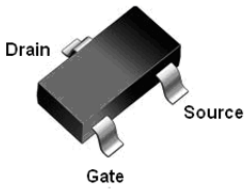
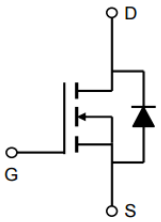
Features

- *Low $R_{DS(on)}$ @V_{GS}=10V*
- *5V Logic Level Control*
- *N Channel SOT23 Package*
- *Pb−Free, RoHS Compliant*





Applications

- Load Switch
- *Battery switch*
- *DC/DC Converter*
- **Marking** :S10

SOT23

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D Max
60V	75mΩ @ 10V	3.2A
	92mΩ @ 4.5V	

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		60	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 150	°C
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested①	T_A=25°C	15.2	A
I_D	Continuous Drain Current	T_A=25°C	3.2	A
		T_A=70°C	3	
P_D	Maximum Power Dissipation	T_A=25°C	1.56	W
		T_A=70°C	0.9	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		80	°C/W

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=60V, V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=48V, V_{GS}=0V	--	--	100	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.5	3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=10V, I_D=3A	--	68	75	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=4.5V, I_D=2A	--	77	92	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz	--	362	--	pF
C_{oss}	Output Capacitance		--	23	--	pF
C_{rss}	Reverse Transfer Capacitance		--	16	--	pF
R_g	Gate Resistance	f=1MHz		9		Ω
Q_g	Total Gate Charge	V_{DS}=30V I_D=4A, V_{GS}=10V	--	6.9	--	nC
Q_{gs}	Gate Source Charge		--	0.9	--	nC
Q_{gd}	Gate Drain Charge		--	1.8	--	nC
Switching Characteristics @ T_J = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	V_{DD}=30V, I_D=1A, R_G=3.3Ω, V_{GS}=10V	--	3.4	--	ns
t_r	Turn on Rise Time		--	5.8	--	ns
$t_{d(off)}$	Turn Off Delay Time		-	21	--	ns
t_f	Turn Off Fall Time		--	4.6	--	ns
Source Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
I_{SD}	Source drain current(Body Diode)	T_A=25℃	--	--	2	A
V_{SD}	Forward on voltage②	T_j=25℃, I_{SD}=2A, V_{GS}=0V	--	0.79	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

②Pulse test ; Pulse width≤300μs, duty cycle≤2%.

