N-Channel Enhancement MOSFET

Features

- TrenchFET Power MOSFET
- Voltage Controlled Small Signal Switch
- Halogen-Free & Lead-Free

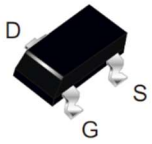
Product Summary		
V_{DS}	$R_{DS(on)}$ (Ω) Max	I_D (A)
50V	2.5 @ 10V	0.34
	3 @ 4.5V	

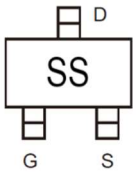
Application

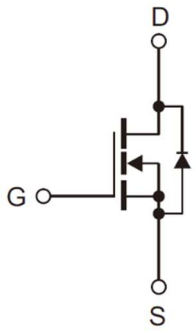
- Load Switch for Portable Devices
- Solid-state relays
- DC/DC Converter

Marking information

SOT-23







N-channel MOSFET

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous drain current (T_A=25 °C)	I_D	0.34	A
Continuous drain current (T_A=70 °C)	I_D	0.272	A
Power Dissipation	P_D	0.35	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 [2]	$R_{\theta JA}$	357	℃/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}	50			V
Drain-Source Leakage Current at V_{DS}=50V, V_{GS}=0V	I_{DSS}			1	μA
Gate Leakage Current at V_{GS}=±20V, V_{DS}=0V	I_{GSS}			±0.1	μA
Gate-Source Threshold Voltage at V_{DS}=V_{GS}, I_D=1mA	$V_{GS(th)}$	0.8		1.6	V
Drain-Source On-State Resistance at V_{GS}=10V, I_D=300mA at V_{GS}=4.5V, I_D=200mA	$R_{DS(on)}$		1.1 1.2	2.5 3	Ω
DYNAMIC PARAMETERS					
Input Capacitance at V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{iss}		17.5		pF
Output Capacitance at V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{oss}		11.5		pF
Reverse Transfer Capacitance at V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{rss}		6.5		pF
Gate charge total at V_{DS}=25V, I_D=0.3A, V_{GS}=10V	Q_g		1.7	2.4	nC
Turn-On Delay Time at V_{DD}=25V, I_D=0.3A, R_{GEN}=6Ω, V_{GS}=10V	$t_{d(on)}$		5		nS
Turn-Off Delay Time at V_{DD}=25V, I_D=0.3A, R_{GEN}=6Ω, V_{GS}=10V	$t_{d(off)}$		17		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			340	mA
Body Diode Reverse Recovery Time at V_R=25V, V_{GS}=0V I_S=0.3A, di/dt=100A/μs	trr		30		nS

