

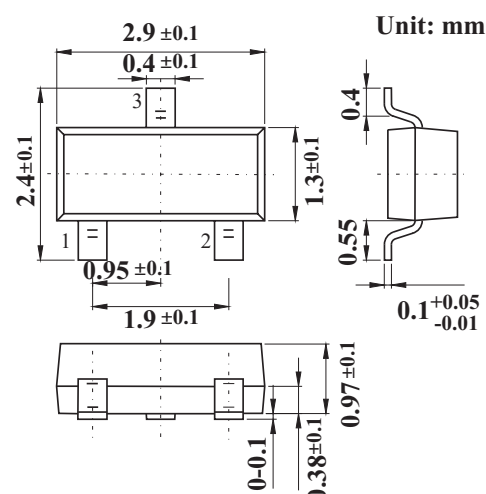
SOT-23 Plastic-Encapsulate MOSFETS

FEATURE

- High dense cell design for extremely low $R_{DS(on)}$ @ $V_{GS}=4.5V$
- 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 $T_A=25^\circ C$	I_{DM}	23	A
Continuous Drain Current($V_{GS}=4.5V$) $T_A=25^\circ C$ $T_A=70^\circ C$	I_D	5.8	A
		4.6	
Maximum Power Dissipation $T_A=25^\circ C$ $T_A=70^\circ C$	P_D	1.2	W
		0.9	
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	100	°C/W

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	--	--	V
Zero Gate Voltage Drain Current(TA=25°C)	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$	--	--	1	μA
Zero Gate Voltage Drain Current(TA=125°C)		$V_{DS}=24V, V_{GS}=0V$	--	--	100	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	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	m Ω
Drain-Source On-State Resistance②	$R_{DS(ON)}$	$V_{GS}=3.3V, I_D=4A$	--	29	45	m Ω
Drain-Source On-State Resistance②	$R_{DS(ON)}$	$V_{GS}=2.5V, I_D=2A$	--	35	50	m Ω

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	$t_{d(on)}$	$V_{DS}=15V, I_D=5A, R_G=3.3\Omega, V_{GS}=4.5V$	--	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}	TA=25°C	--	--	1.5	A
Forward on voltage②	V_{SD}	Tj=25°C, $I_{SD}=3A, V_{GS}=0V$	--	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

