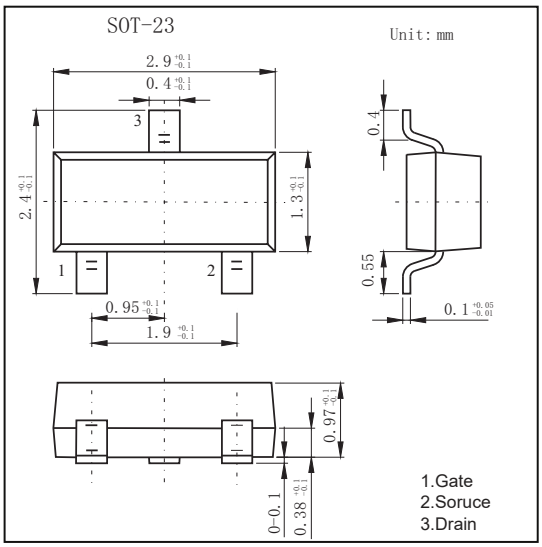
SOT-23 Plastic-Encapsulate MOSFETS

FEATURE

- High dense cell design for extremely low RDS(on) @VGS=4.5V
- 5V Logic Level Control
- Exceptional on-resistance and maximum DC current capability
- N-Channel Enhancement Mode Field Effect Transistor

MECHANICAL DATA

- Case style:SOT-23molded plastic
- Mounting position:any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter		Symbol	Rating	Unit
Gate-Source Voltage		V_{GS}	±12	V
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	30	V
Maximum Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-50 to 150	°C
Pulse Drain Current Tested①	T_A=25°C	I_{DM}	23	A
Continuous Drain Current(V_{GS}=4.5V)	T_A=25°C T_A=70°C	I_D	5.8 4.6	A
Maximum Power Dissipation	T_A=25°C T_A=70°C	P_D	1.2 0.9	W
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	100	°C/W

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 ℃ unless otherwise specified

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V I_D=250μA	30	--	--	V
Zero Gate Voltage Drain Current(T_A=25℃)	I_{DSS}	V_{DS}=24V, V_{GS}=0V	--	--	1	μA
Zero Gate Voltage Drain Current(T_A=125℃)		V_{DS}=24V, V_{GS}=0V	--	--	100	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	--	--	±100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	0.7	1.2	V
Drain-Source On-State Resistance②	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=5.8A	--	27	35	mΩ
Drain-Source On-State Resistance②	$R_{DS(ON)}$	V_{GS}=3.3V, I_D=4A	--	29	45	mΩ
Drain-Source On-State Resistance②	$R_{DS(ON)}$	V_{GS}=2.5V, I_D=2A	--	35	50	mΩ

Dynamic Characteristics (note 4,5)

Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz	--	635	--	pF
Output Capacitance	C_{oss}		--	135	--	pF
Reverse Transfer Capacitance	C_{rss}		--	40	--	pF
Total Gate Charge	Q_g	V_{DS}=15V I_D=5A, V_{GS}=4.5V	--	10.5	--	nC
Gate Source Charge	Q_{gs}		--	1.6	--	nC
Gate Drain Charge	Q_{gd}		--	2.7	--	nC

Switching Characteristics (note 4,5)

Turn on Delay Time	$t_{d(on)}$	V_{DS}=15V, I_D=5A, R_G=3.3Ω, V_{GS}=4.5V	--	7.5	--	ns
Turn on Rise Time	t_r		--	18	--	ns
Turn Off Delay Time	$t_{d(off)}$		-	36	--	ns
Turn Off Fall Time	t_f		--	5	--	ns

Drain-source diode characteristics and maximum ratings

Source drain current(Body Diode)	I_{SD}	T_A=25℃	--	--	1.5	A
Forward on voltage②	V_{SD}	T_j=25℃, I_{SD}=3A, V_{GS}=0V	--	0.82	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

② Pulse test ; Pulse width 300 s, duty cycle 2%.

