

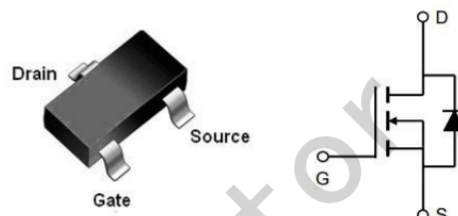
Features

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

$V_{(BR)DSS}$	$R_{DS(ON)}$ Typ	I_D Max
60V	57mΩ @ 10V	3.5A
	66mΩ @ 4.5V	

Applications

- Load Switch
- Battery switch
- DC/DC Converter



SOT23

Absolute Maximum Ratings

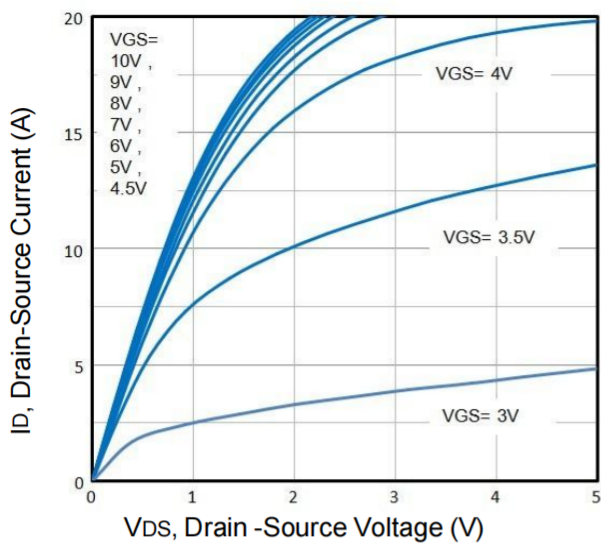
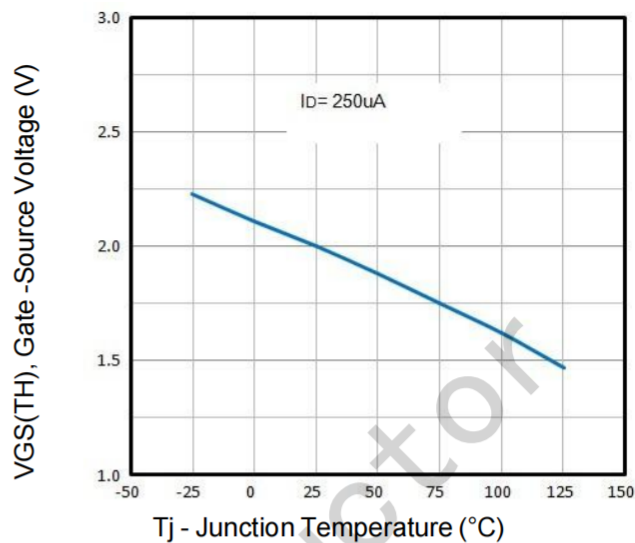
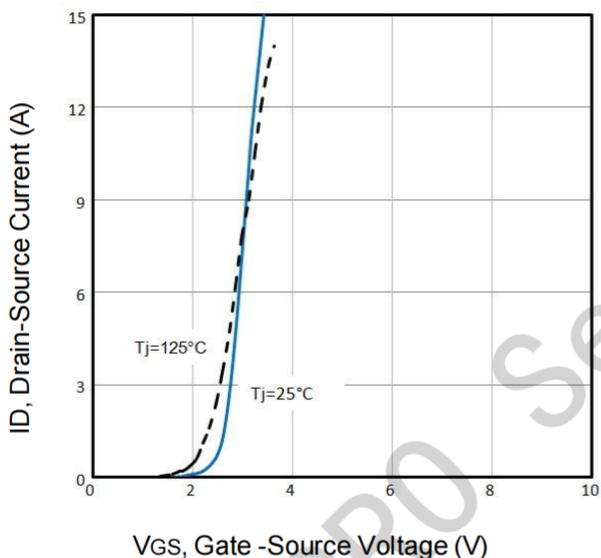
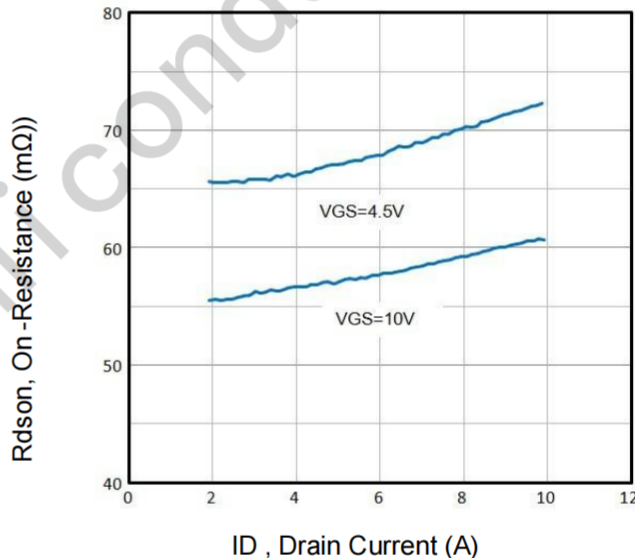
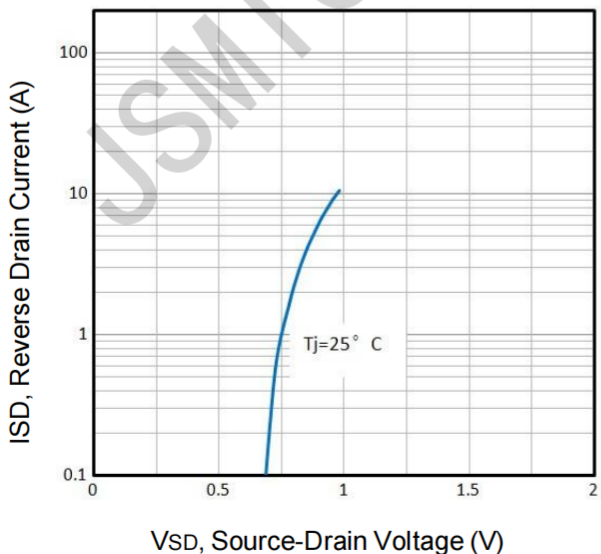
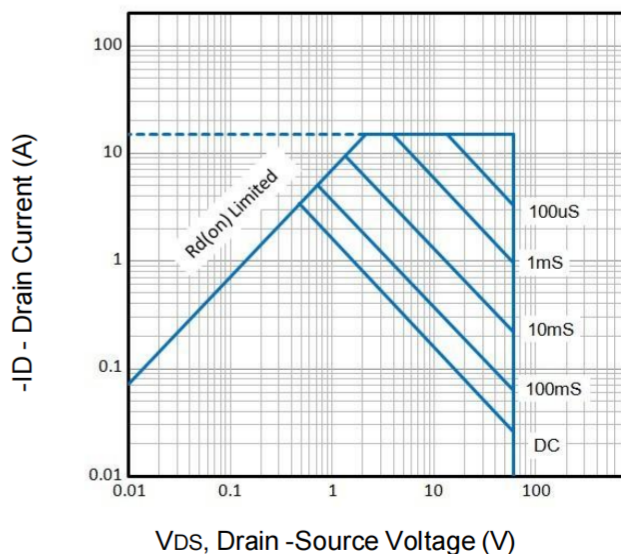
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter	Rating	Unit	
Common Ratings (TA=25°C Unless Otherwise Noted)				
VGS	Gate-Source Voltage	±16	V	
V(BR)DSS	Drain-Source Breakdown Voltage	60	V	
TJ	Maximum Junction Temperature	150	°C	
TSTG	Storage Temperature Range	-50 to 150	°C	
Mounted on Large Heat Sink				
IDM	Pulse Drain Current Tested①	TA=25°C	15.2	A
ID	Continuous Drain Current	TA=25°C	3.5	A
		TA=70°C	3	
PD	Maximum Power Dissipation	TA=25°C	1.56	W
		TA=70°C	0.9	
θJA	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°C)	V _{DS} =60V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T _A =125°C)	V _{DS} =48V, V _{GS} =0V	--	--	100	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±16V, V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	2.0	3.0	V
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =10V, I _D =3A	--	57	70	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =4.5V, I _D =2A	--	66	90	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°C	--	--	2	A
V _{SD}	Forward on voltage②	T _J =25°C, I _{SD} =2A, V _{GS} =0V	--	0.79	1.2	V

Notes:

- ① Pulse width limited by maximum allowable junction temperature
- ② Pulse test ; Pulse width 300μs, duty cycle 2%.