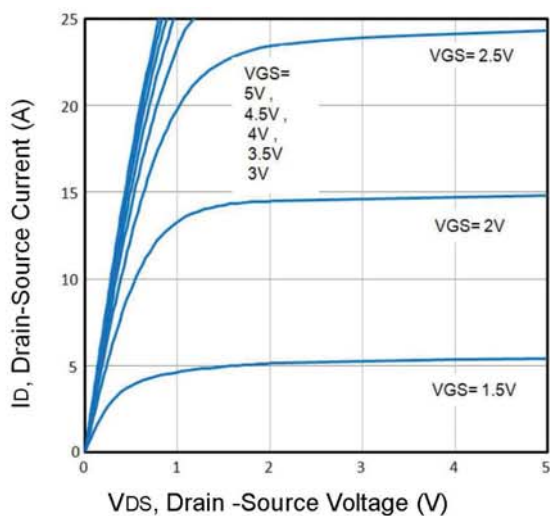


Fig1. Typical Output Characteristics

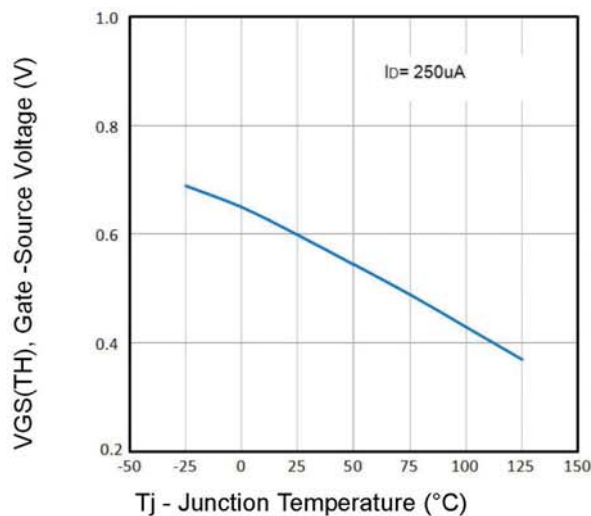


Fig2. Normalized Threshold Voltage Vs. Temperature

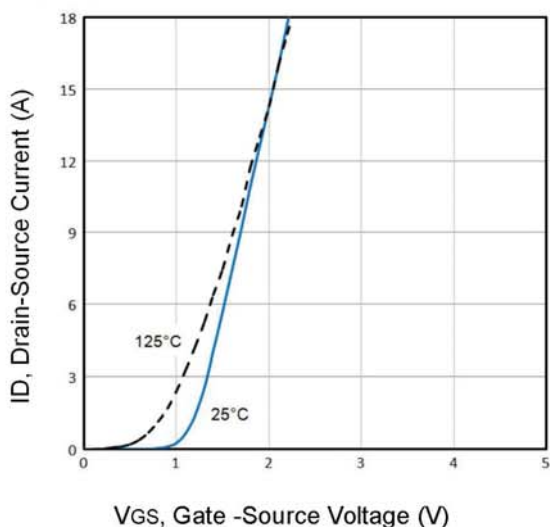


Fig3. Typical Transfer Characteristics

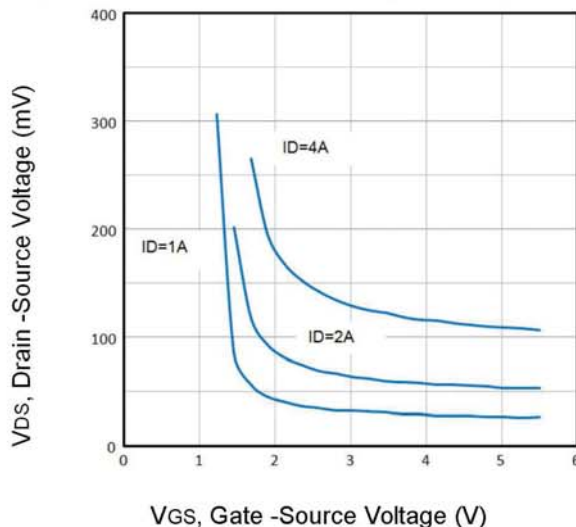


Fig4. Drain-Source Voltage vs Gate-Source Voltage

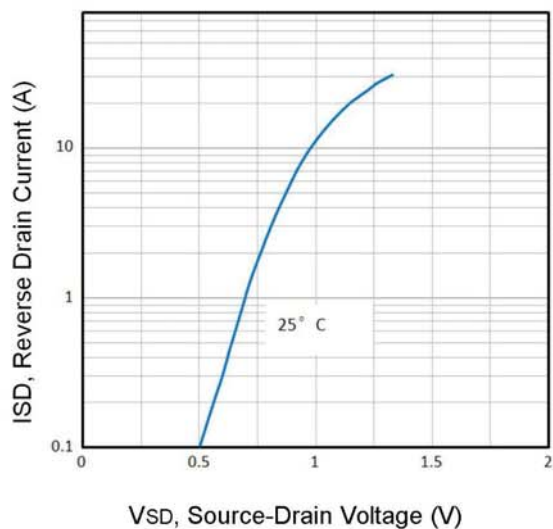


Fig5. Typical Source-Drain Diode Forward Voltage

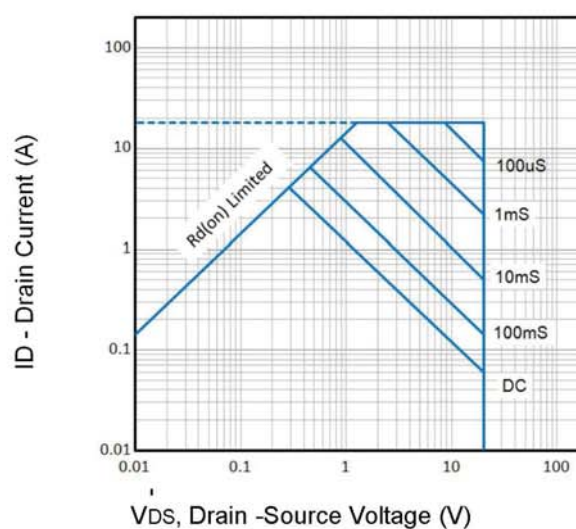