Electrical Characteristics Curves

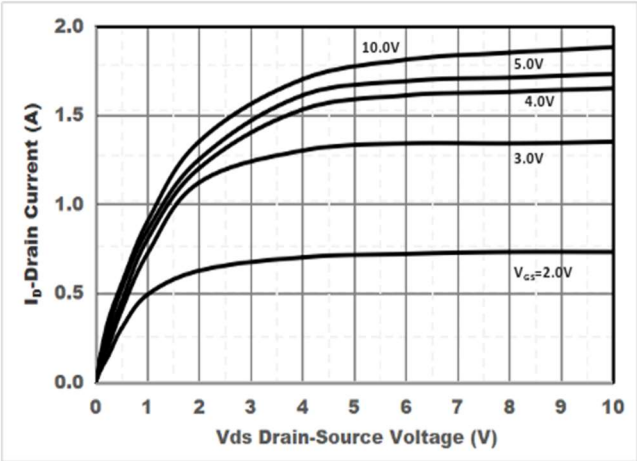


Figure1. Output Characteristics

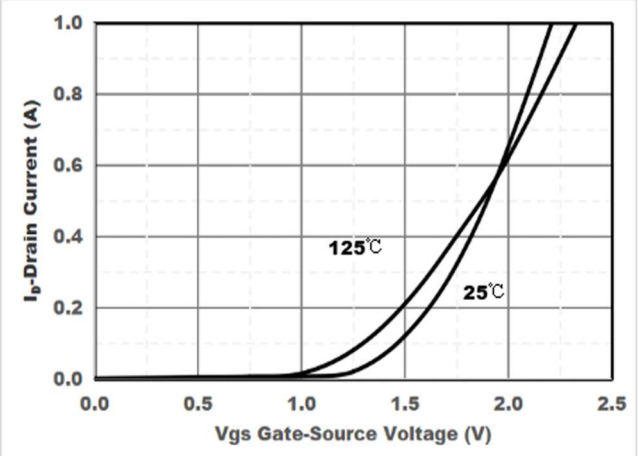


Figure2. Transfer Characteristics

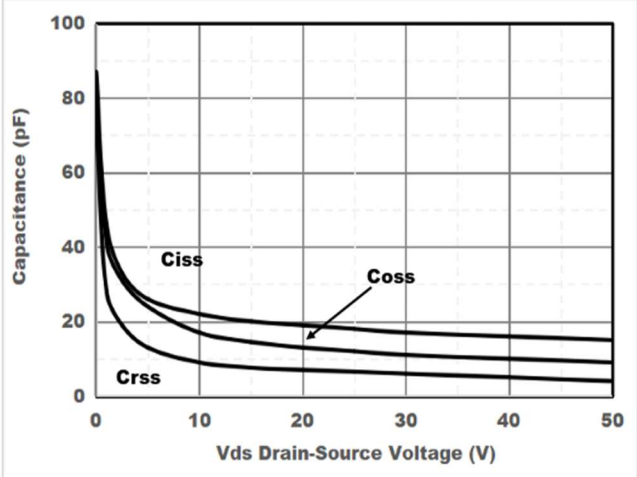


Figure3. Capacitance Characteristics

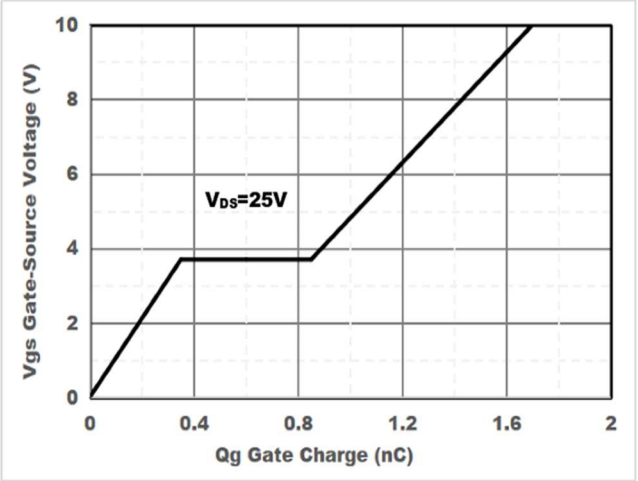


Figure4. Gate Charge

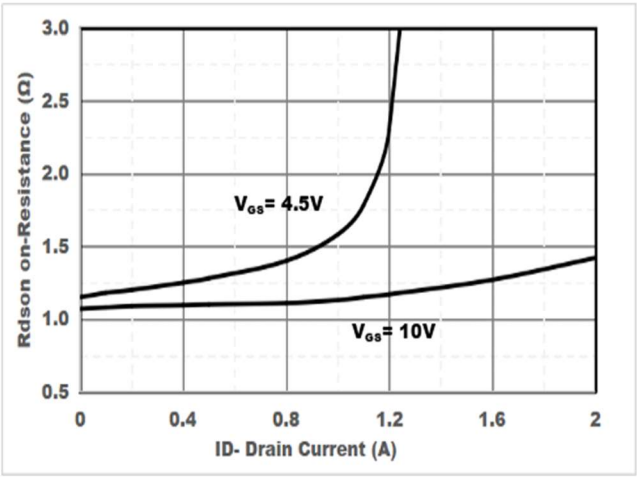


Figure5. Drain-Source on Resistance

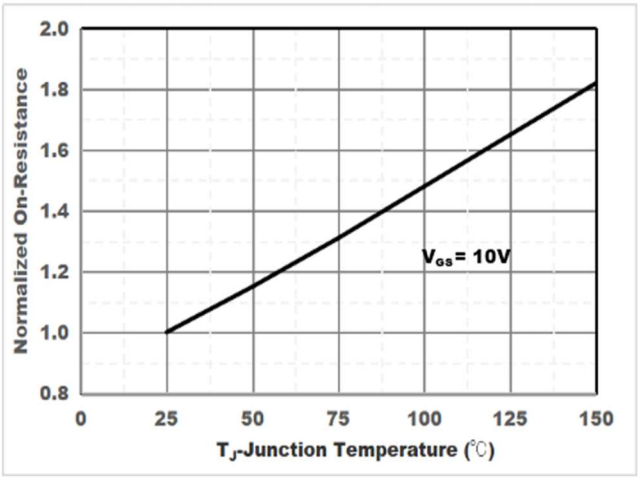


Figure6. Drain-Source on Resistance

