

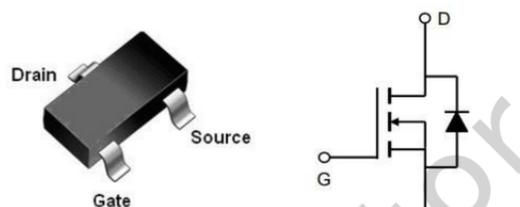
Features

- Low $R_{DS(on)}$ @ $V_{GS}=10V$
- 5V Logic Level Control
- N Channel SOT23-3L Package
- Pb-Free, RoHS Compliant

$V_{(BR)DSS}$	$R_{DS(ON)}$ Typ	I_D Max
60V	65m Ω @ 10V	3.5A
	74m Ω @ 4.5V	

Applications

- Load Switch
- Battery switch
- DC/DC Converter


SOT23-3L
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 ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{GS}	Gate-Source Voltage	± 16	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	60	V
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
Mounted on Large Heat Sink			
I_{DM}	Pulse Drain Current Tested \odot	$T_A=25^\circ\text{C}$	15.2 A
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$	3.5 A
		$T_A=70^\circ\text{C}$	3 A
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	1.56 W
		$T_A=70^\circ\text{C}$	0.9 W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	80	$^\circ\text{C/W}$

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	μA
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	--	65	78	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =4.5V, I _D =2A	--	74	98	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%.

