

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	850mΩ@-4.5V	-0.5A
	1200mΩ@-2.5V	
	2000mΩ@-1.8V	

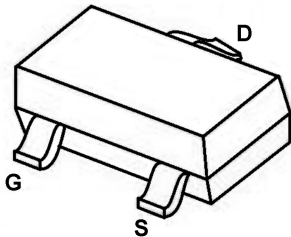
Feature

- Trench Power LV MOSFET technology
- High Density Cell Design for Low $R_{DS(on)}$
- High Speed switching
- ESD Protection

Application

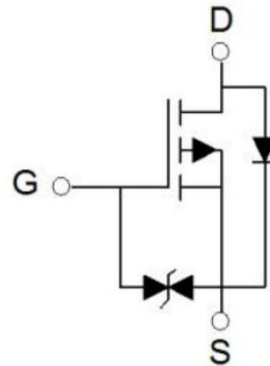
- Interfacing, Logic switch
- Load switch
- Power management

Package

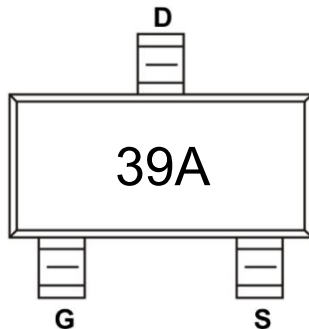


SOT-523

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-0.5	A
Continuous Drain Current ($T_A=70^\circ\text{C}$)	$I_{D(70^\circ\text{C})}$	-0.4	A
Pulsed Drain Current ¹⁾	I_{DM}	-2.6	A
Power Dissipation	P_D	0.18	W
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	694	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}, T_C = 25^\circ\text{C}$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 10\text{V}, V_{DS} = 0\text{V}$			± 10	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-0.35	-0.62	-1.2	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = -4.5\text{V}, I_D = -0.5\text{A}$		580	850	m Ω
		$V_{GS} = -2.5\text{V}, I_D = -0.3\text{A}$		855	1200	
		$V_{GS} = -1.8\text{V}, I_D = -0.2\text{A}$		1350	2000	
Dynamic characteristics³⁾						
Input Capacitance	C_{iss}	$V_{DS} = -10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		71		pF
Output Capacitance	C_{oss}			20		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge	Q_g	$V_{DD} = -10\text{V}, V_{GS} = -4.5\text{V}, I_D = -0.5\text{A}$		1.24		nC
Gate-Source Charge	Q_{gs}			0.37		
Gate-Drain Charge	Q_{gd}			0.27		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10\text{V}, V_{GS} = -4.5\text{V}, R_L = 2.5\Omega, R_{GEN} = 3\Omega$		4		nS
Turn-on rise time	t_r			19		
Turn-off delay time	$t_{d(off)}$			16		
Turn-off fall time	t_f			25		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{GS} = 0\text{V}, I_S = -0.5\text{A}$			-1.2	V
Body-Diode Continuous Current	I_S				-0.5	A
Reverse Recovery Time	t_{rr}	$I_F = -0.5\text{A}, di/dt = -20\text{A}/\mu\text{s}$		26		nS
Reverse Recovery Charge	Q_{rr}			0.97		nC

Notes:

- 1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
- 2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.
- 3) Guaranteed by design, not subject to production testing.