RATINGS AND CHARACTERISTIC CURVES

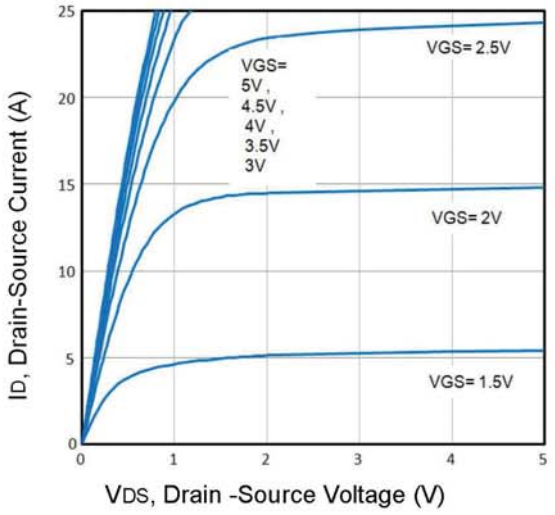


Fig1. Typical Output Characteristics

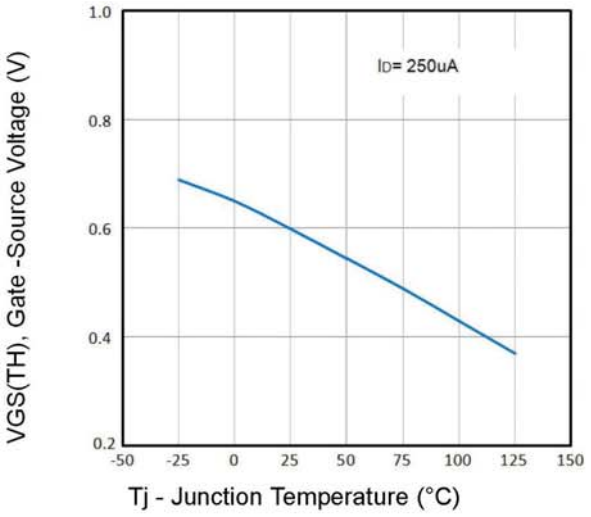


Fig2. Normalized Threshold Voltage Vs. Temperature

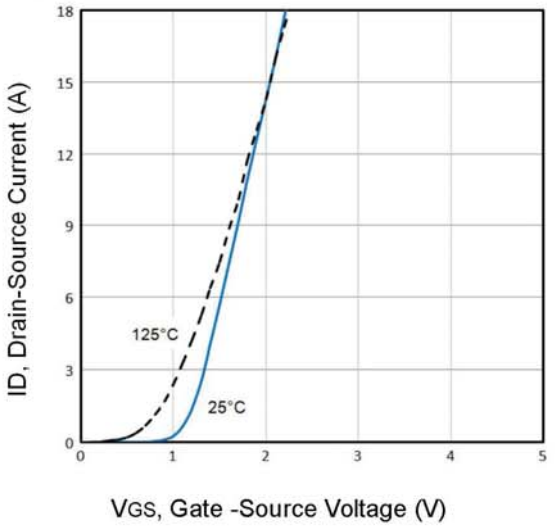


Fig3. Typical Transfer Characteristics

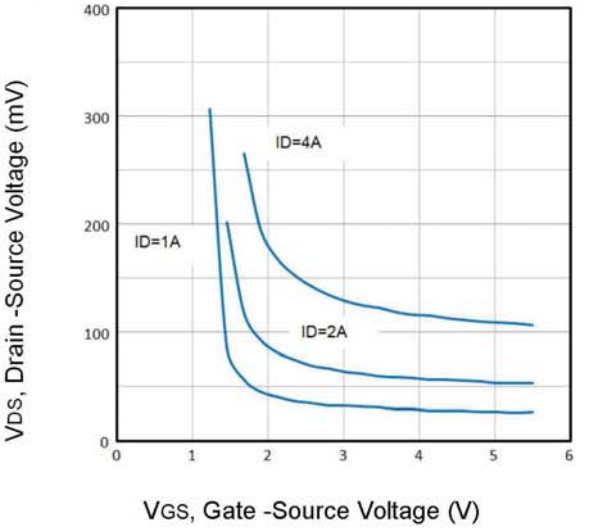