Fig6. Maximum Safe Operating Area

RATINGS AND CHARACTERISTIC CURVES

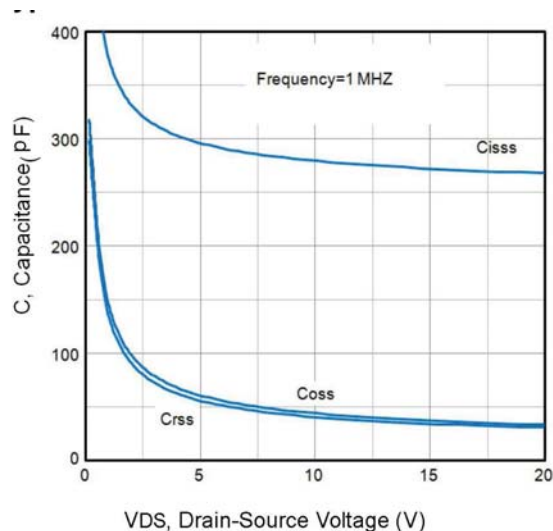


Fig7. Typical Capacitance Vs. Drain-Source Voltage

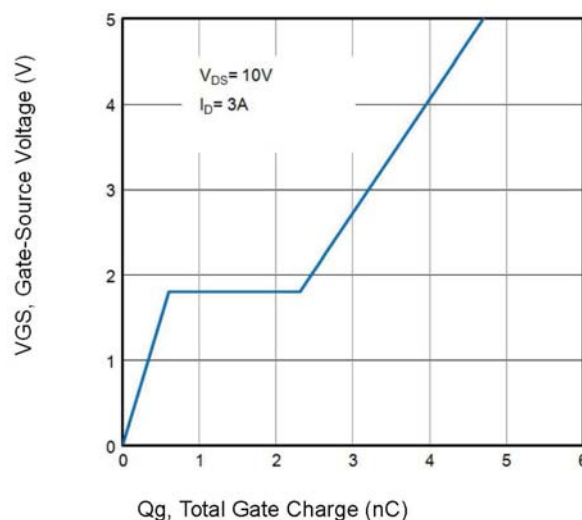


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

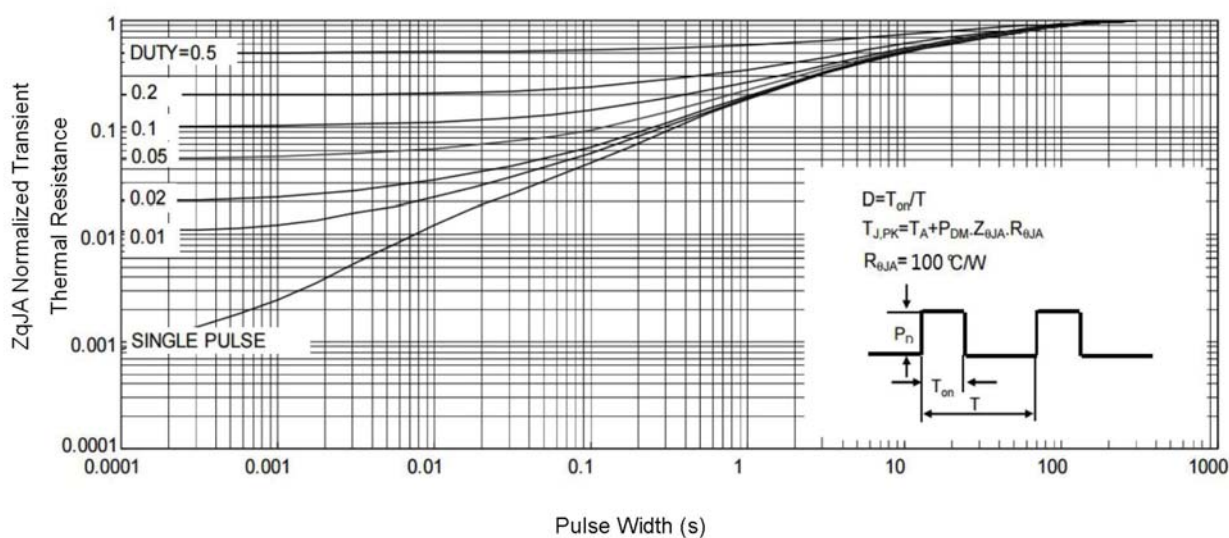


Fig9. Normalized Maximum Transient Thermal Impedance

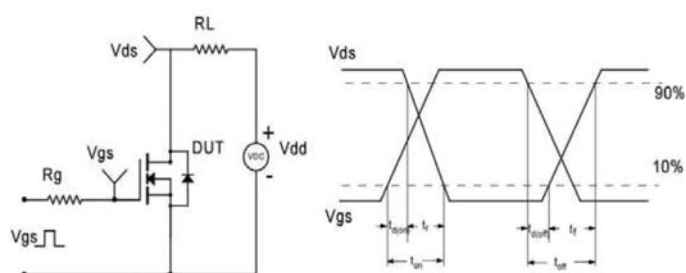


Fig10. Switching Time Test Circuit and waveform