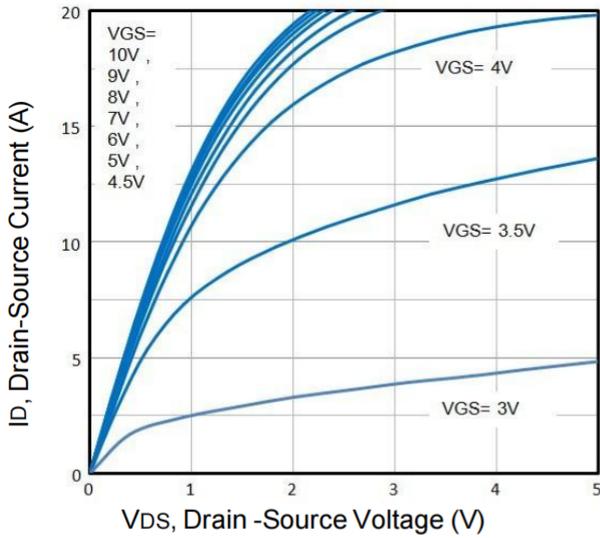


Fig1. Typical Output Characteristics

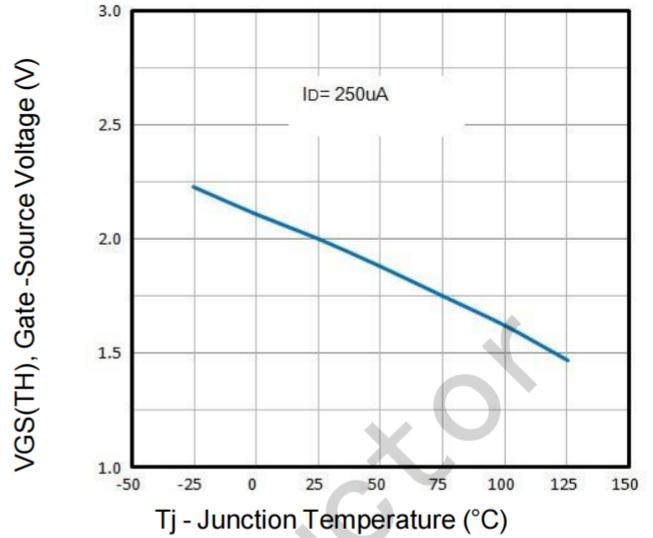


Fig2. $V_{GS(TH)}$ Voltage Vs. Temperature

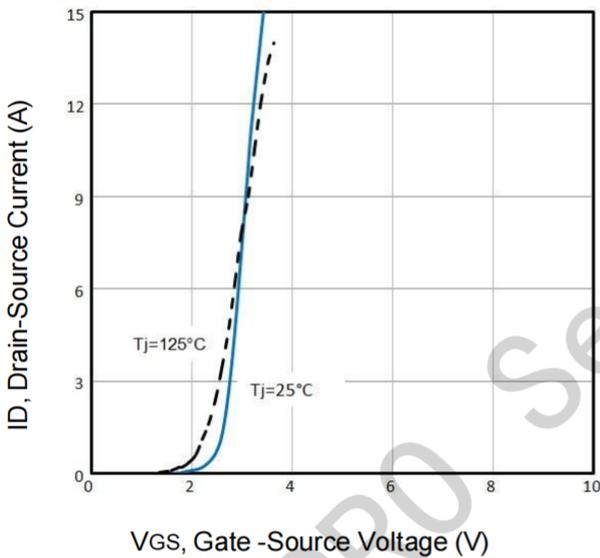


Fig3. Typical Transfer Characteristics

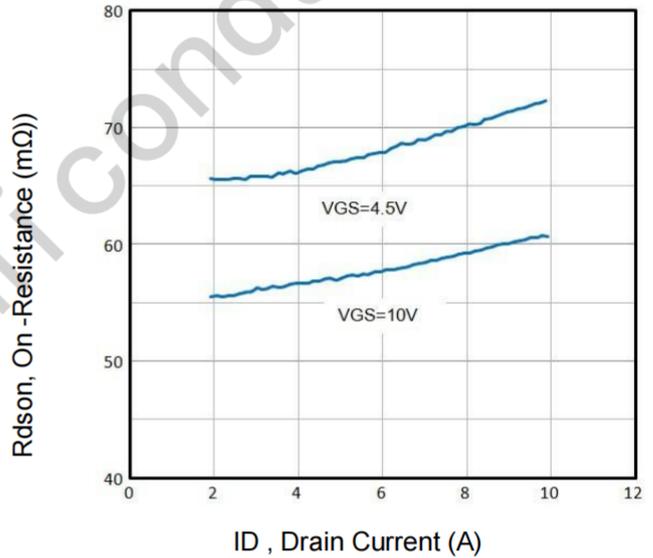