Fig4. Drain -Source Voltage vs Gate -Source Voltage

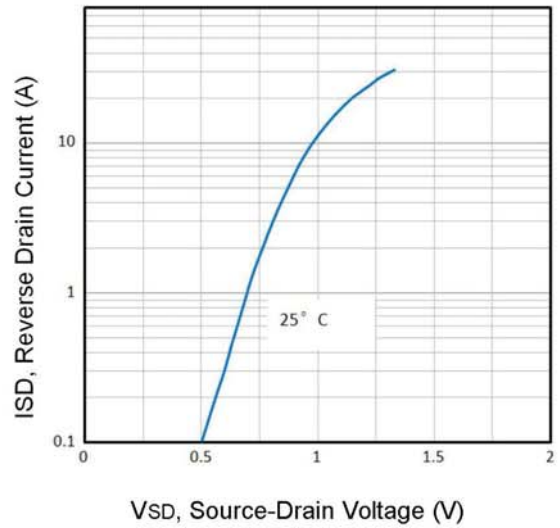


Fig5. Typical Source-Drain Diode Forward Voltage

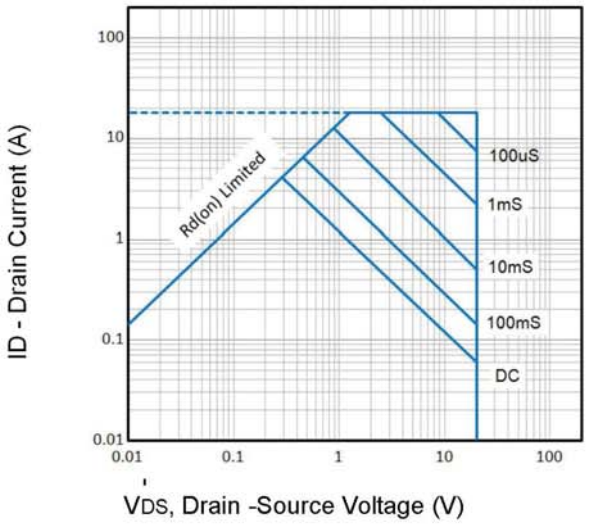


Fig6. Maximum Safe Operating Area

RATINGS AND CHARACTERISTIC CURVES

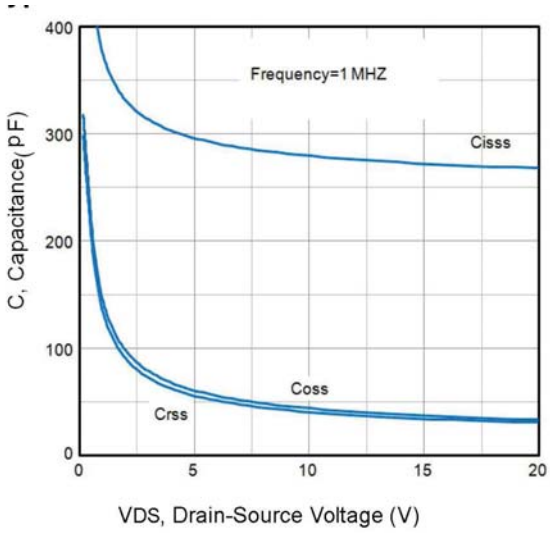