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

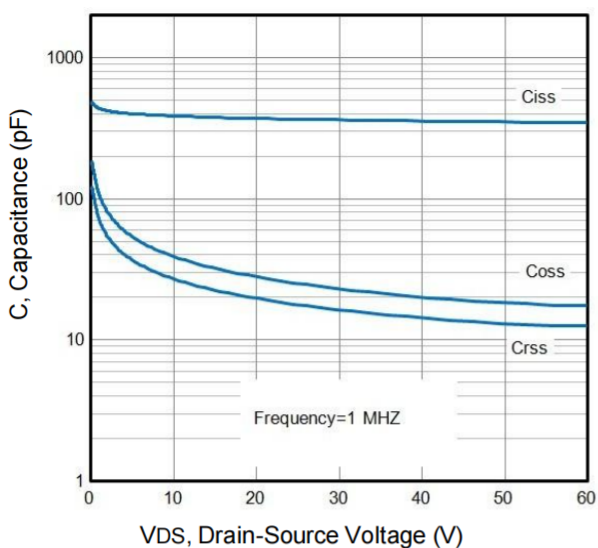


Fig7. Typical Capacitance Vs. Drain-Source Voltage

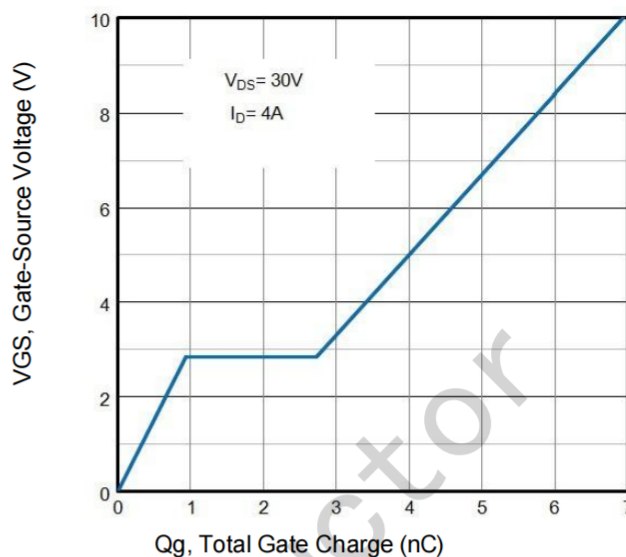


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

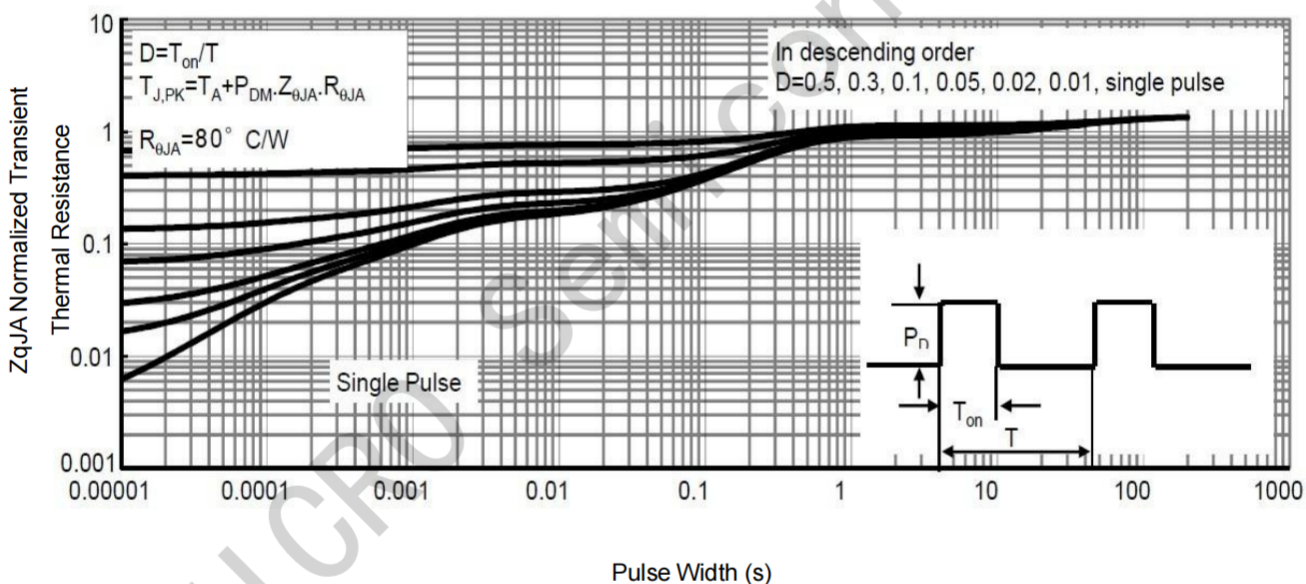


Fig9. Normalized Maximum Transient Thermal Impedance