Fig4. On-Resistance vs. Drain Current and Gate

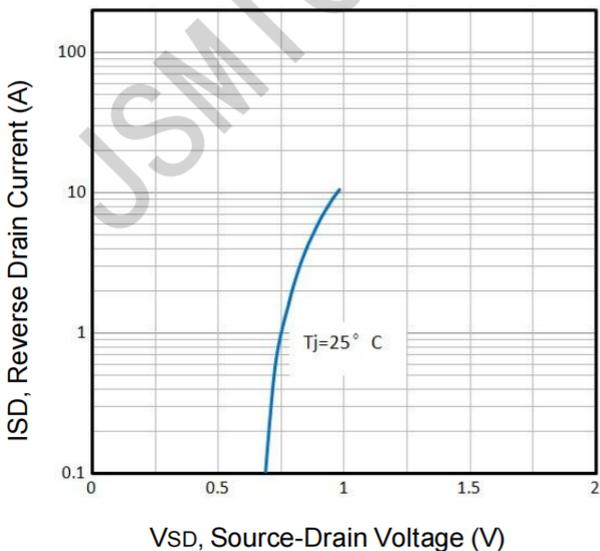


Fig5. Typical Source-Drain Diode Forward Voltage

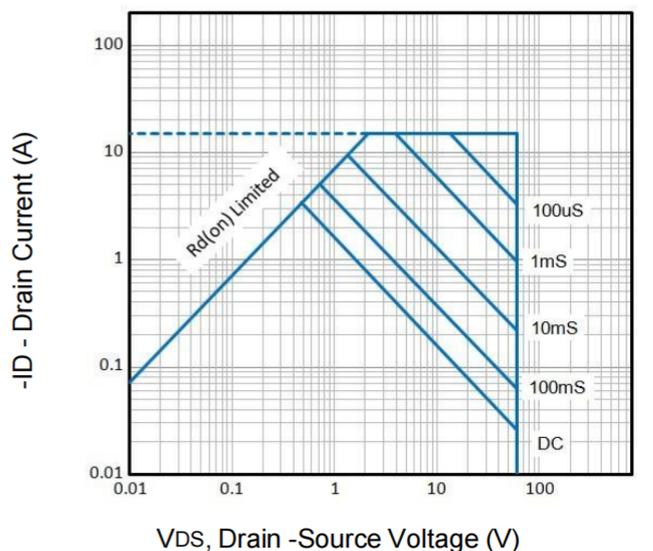
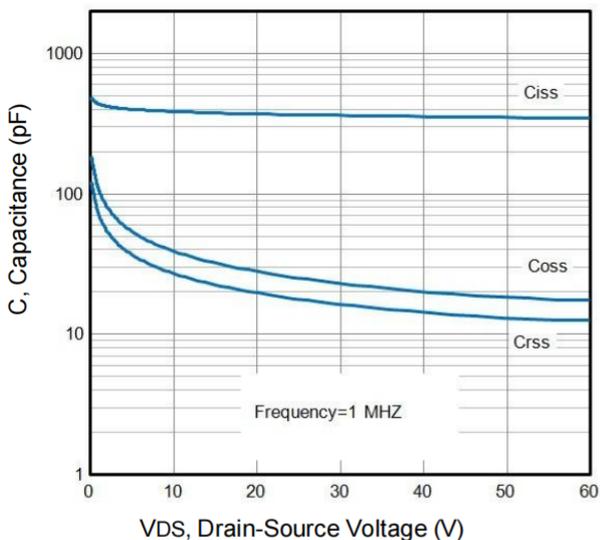
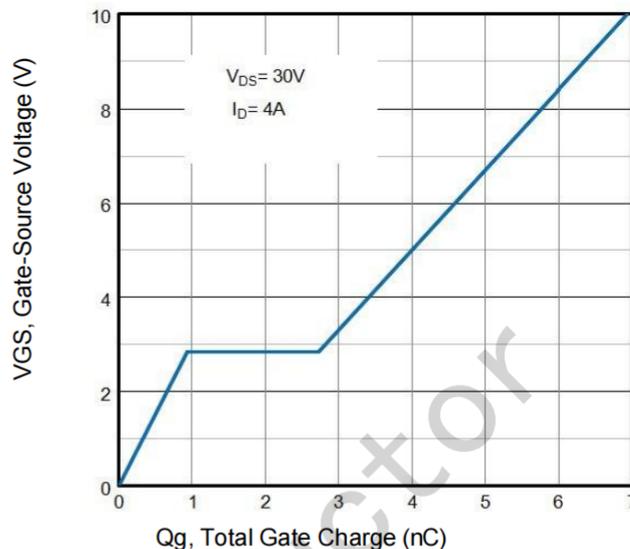
