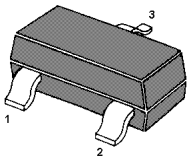
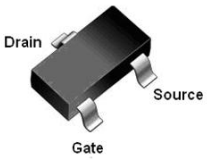
N Channel Advanced Power MOSFET

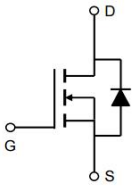
ea ures

- *Low $R_{DS(on)}$ @V_{GS}=10V*
- *3.3V Logic Level Control*
- *N Channel SOT23 Package*
- *Pb−Free, RoHS Compliant*

SOT-23







MARKING: 4L*

Applications

- Charging switch for portable devices
- Small brushless DC motor drive
- Load Switch for PWM
- DC-to-DC converters

may affect device reliability.

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		30	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	23	A
I_D	Continuous Drain Current	T_A=25°C	5.8	A
		T_A=70°C	4.6	
P_D	Maximum Power Dissipation	T_A=25°C	1.5	W
		T_A=70°C	0.9	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		100	°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	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=30V, V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=24V, 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	0.5	1.0	1.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=10V, I_D=5A	--	25	28	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=4.5V, I_D=4A	--	26	30	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=2.5V, I_D=2A	--	32	40	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	--	650	--	pF
C_{oss}	Output Capacitance		--	54	--	pF
C_{rss}	Reverse Transfer Capacitance		--	47	--	pF
Q_g	Total Gate Charge	V_{DS}=15V I_D=5A, V_{GS}=4.5V	--	6.2	--	nC
Q_{gs}	Gate Source Charge		--	1.2	--	nC
Q_{gd}	Gate Drain Charge		--	1.9	--	nC
Switching Characteristics @ T_J = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	V_{DD}=15V, I_D=5A, R_G=3.3Ω, V_{GS}=4.5V	--	7.5	--	ns
t_r	Turn on Rise Time		--	18	--	ns
$t_{d(off)}$	Turn Off Delay Time		-	36	--	ns
t_f	Turn Off Fall Time		--	5	--	ns
Source Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
I_{SD}	Source drain current(Body Diode)	T_A=25℃	--	--	1.5	A
V_{SD}	Forward on voltage②	T_j=25℃, I_{SD}=5A, V_{GS}=0V	--	0.83	1.2	V