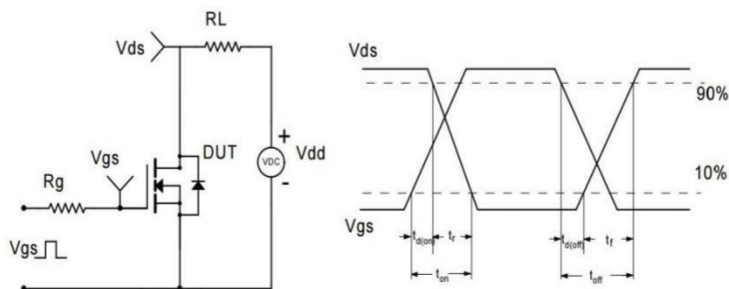
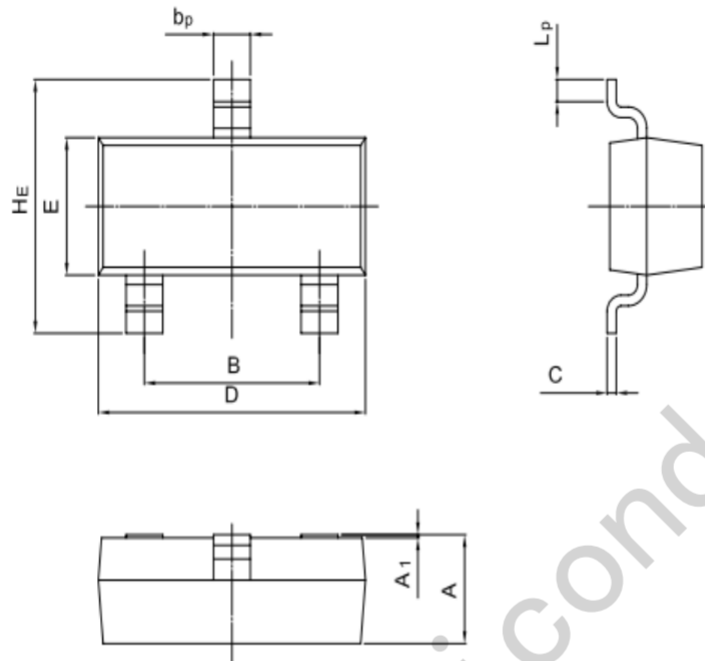


Fig10. Switching Time Test Circuit and waveforms

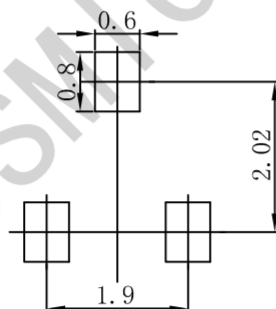
Package Information

SOT-23



UNIT	A	B	b_p	C	D	E	H_E	A_1	L_p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

SOT-23 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.