Typical Characteristics

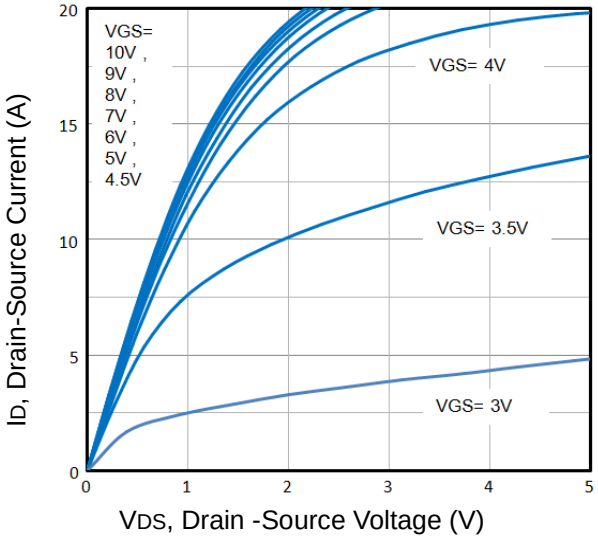


Fig1. Typical Output Characteristics

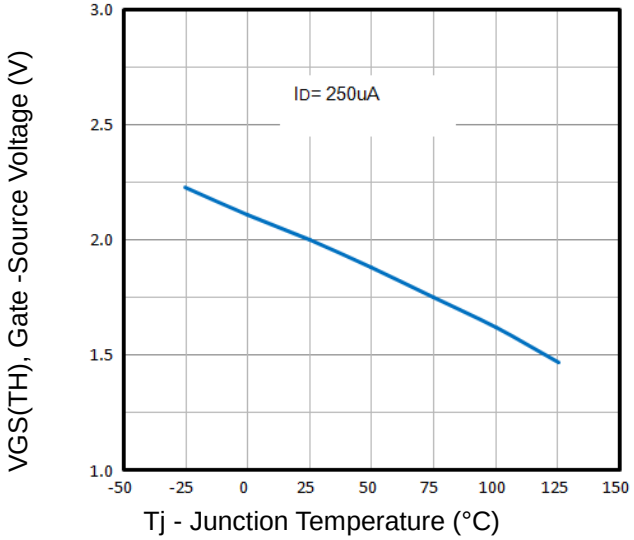


Fig2. VGS(TH) Voltage Vs. Temperature

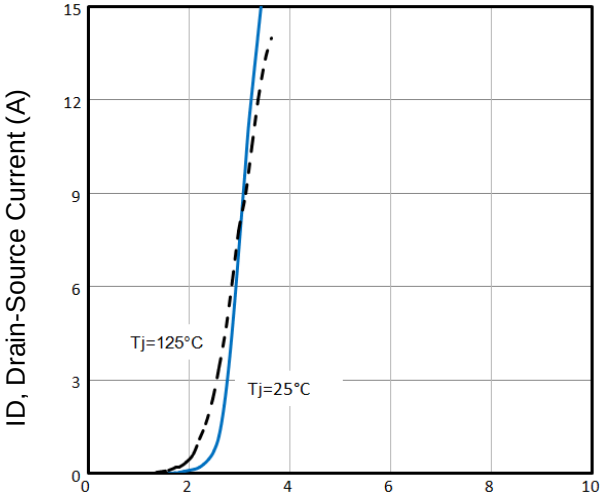


Fig3. Typical Transfer Characteristics

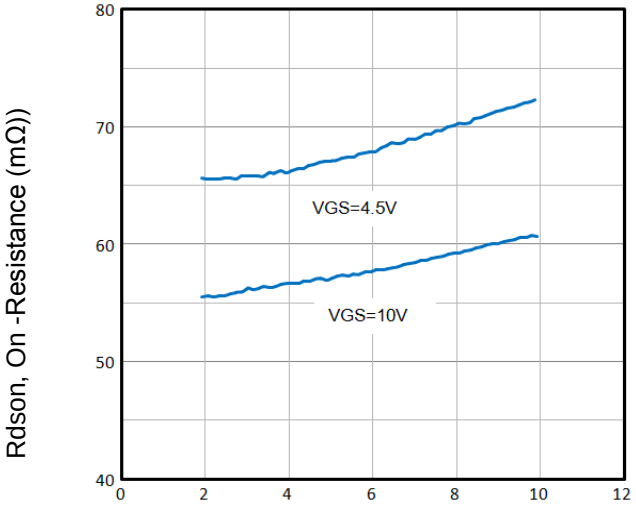


Fig4. On-Resistance vs. Drain Current and Gate

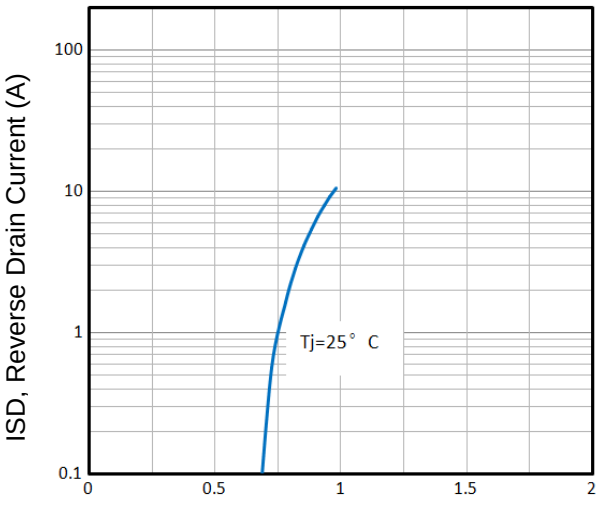