Electrical Characteristics Curves

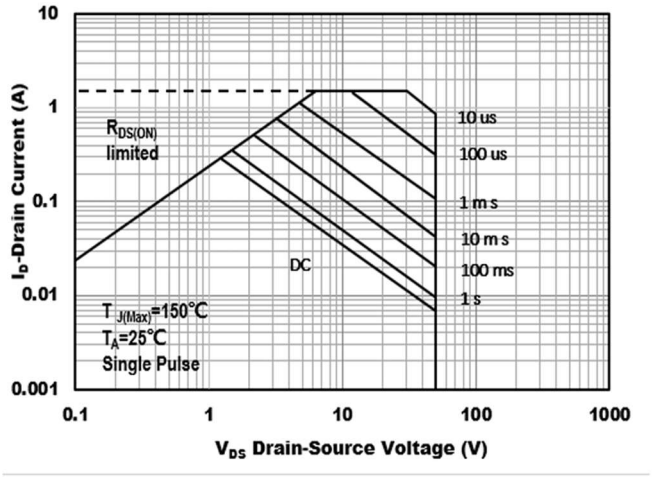


Figure7. Safe Operation Area

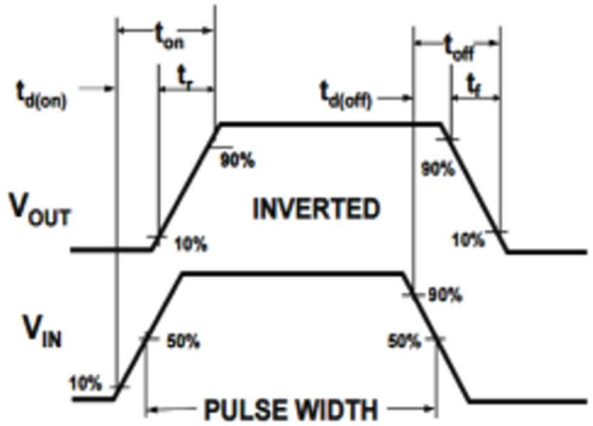
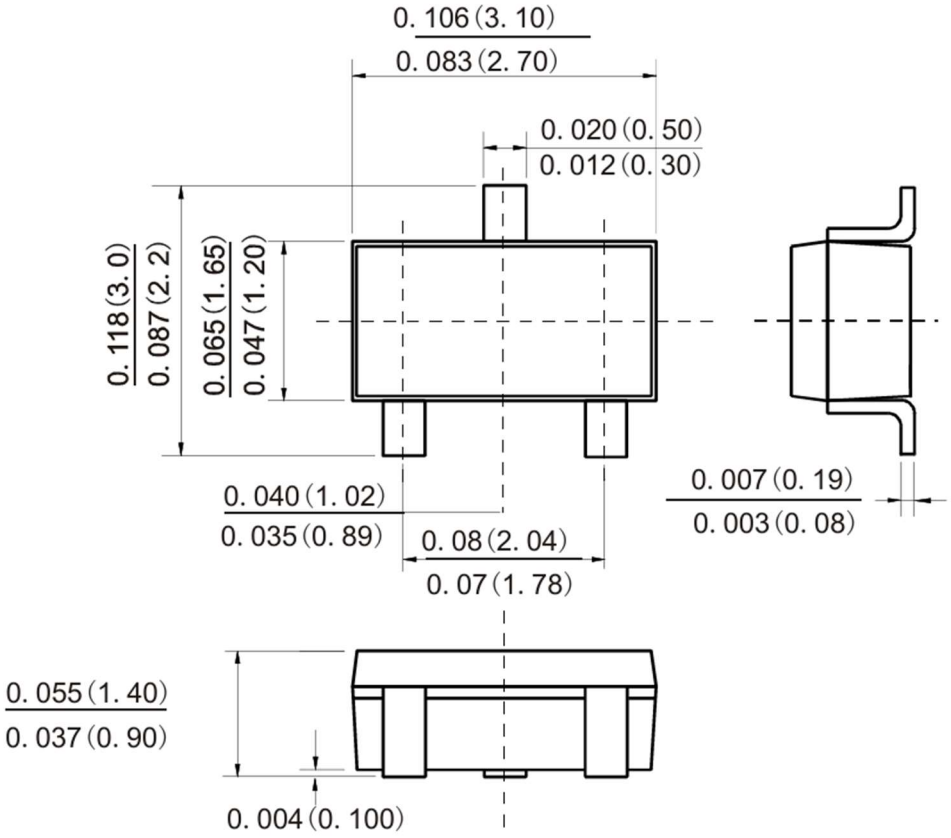


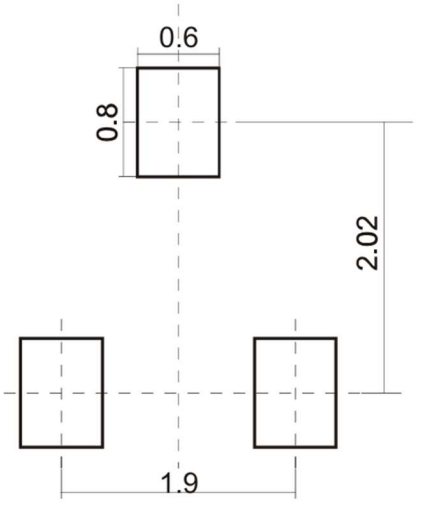
Figure8. Switching wave

Package Outline Dimensions (Units: mm) SOT-23



Dimensions in inches and (millimetrers)

Suggested Pad Layout



Dimensions in millimetrers

Order Information

Part Number	Package	Quantity
ShBSS138	SOT-23	3000