N-Channel Enhancement MOSFET

Features

- Trench Power LV MOSFET technology
- 100% Rg tested
- High Current and Power handing capability
- Halogen-Free & Lead-Free

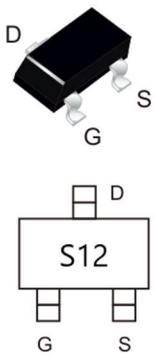
Product Summary			
V_{DS}	$R_{DS(on)}$ (mΩ) Typ	I_D (A)	Qg (Typ)
20V	13.3 @ 4.5V,6.8A	6.8	9.2nc
	17.2 @ 2.5V,3.0A		
	27.2 @ 1.8V,2.5A		

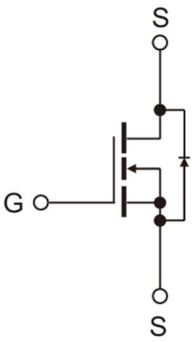
Application

- Load Switch
- Power Management
- PWM Control Circuit

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}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous drain current (T_A=25 °C)	I_D	6.8	A
Continuous drain current (T_A=70 °C)	I_D	5.4	A
Pulsed drain current[1)]	I_{DM}	27	A
Power Dissipation	P_D	1.2	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)]	$R_{\theta JA}$	104	℃/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	$V_{GS(th)}$	0.45	0.62	1	V
Drain-Source On-State Resistance at V_{GS}=4.5V, I_D=6.8A at V_{GS}=2.5V, I_D=3.0A at V_{GS}=1.8V, I_D=2.5A	$R_{DS(on)}$		13.3 17.2 27.2	18 25 40	mΩ
DYNAMIC PARAMETERS					
Input Capacitance at V_{DS}=10V, V_{GS}=0V, f=1MHz	C_{iss}		900		pF
Output Capacitance at V_{DS}=10V, V_{GS}=0V, f=1MHz	C_{oss}		165		pF
Reverse Transfer Capacitance at V_{DS}=10V, V_{GS}=0V, f=1MHz	C_{rss}		75		pF
Gate charge total at V_{DS}=10V, V_{GS}=4.5V, I_D=6.8A	Q_g		9.2		nC
Gate to Source Charge at V_{DS}=10V, V_{GS}=4.5V, I_D=6.8A	Q_{gs}		1.8		nC
Gate to Drain Charge at V_{DS}=10V, V_{GS}=4.5V, I_D=6.8A	Q_{gd}		3.1		nC
Turn-On Delay Time at V_{DD}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	$t_{d(on)}$		12		nS
Rise Time at V_{DD}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	t_r		52		ns
Turn-Off Delay Time at V_{DD}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	$t_{d(off)}$		17		nS
Fall Time at V_{DD}=10V, R_L=1.5Ω, R_{GEN}=3Ω, V_{GS}=4.5V	t_f		10		ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I_S=6.8A, V_{GS}=0V	V_{SD}			1.2	V
Maximum Body-Diode Continuous Current	I_S			6.8	A

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

Electrical Characteristics Curves

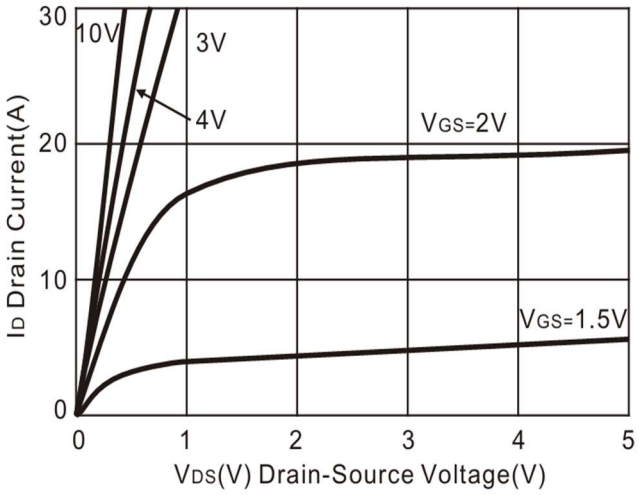


Fig1. Output Characteristics

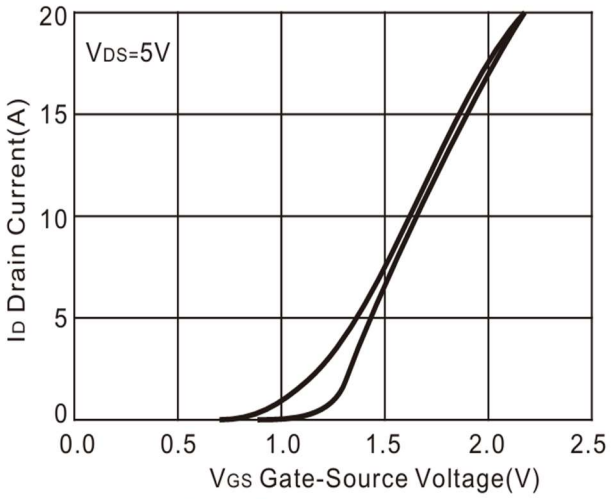


Fig2. Transfer Characteristics

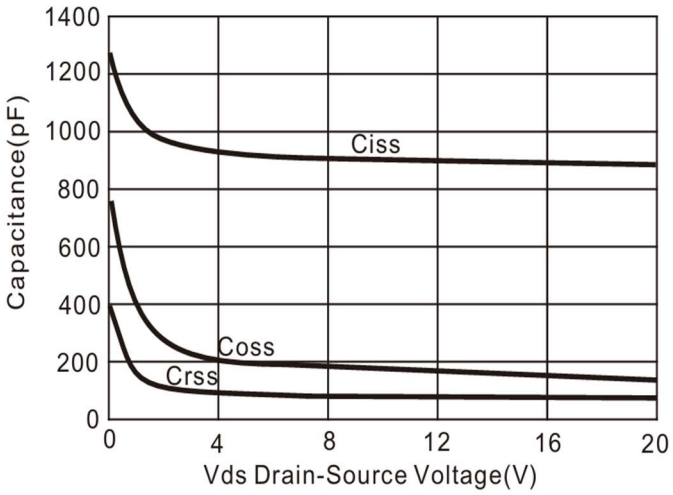


Fig3. Capacitance Characteristics

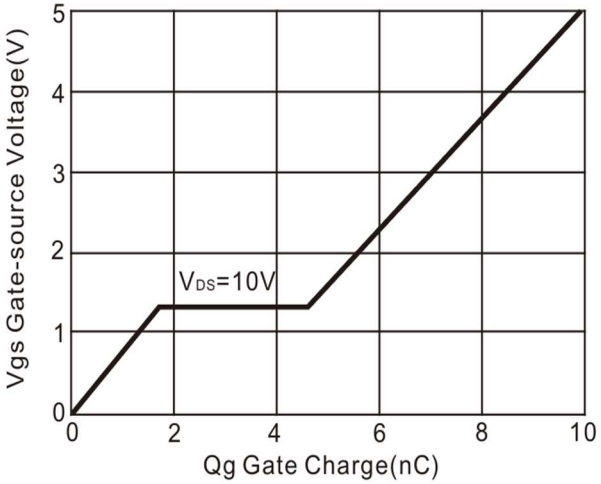


Fig4. Gate Charge

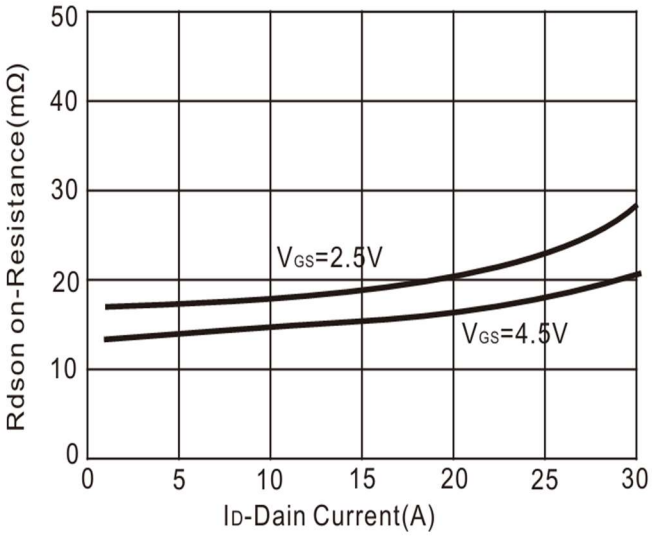


Fig5. Drain-Source on Resistance

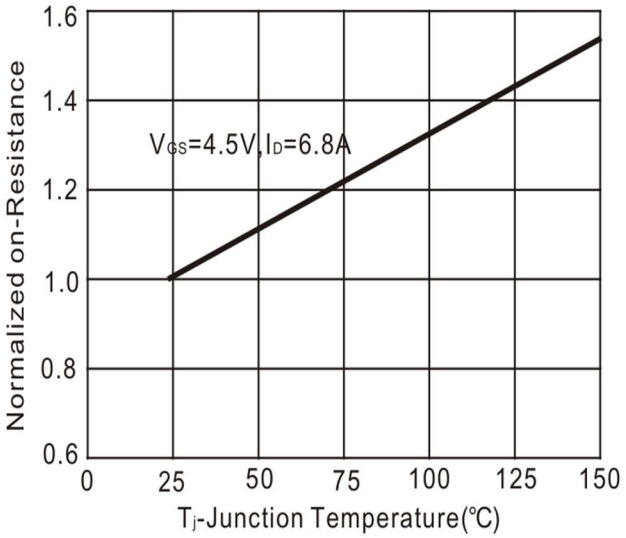


Fig6. Drain-Source on Resistance

Electrical Characteristics Curves

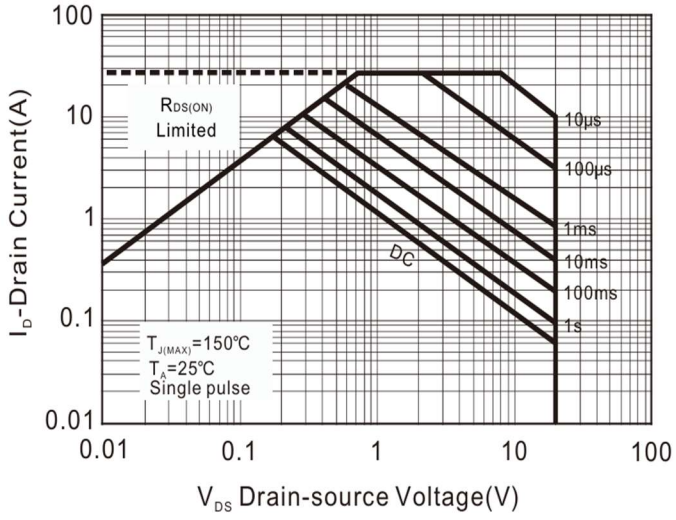


Fig7. Safe Operation Area

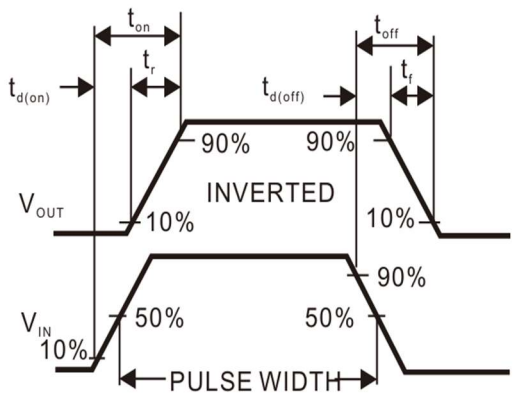
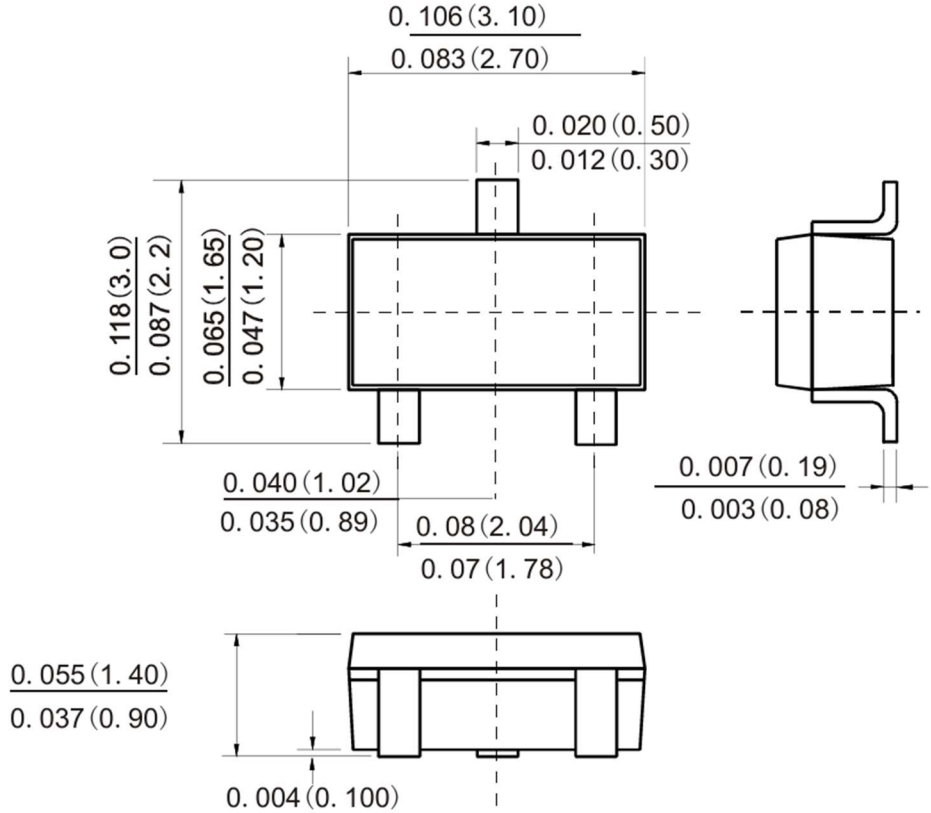


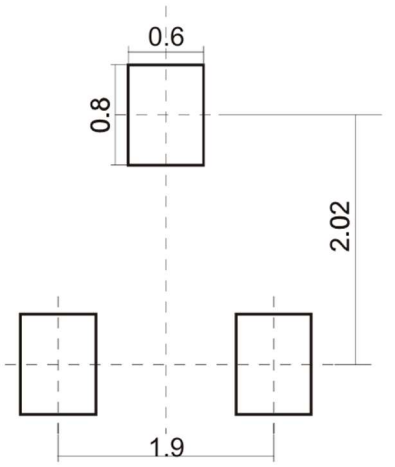
Fig8. Switching wave

Package Outline Dimensions (Units: mm) SOT-23



Dimensions in inches and (millimetrers)

Suggested Pad Layout



Dimensions in millimetrers

Order Information

Part Number	Package	Quantity
Sh2312A	SOT-23	3000