N-Channel Enhancement MOSFET

Features

- Trench Power LV MOSFET technology
- Voltage Controlled Small Signal Switch
- Halogen-Free & Lead-Free

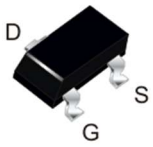
Product Summary		
V_{DS}	$R_{DS(on)}$ (mΩ) Typ	I_D (A)
20V	57@ 4.5V, 2.5A	3
	72@ 2.5V,2.0A	

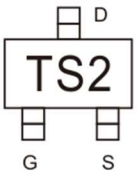
Application

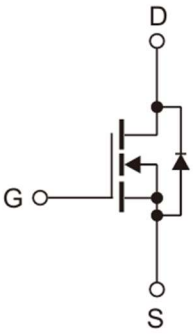
- Load Switch for Portable Devices
- DC/DC Converter

Marking information

SOT-323







N-channel MOSFET

Absolute Maximum Ratings (at T_A = 25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous drain current (T_A=25 °C)	I_D	3.0	A
Continuous drain current (T_A=75 °C)	I_D	2.4	A
Pulsed drain current [1)]	I_{DM}	14	A
Power Dissipation	P_D	0.25	W
Operating Junction	T_J	-55~150	℃
Storage Temperature Range	T_{stg}	-55~150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	500	℃/W

Characteristics at T_J = 25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at V_{GS}=0V, I_D=250μA	BV_{DSS}	20			V
Drain-Source Leakage Current at V_{DS}=20V, V_{GS}=0V	I_{DSS}			1	μA
Gate Leakage Current at V_{GS}=±10V, V_{DS}=0V	I_{GSS}			±0.1	μA
Gate-Source Threshold Voltage at V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	0.55		1.1	V
Drain-Source On-State Resistance at V_{GS}=4.5V, I_D=2.5A at V_{GS}=2.5V, I_D=2.0A	$R_{DS(on)}$		57 72	70 98	mΩ
DYNAMIC PARAMETERS					
Input Capacitance at V_{DS}=10V, V_{GS}=0V, f=1MHz	C_{iss}		220		pF
Output Capacitance at V_{DS}=10V, V_{GS}=0V, f=1MHz	C_{oss}		34		pF
Reverse Transfer Capacitance at V_{DS}=10V, V_{GS}=0V, f=1MHz	C_{rss}		26		pF
Gate charge total at V_{DS}=10V, V_{GS}=4.5V, I_D=2.5A	Q_g		3.61		nC
Gate to Source Charge at V_{DS}=10V, V_{GS}=4.5V, I_D=2.5A	Q_{gs}		0.88		nC
Gate to Drain Charge at V_{DS}=10V, V_{GS}=4.5V, I_D=2.5A	Q_{gd}		0.77		nC
Turn-On Delay Time at V_{DS}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	$t_{d(on)}$		6.8		nS
Turn-On Rise Time at V_{DS}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	t_r		57		ns
Turn-Off Delay Time at V_{DS}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	$t_{d(off)}$		14		nS
Turn-On Fall Time at V_{DS}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	t_f		53		ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I_S=0.3A, V_{GS}=0V	V_{SD}			1.2	V
Maximum Body-Diode Continuous Current	I_S			3	A

Notes：1. Repetitive Rating: Pulse width limited by maximum junction temperature
Pulse Test: Pulse width ≤300μS, Duty cycle≤2%