Typical Characteristics

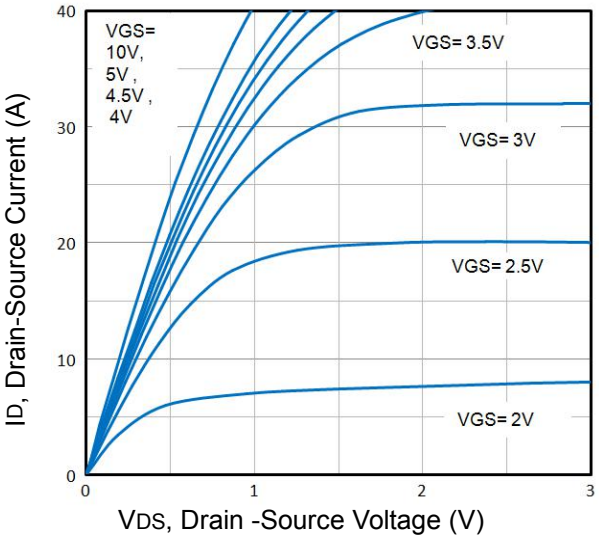


Fig1. Typical Output Characteristics

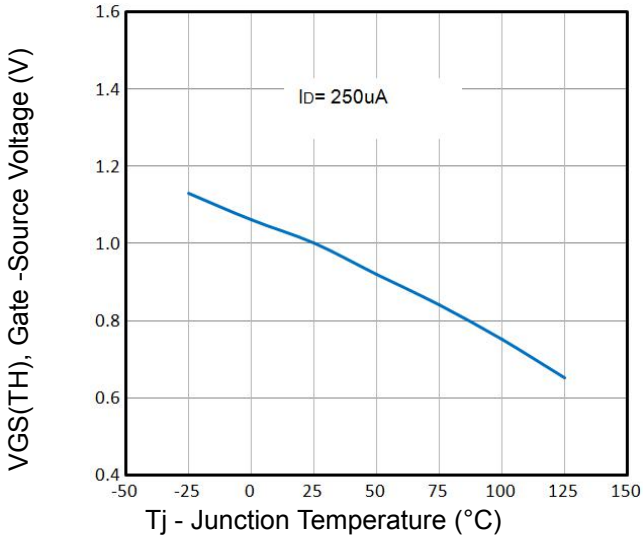


Fig2. Normalized Threshold Voltage Vs. Temperature

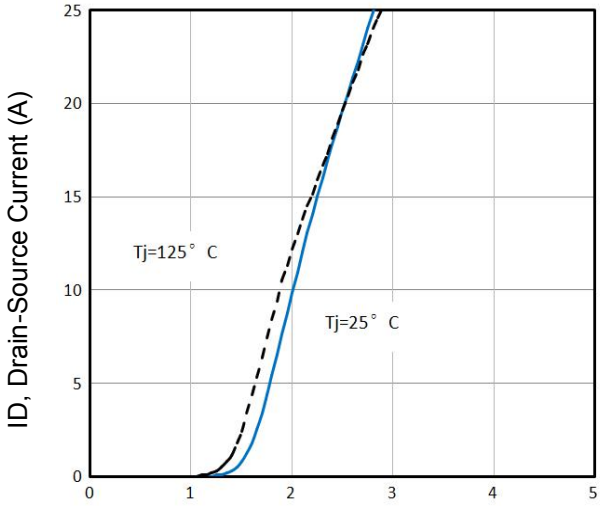


Fig3. Typical Transfer Characteristics

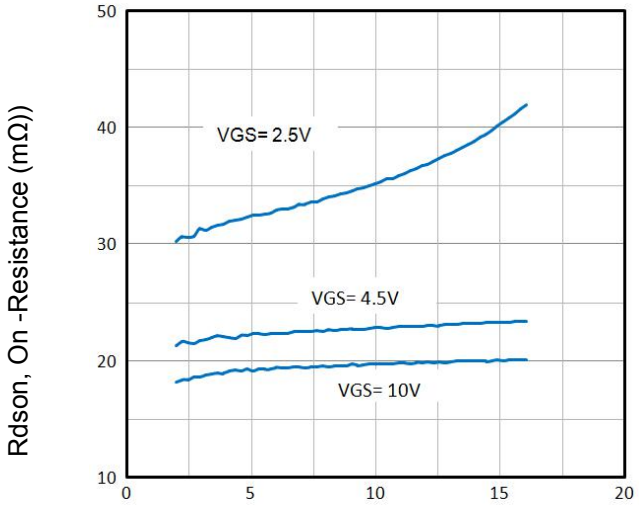


Fig4. On-Resistance vs. Drain Current and VGS

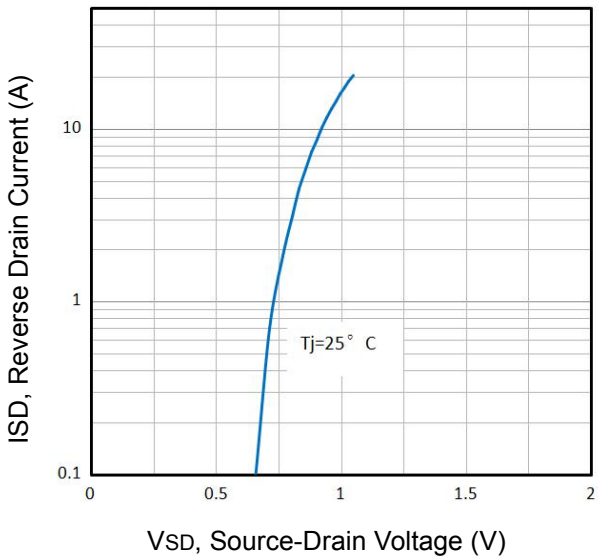


Fig5. Typical Source-Drain Diode Forward Voltage

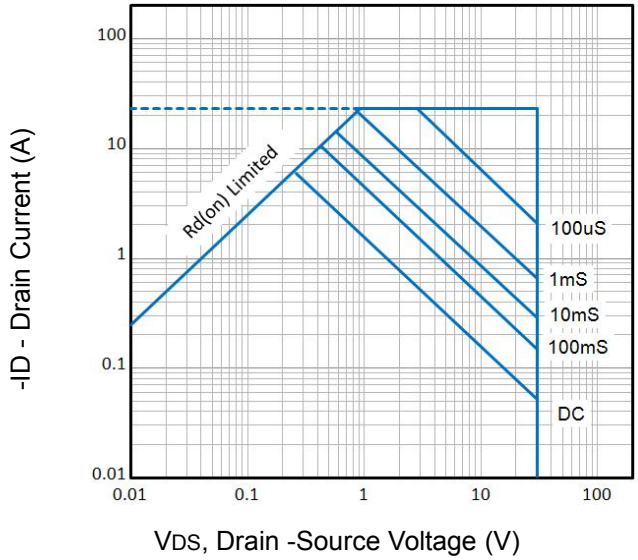
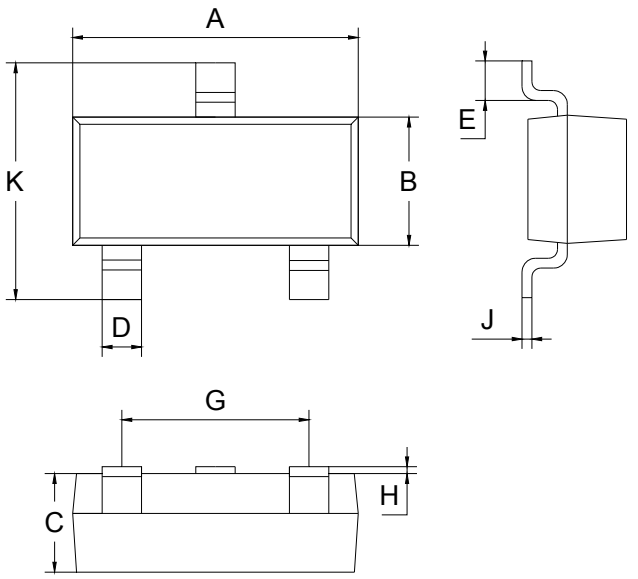


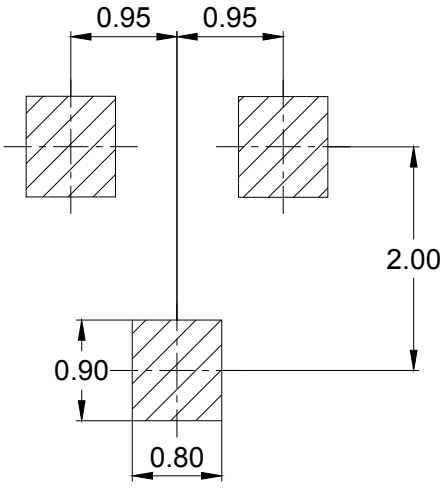
Fig6. Maximum Safe Operating Area

Plastic surface mounted package SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	1.0 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.1 Typical	
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm