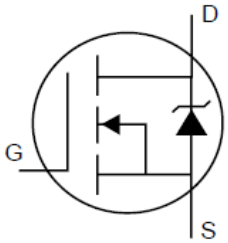
2300

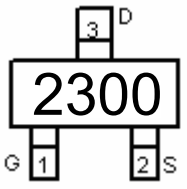
RoHS COMPLIANT

Description

The 2300 designed by the trench processing techniques to achieve extremely low on-resistance. And fast switching speed and improved transfer effective . These features combine to make this design an extremely efficient and reliable device for variety of DC-DC applications.



Schematic diagram



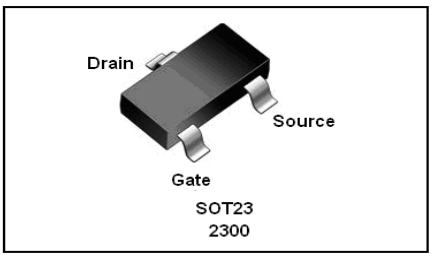
Marking and pin Assignment

Features

- Ron(typ.)=25mΩ @VGS=10V
- Ron(typ.)=32mΩ @VGS=4.5V
- Low On-Resistance
- 150°C Operating Temperature
- Fast Switching
- Lead-Free, RoHS Compliant

Application

- Battery protection
- Load switch
- Power management



Symbol	Parameter		Rating	Unit
Common Ratings (T_C=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 155	°C
I_S	Diode Continuous Forward Current	T_C=25°C	5.2①	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	T_C=25°C	20	A
I_D	Continuous Drain Current(VGS=10V)	T_C=25°C	5.2①	A
		T_C=100°C	4.0	
P_D	Maximum Power Dissipation	T_C=25°C	1.25	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		135	°C/W

1

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	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current (Tc=25℃)	V_{DS}=20V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current (Tc=125℃)	V_{DS}=20V,V_{GS}=0V	--	--	100	μA
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	0.7	1.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=5.2A	--	25	32	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=4.8A	--	32	40	mΩ
Dynamic Electrical Characteristics @ T_J= 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V, f=1MHz	--	630	--	pF
C_{oss}	Output Capacitance		--	150	--	pF
C_{rss}	Reverse Transfer Capacitance		--	60	--	pF
Q_g	Total Gate Charge	V_{DS}=10V,I_D=2.8A, V_{GS}=4.5V	--	11	--	nC
Q_{gs}	Gate-Source Charge		--	1.6	--	nC
Q_{gd}	Gate-Drain Charge		--	2.7	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=10V, I_D=1A, R_G=6Ω, V_{GS}=4.5V, RL=5Ω,	--	14.5	--	nS
t_r	Turn-on Rise Time		--	46	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	52	--	nS
t_f	Turn-Off Fall Time		--	39	--	nS
Source- Drain Diode Characteristics						
I_{SD}	Source-drain current(Body Diode)	T_C=25℃	--	--	5.2①	A
I_{SDM}	Pulsed Source-drain current (Body Diode)		--	--	20①	A
V_{SD}	Forward on voltage	T_j=25℃,I_{SD}=2.8A, V_{GS}=0V	--	0.85	1.3	V

