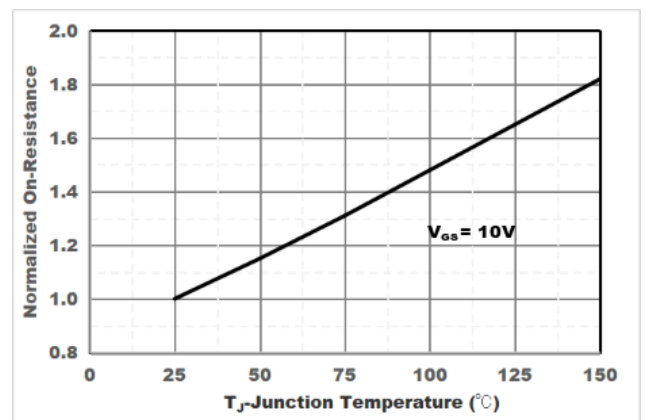

Figure4. Gate Charge

Figure5. Drain-Source on Resistance
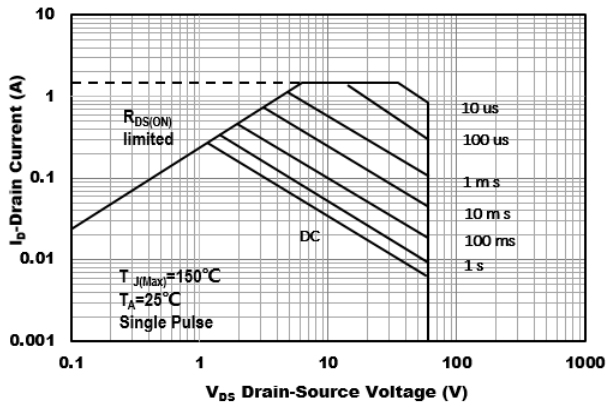

Figure6. Drain-Source on Resistance
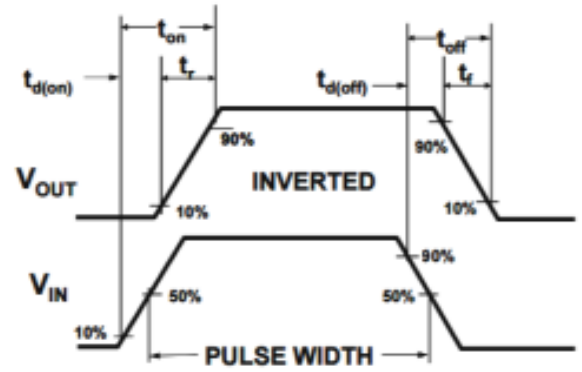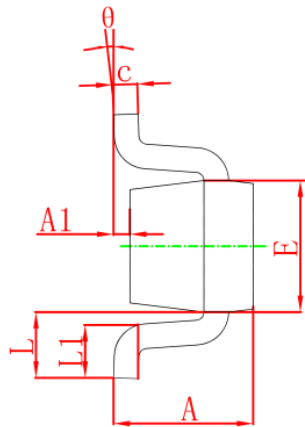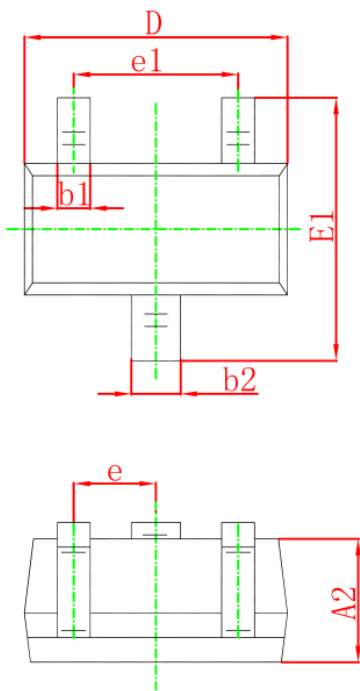
Figure7. Safe Operation Area

Figure8. Switching wave

■SOT-523 Package Outline Dimensions

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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