Fig5. Typical Source-Drain Diode Forward Voltage

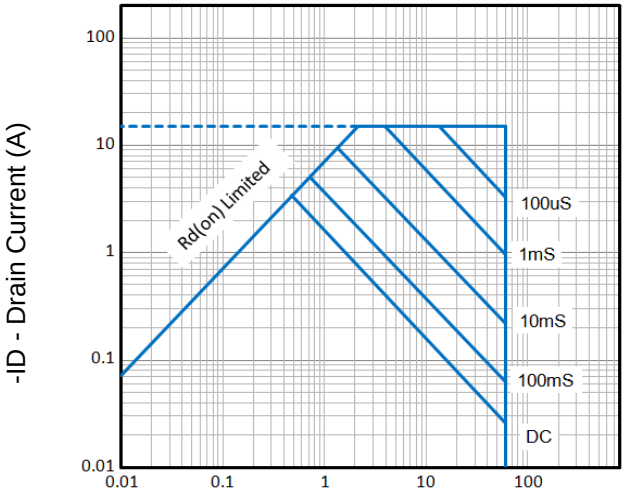


Fig6. Maximum Safe Operating Area

Typical Characteristics

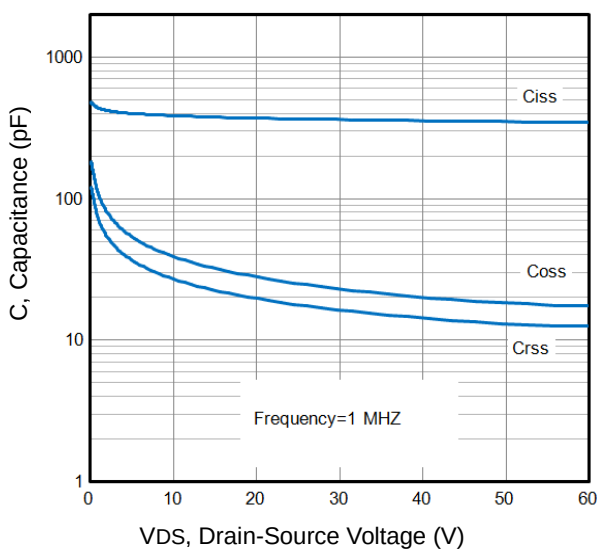


Fig7. Typical Capacitance Vs. Drain-Source Voltage

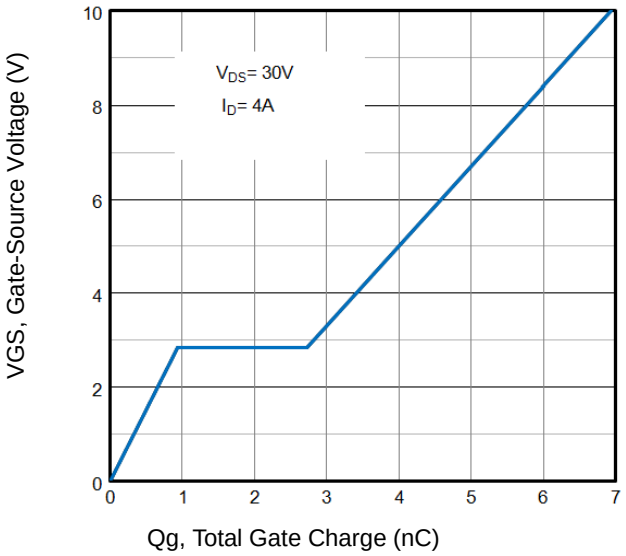


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

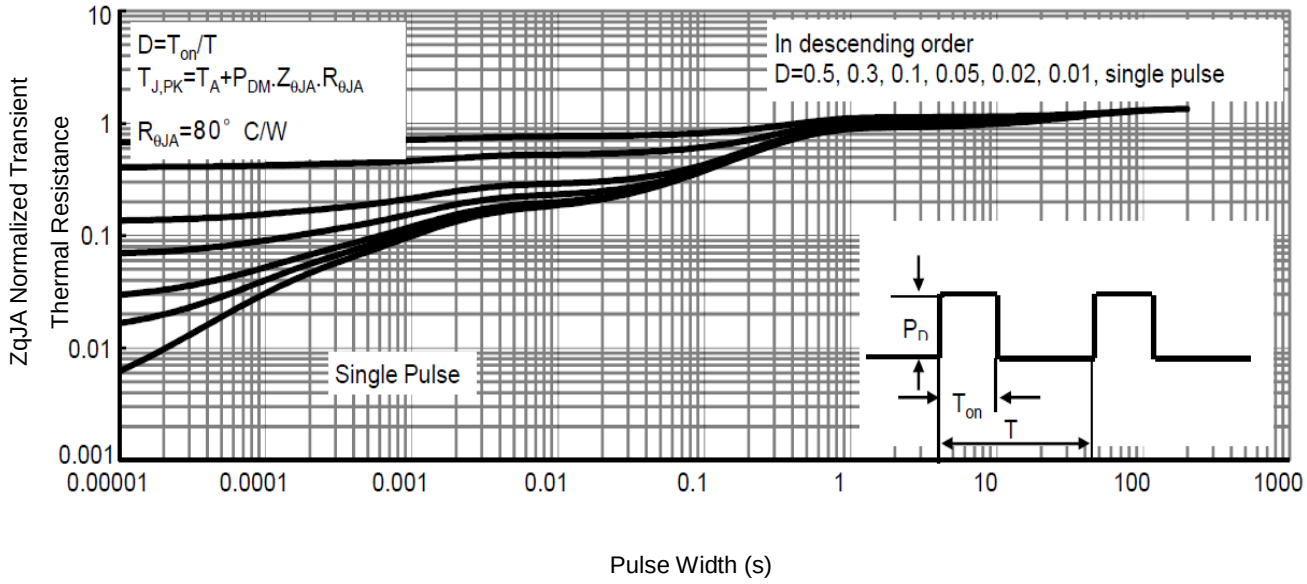


Fig9. Normalized Maximum Transient Thermal Impedance

