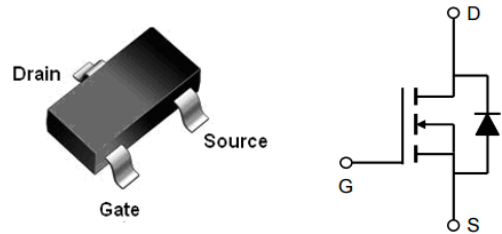


Features

- Low $R_{DS(on)}$ @ $V_{GS}=4.5V$
- 3.3V Logic Level Control
- N Channel SOT23-3L Package
- Pb-Free, RoHS Compliant

Applications

- Load Switch
- DC/DC Converter
- Switching Circuits
- LED Driver



SOT23-3L

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)			
V _{GS}	Gate-Source Voltage	±12	V
V _{(BR)DSS}	Drain-Source Breakdown Voltage	20	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	18 A
I _D	Continuous Drain Current(V _{GS} =4.5V)	T _A =25°C	3.6 A
		T _A =70°C	2.8
P _D	Maximum Power Dissipation	T _A =25°C	1 W
		T _A =70°C	0.8
R _{θJA}	Thermal Resistance Junction-Ambient	100	°C/W

Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(T _A =25°C)	V _{DS} =20V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T _A =125°C)	V _{DS} =16V, V _{GS} =0V	--	--	100	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.4	0.6	1.0	V
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =4.5V, I _D =3A	--	28	35	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =3.3V, I _D =2A	--	32	42	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =2.5V, I _D =1A	--	36	48	mΩ

Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)

C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	--	280	--	pF
C _{oss}	Output Capacitance		--	46	--	pF
C _{rss}	Reverse Transfer Capacitance		--	42	--	pF
Q _g	Total Gate Charge	V _{DS} =10V I _D =3A, V _{GS} =5V	--	4.7	--	nC
Q _{gs}	Gate Source Charge		--	0.6	--	nC
Q _{gd}	Gate Drain Charge		--	1.7	--	nC

Switching Characteristics

t _{d(on)}	Turn on Delay Time	V _{DD} =10V, I _D =4A, R _G =3.3Ω, V _{GS} =4.5V	--	11	--	ns
t _r	Turn on Rise Time		--	35	--	ns
t _{d(off)}	Turn Off Delay Time		-	25	--	ns
t _f	Turn Off Fall Time		--	32	--	ns

Source Drain Diode Characteristics

I _{SD}	Source drain current(Body Diode)	T _A =25°C	--	--	1.8	A
V _{SD}	Forward on voltage②	T _J =25°C, I _{SD} =2A, V _{GS} =0V	--	0.74	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