Typical Characteristics

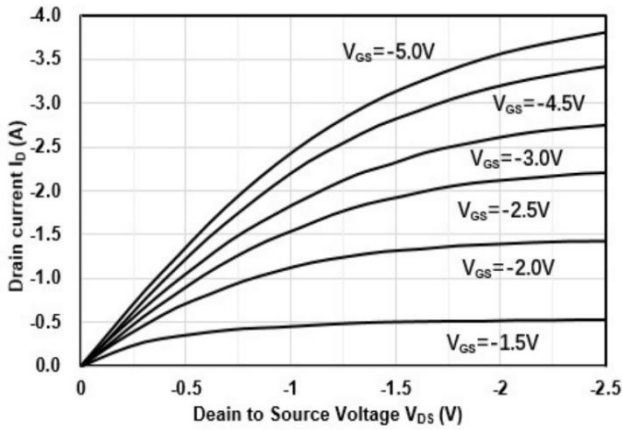


Figure1. Output Characteristics

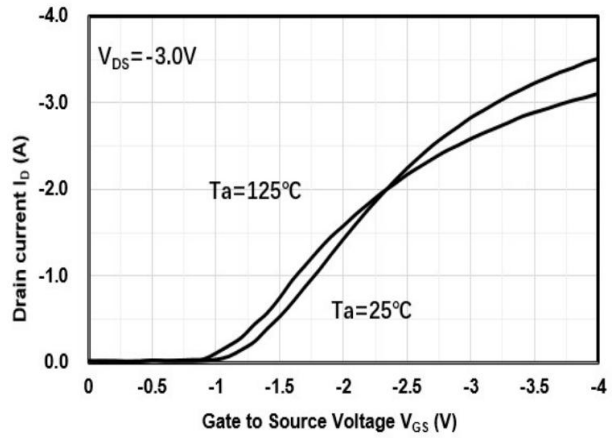


Figure2. Transfer Characteristics

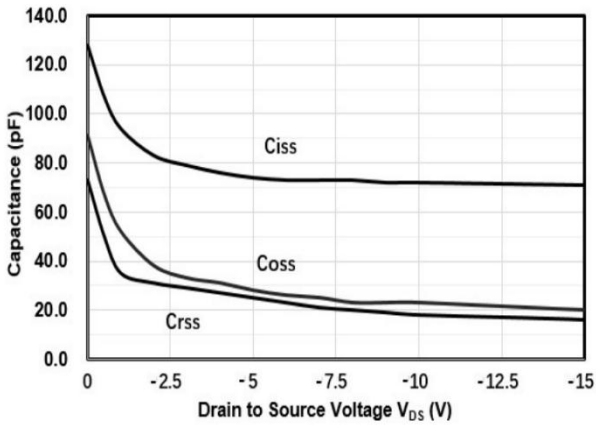


Figure3. Capacitance Characteristics

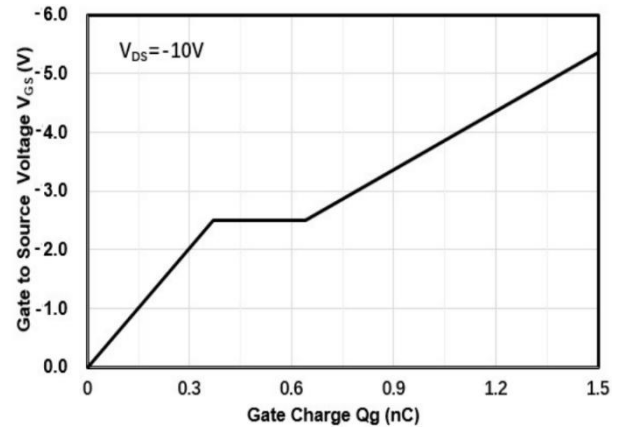


Figure4. Gate Charge

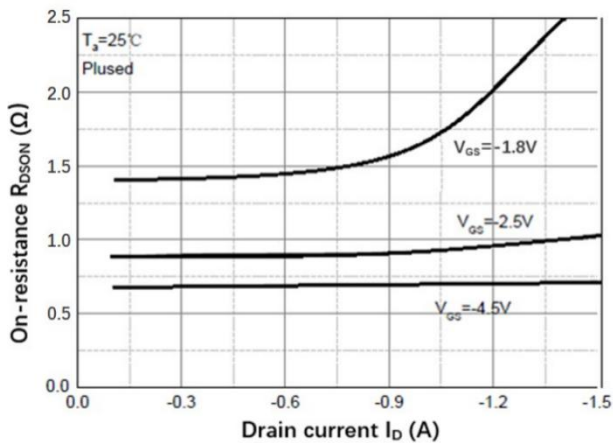


Figure5. Drain-Source on Resistance

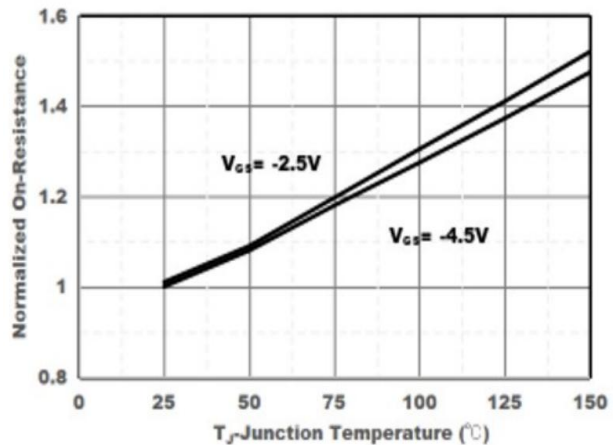


Figure6. Drain-Source on Resistance