Electrical Characteristics Curves

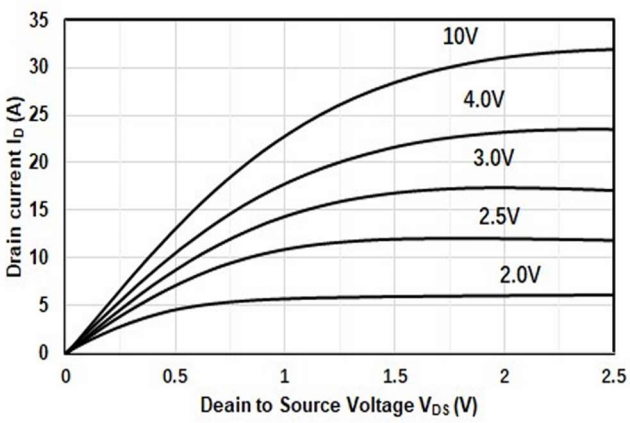


Figure1. Output Characteristics

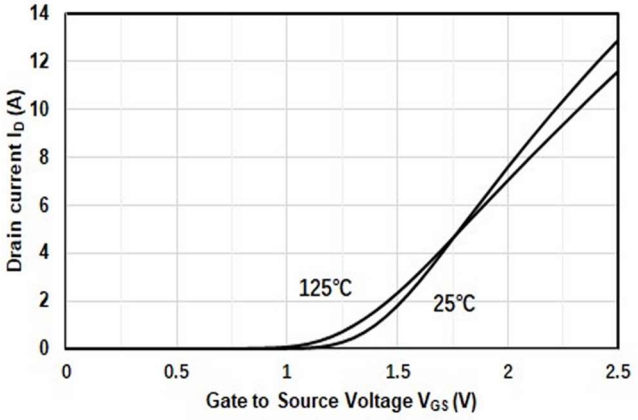


Figure2. Transfer Characteristics

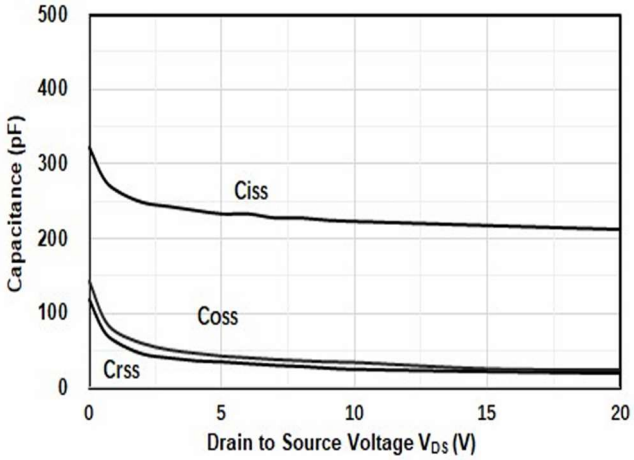


Figure3. Capacitance Characteristics

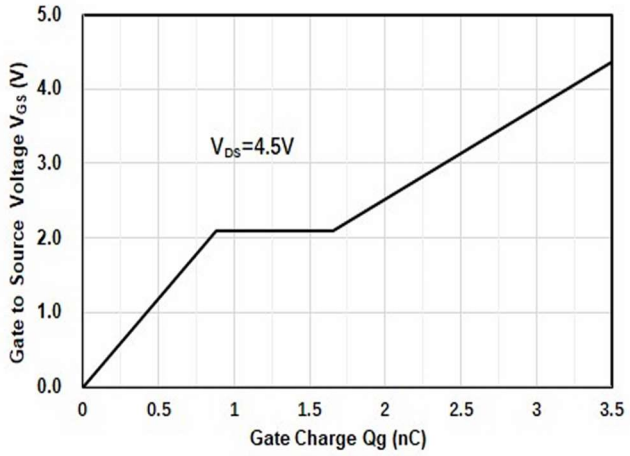


Figure4. Gate Charge

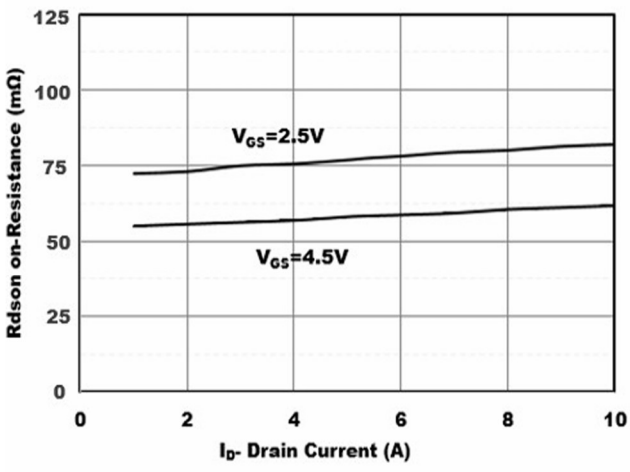


Figure5. Drain-Source on Resistance

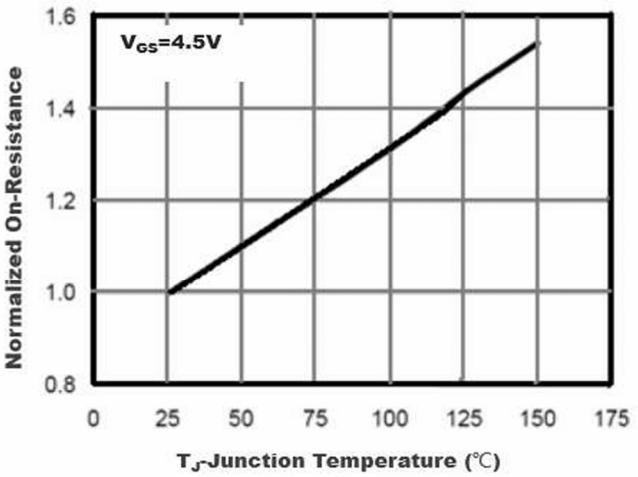


Figure6. Drain-Source on Resistance