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

Typical Characteristics

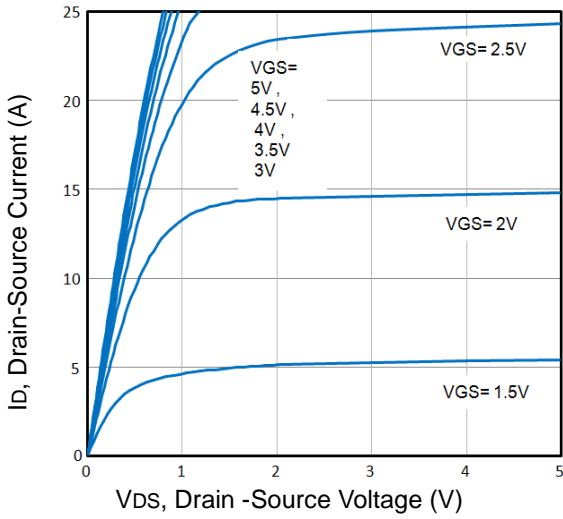


Fig1. Typical Output Characteristics

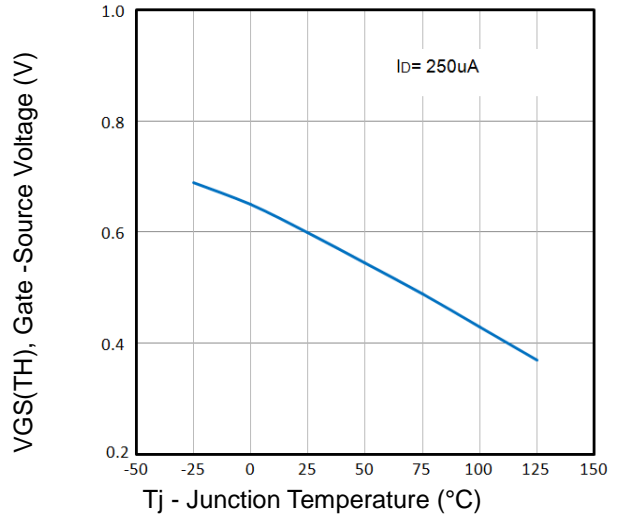


Fig2. Normalized Threshold Voltage Vs. Temperature

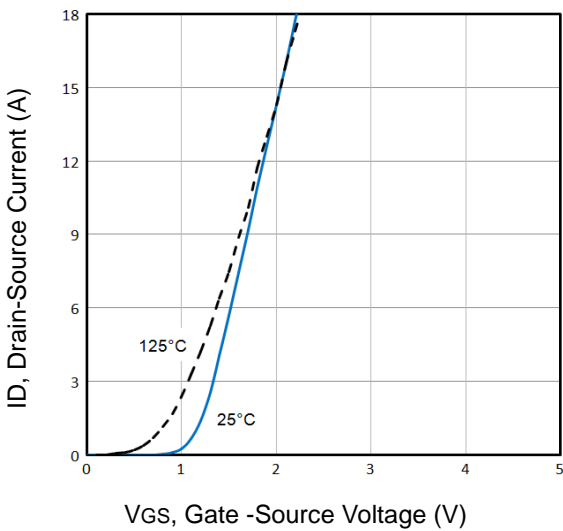


Fig3. Typical Transfer Characteristics

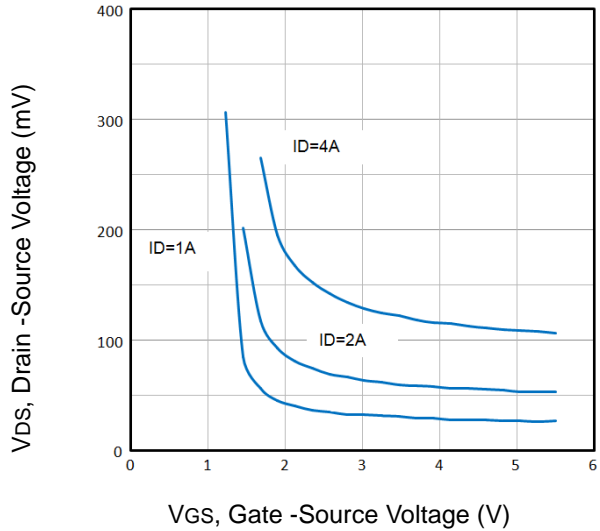


Fig4. Drain-Source Voltage vs Gate-Source Voltage

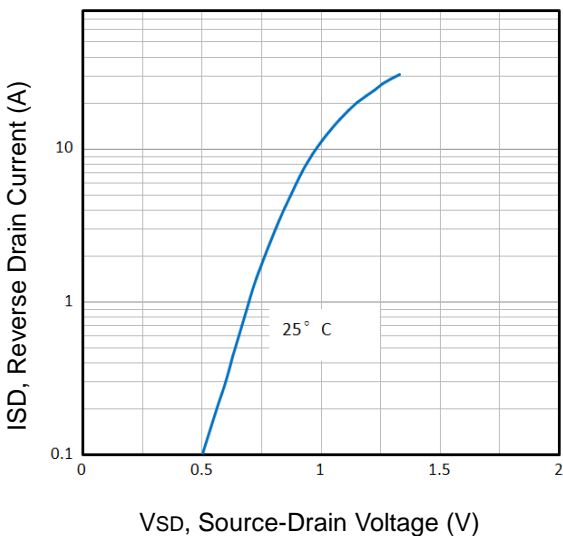


Fig5. Typical Source-Drain Diode Forward Voltage