Typical Characteristics

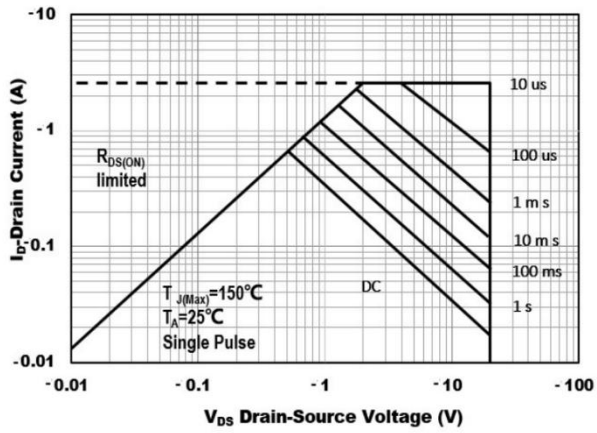


Figure7. Safe Operation Area

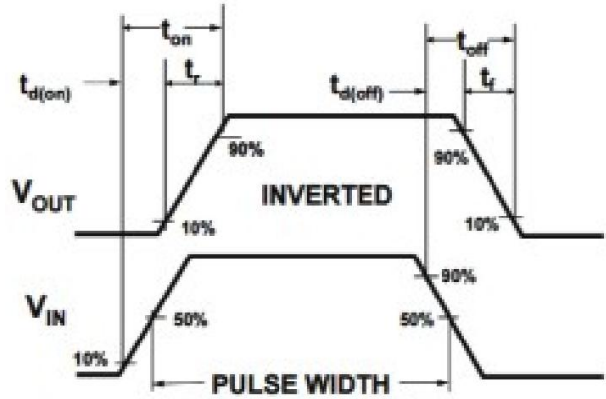
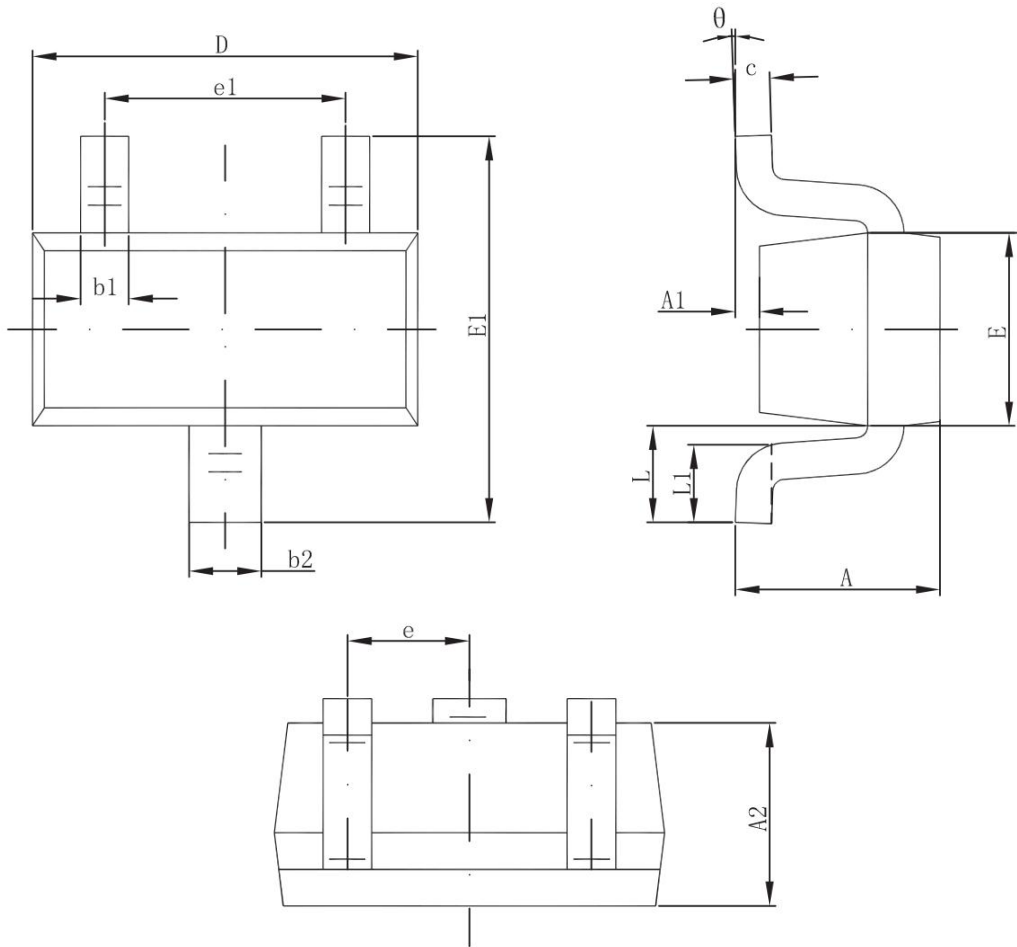


Figure8. Switching wave

SOT-523 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.600	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.600	0.800	0.024	0.031
b1	0.150	0.350	0.006	0.014
b2	0.250	0.450	0.010	0.018
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°