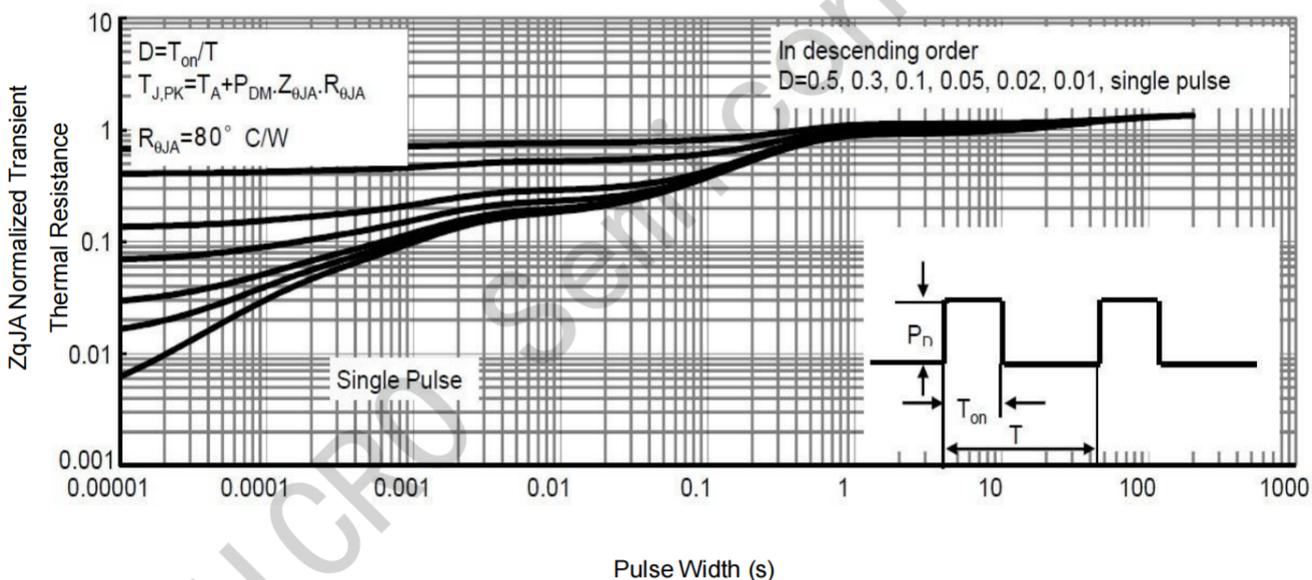
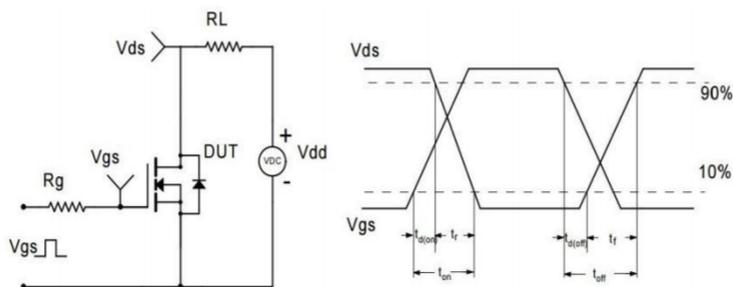
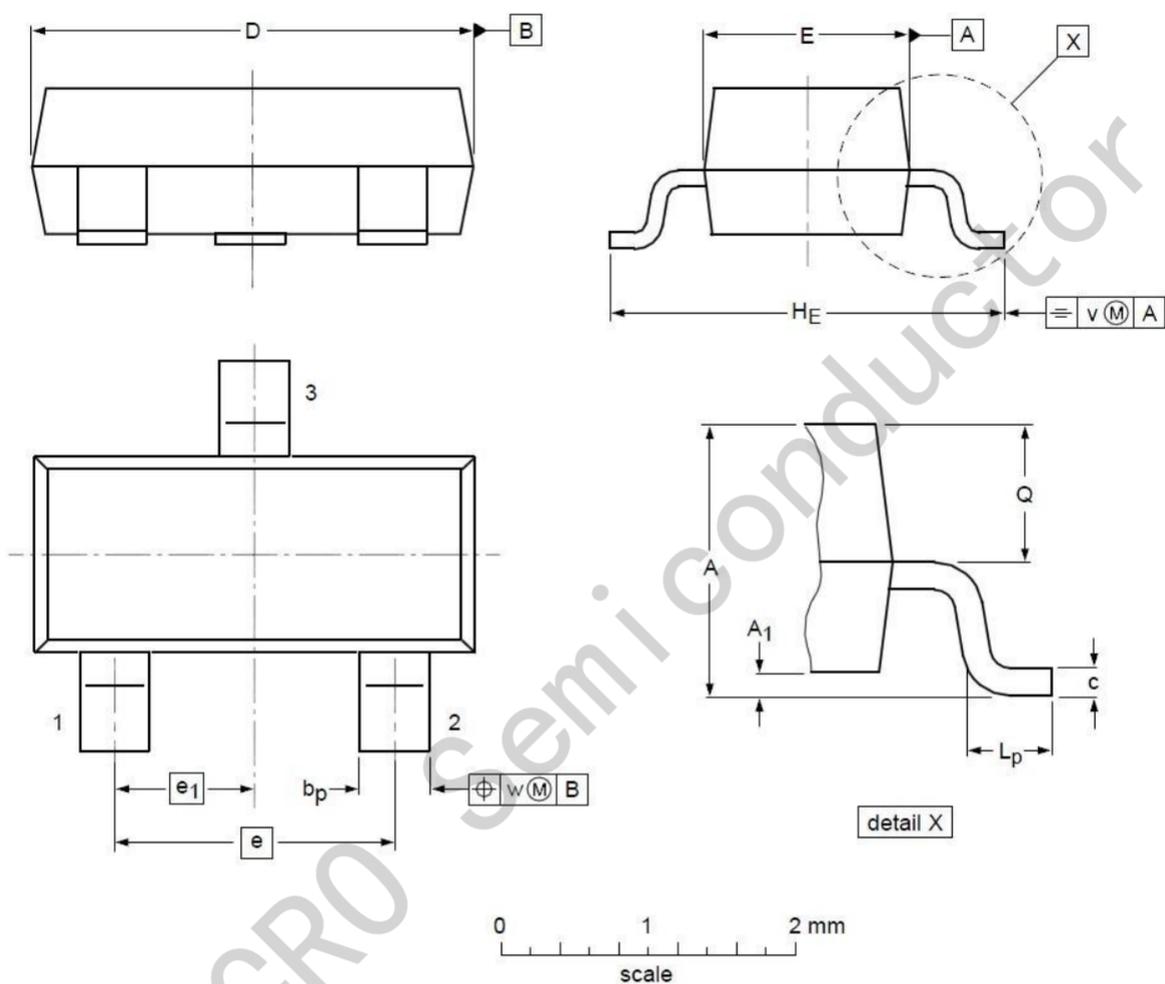


Fig6. Maximum Safe Operating Area


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-23-3L



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	--				