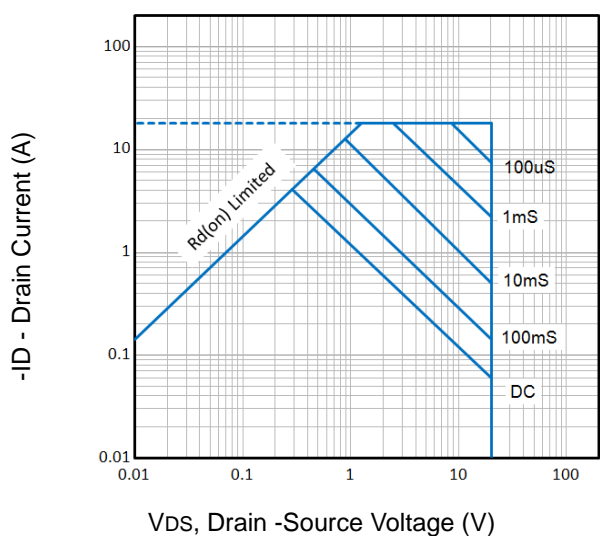


Fig6. Maximum Safe Operating Area

Typical Characteristics

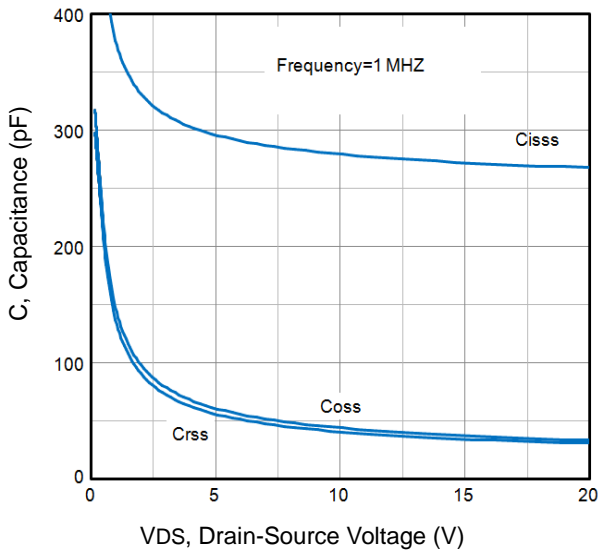


Fig7. Typical Capacitance Vs. Drain-Source Voltage

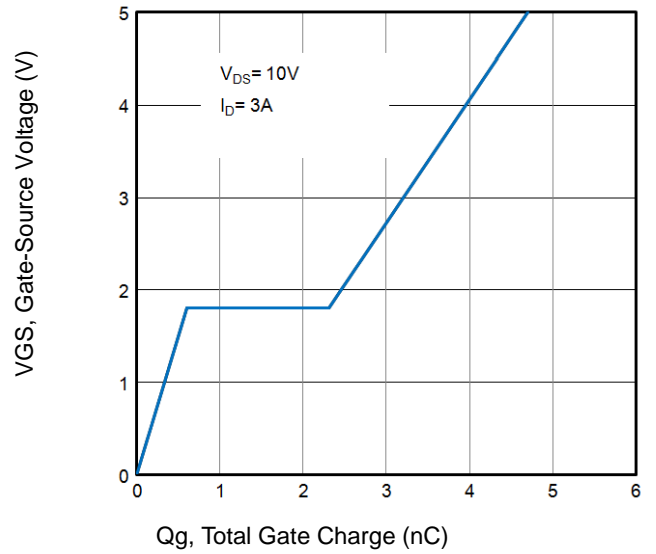


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

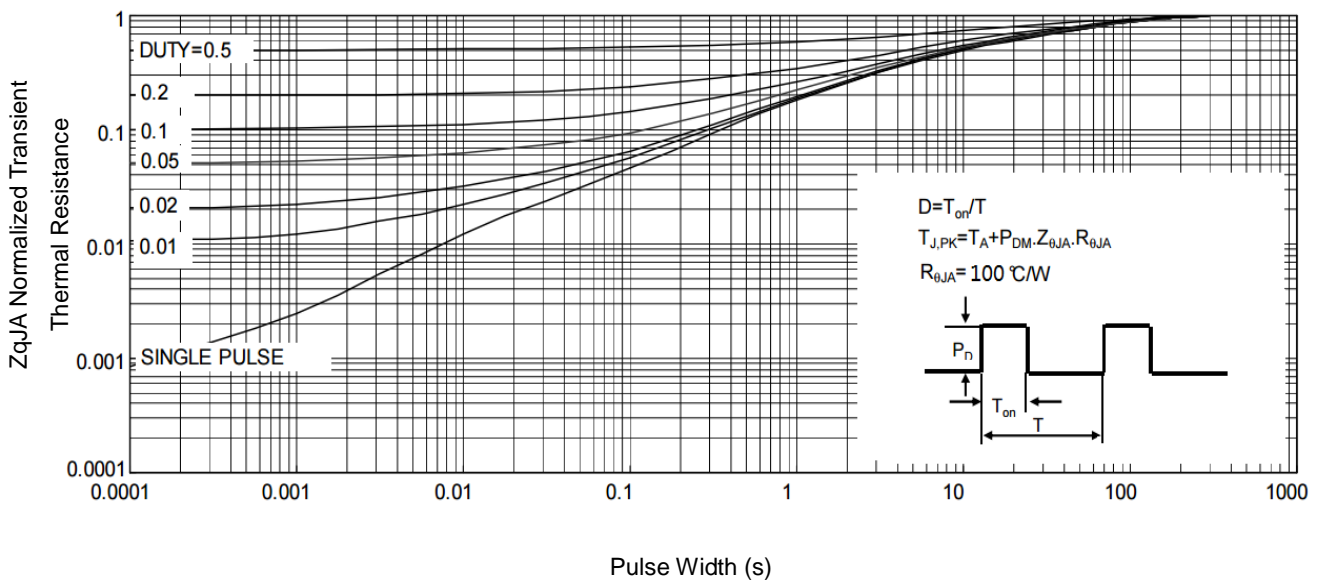


Fig9. Normalized Maximum Transient Thermal Impedance

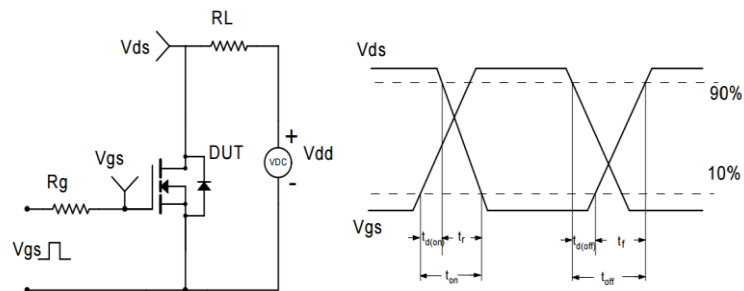


Fig10. Switching Time Test Circuit and waveforms