Electrical Characteristics Curves

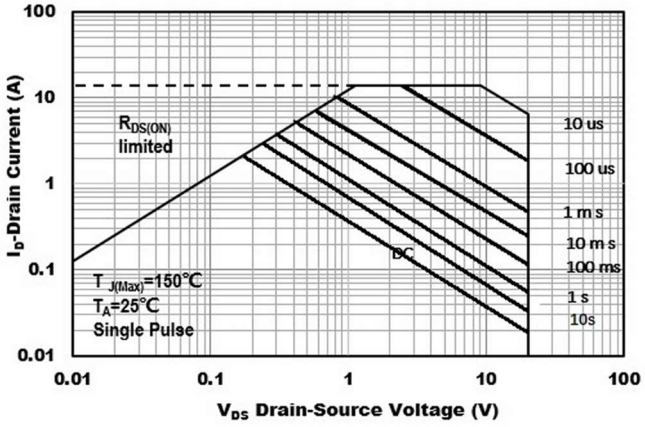


Figure7. Safe Operation Area

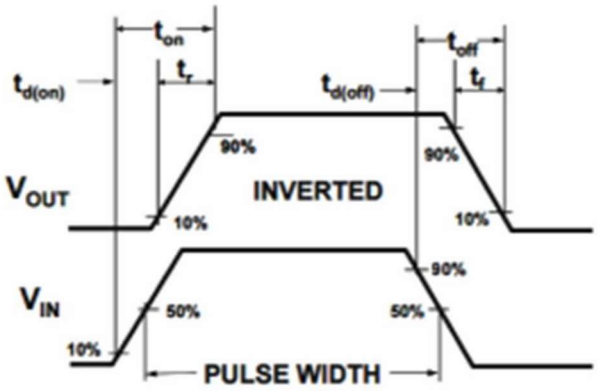
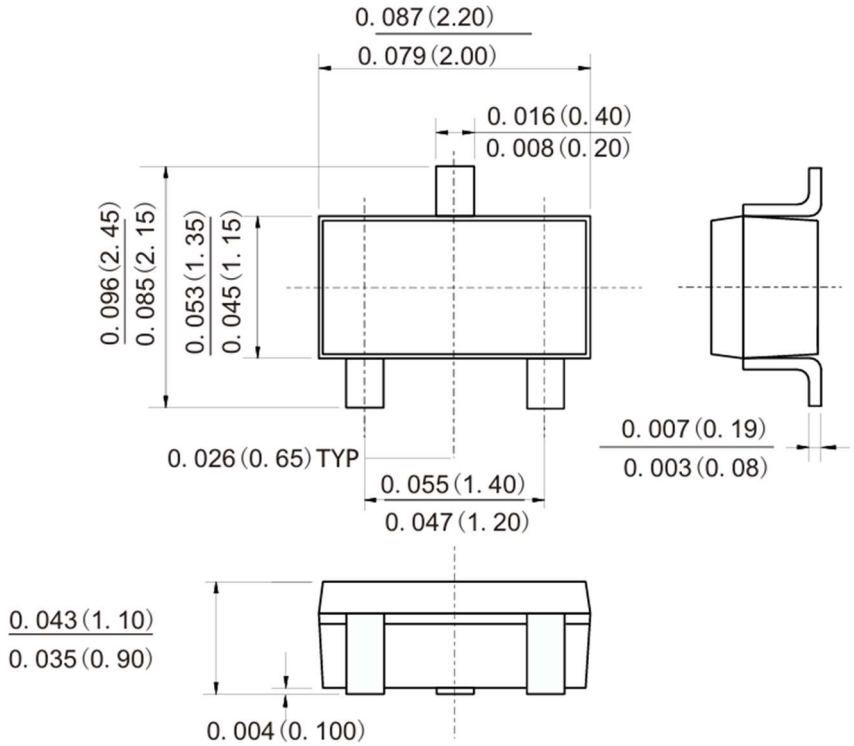


Figure8. Switching wave

Order Information

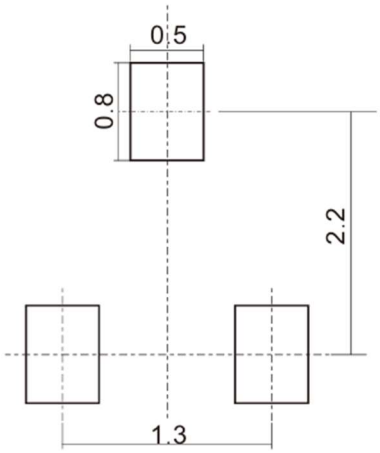
Part Number	Package	Quantity
Sh2102W	SOT-323	3000

Package Outline Dimensions (Units: mm) SOT-323



Dimensions in inches and (millimetrers)

Suggested Pad Layout



Dimensions in millimetrers