Typical Characteristics

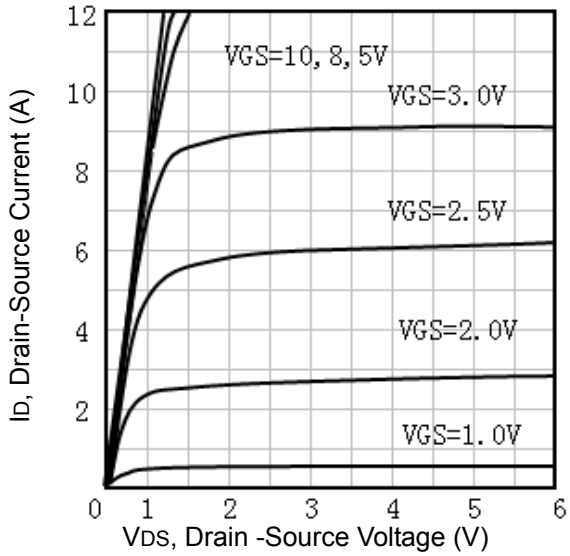


Fig1. Typical Output Characteristics

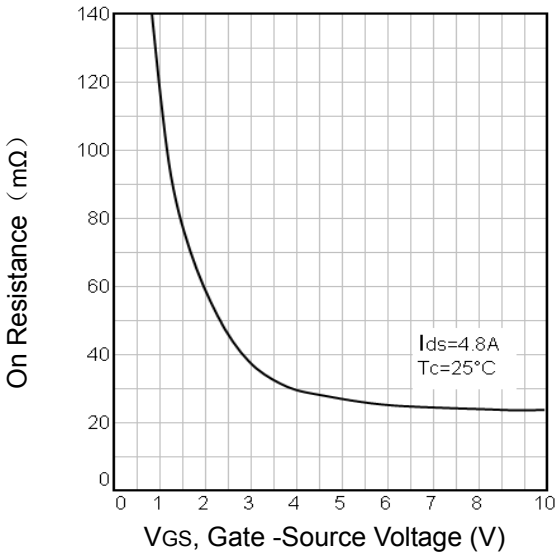


Fig2. Typical Transfer Characteristics

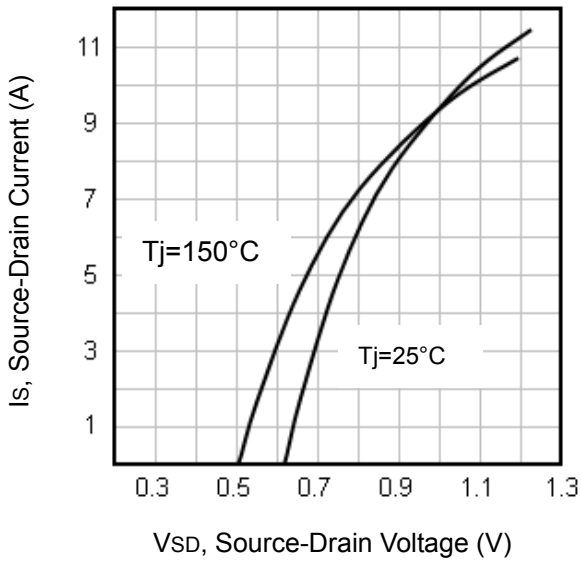


Fig7. Typical Source-Drain Diode Forward Voltage

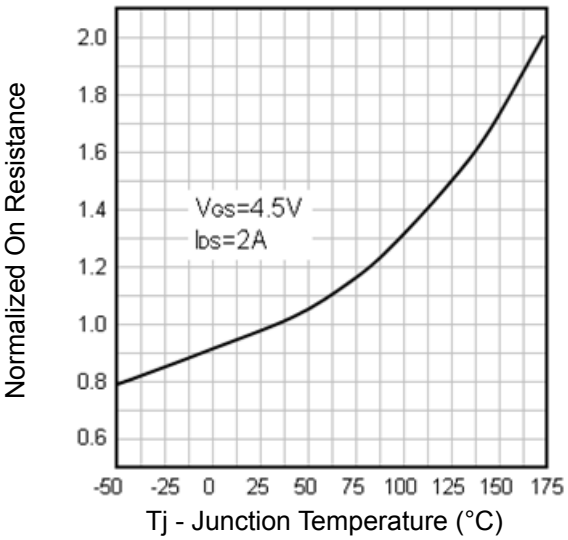


Fig4. Normalized On-Resistance Vs. Temperature

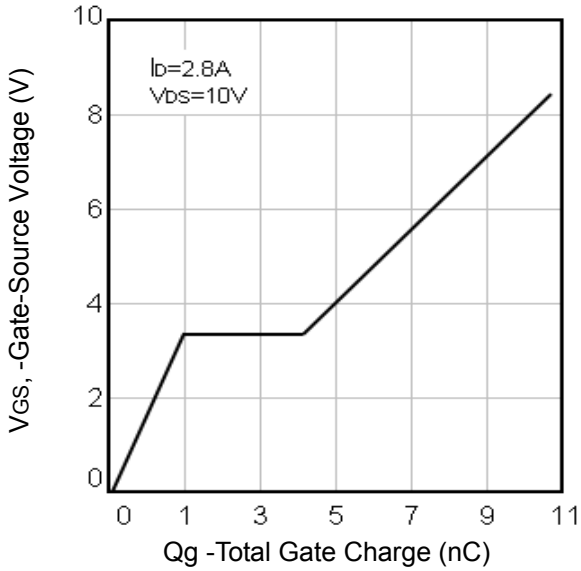


Fig5. Typical Gate Charge Vs.Gate-Source Voltage

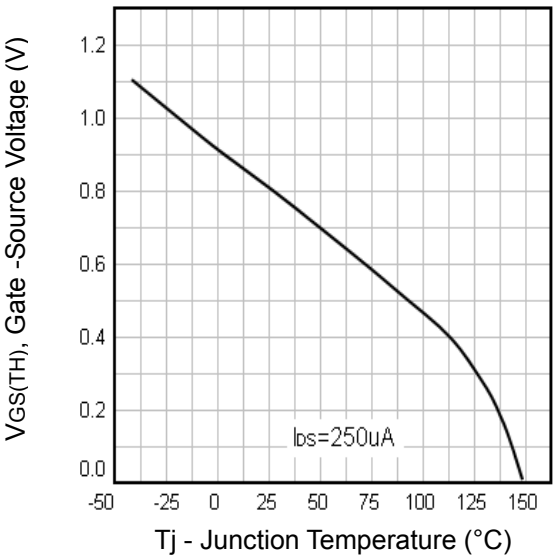


Fig6. Threshold Voltage Vs. Temperature

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