Fig7. Typical Capacitance Vs. Drain-Source Voltage

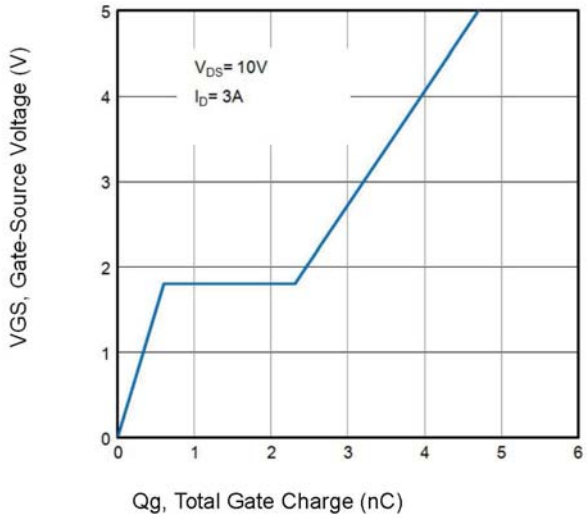


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

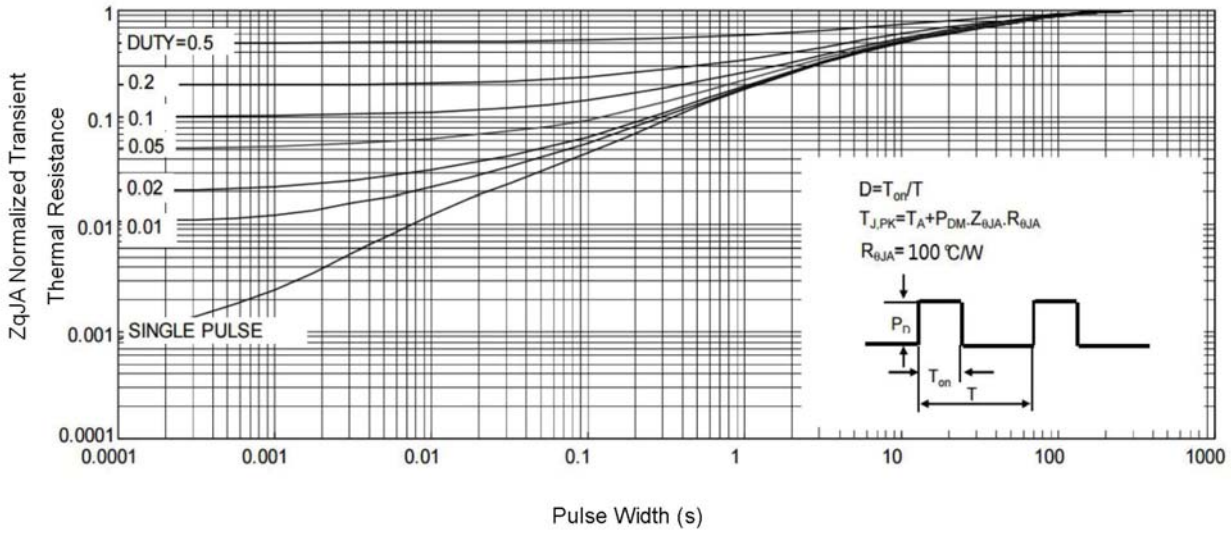


Fig9. Normalized Maximum Transient Thermal Impedance

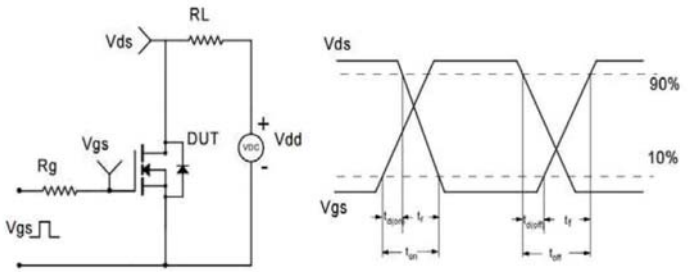


Fig10. Switching Time Test Circuit and waveform