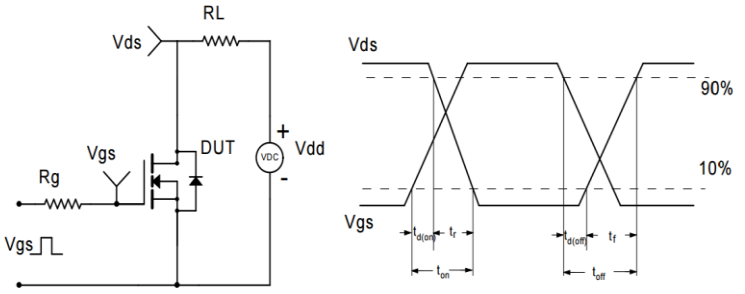
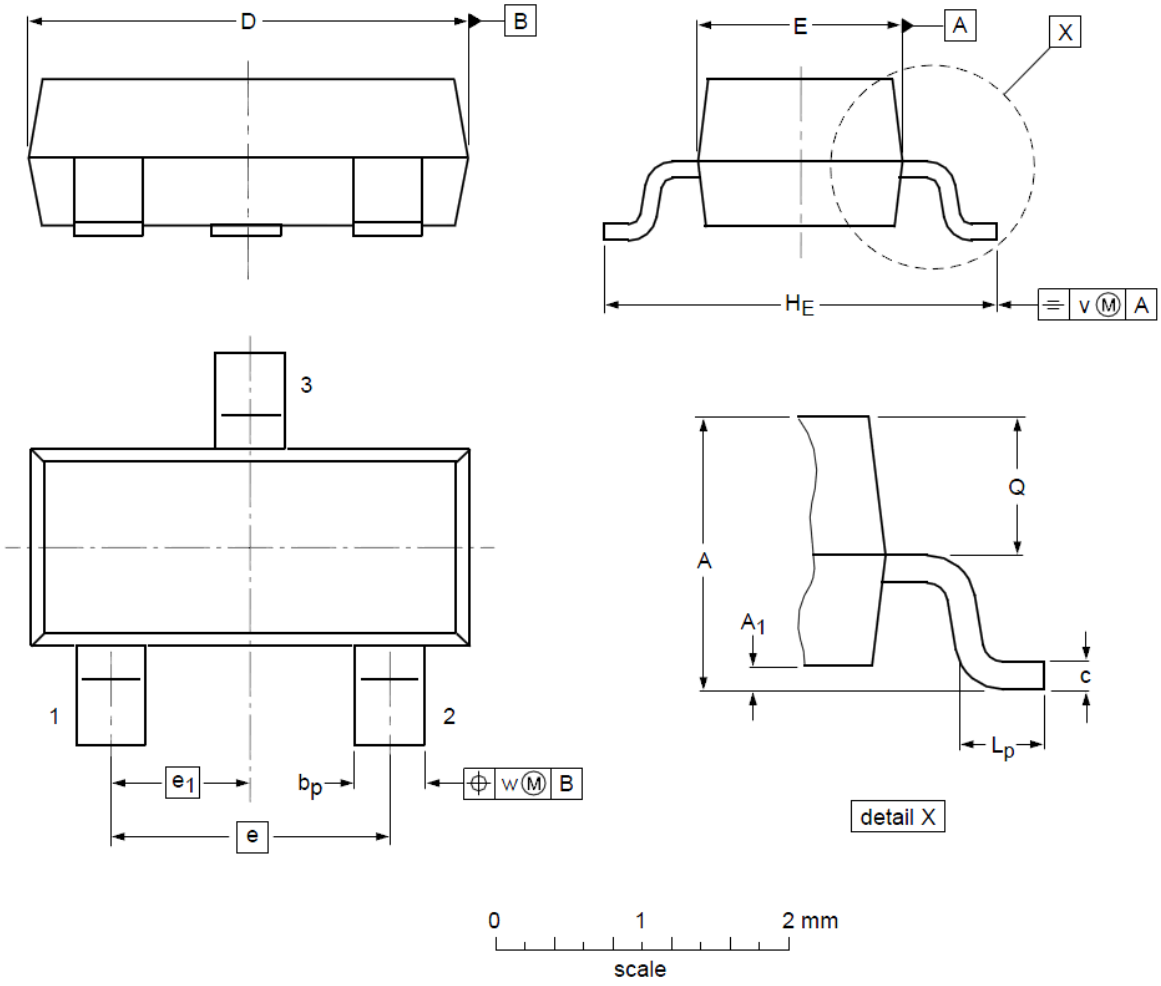


Fig10. Switching Time Test Circuit and waveforms

SOT23 Mechanical Data



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	**A_1**	0.01	0.05	0.10
b_p	0.30	0.42	0.50	**c**	0.08	0.13	0.15
D	2.80	2.92	3.00	**E**	1.20	1.33	1.40
e	--	1.90	--	**e_1**	--	0.95	--
H_E	2.25	2.40	2.55	**L_p**	0.30	0.42	0.50
Q	0.45	0.49	0.55	**v**	--	0.20	--
w	--	0.10	--				