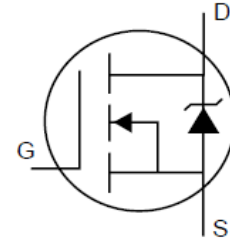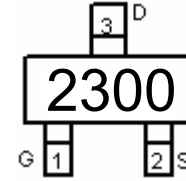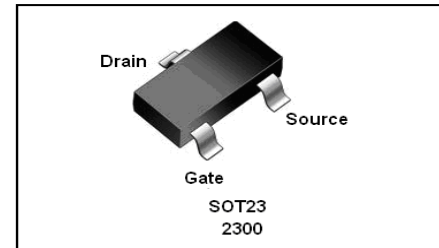# LGE

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.

Features

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

Application

● Battery protection
● Load switch
● Power management

Schematic diagram

2300

Marking and pin Assignment

Drain
Source
Gate
SOT23
2300

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	5.2[①]	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	5.2[①]	A
		T$_C$=100°C	4.0	
P$_D$	Maximum Power Dissipation	T$_C$=25°C	1.25	W
R$_{θJA}$	Thermal Resistance Junction-Ambient		135	°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	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, R$_L$=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)	Tc=25℃	--	--	5.2[①]	A
I_{SDM}	Pulsed Source-drain current (Body Diode)		--	--	20[①]	A
V_{SD}	Forward on voltage	Tj=25℃,I$_{SD}$=2.8A, V$_{GS}$=0V	--	0.85	1.3	V

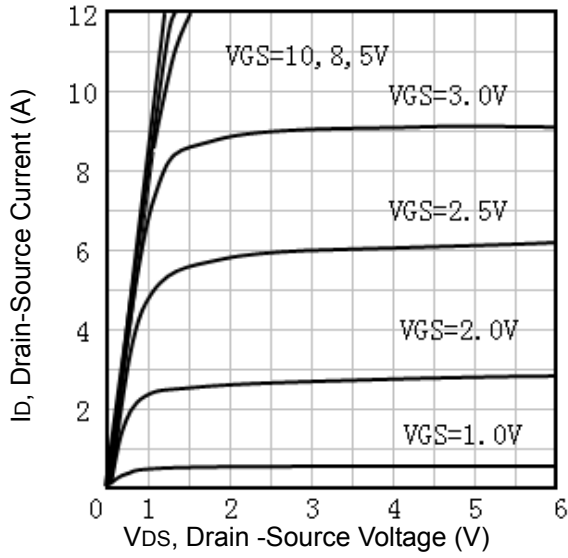**http://www.lgesemi.com**

Typical Characteristics

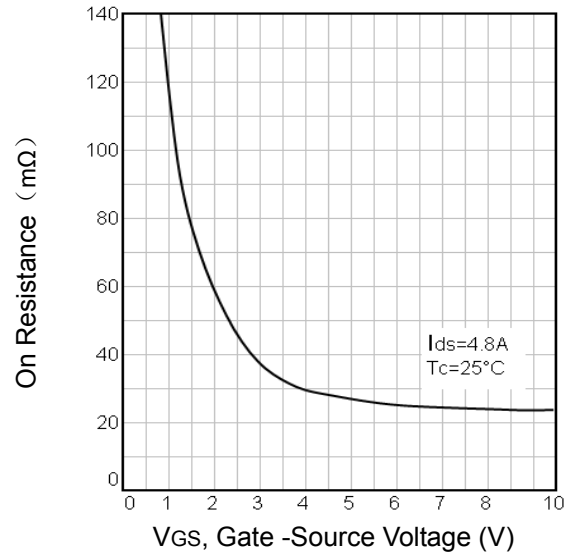Fig1. Typical Output Characteristics
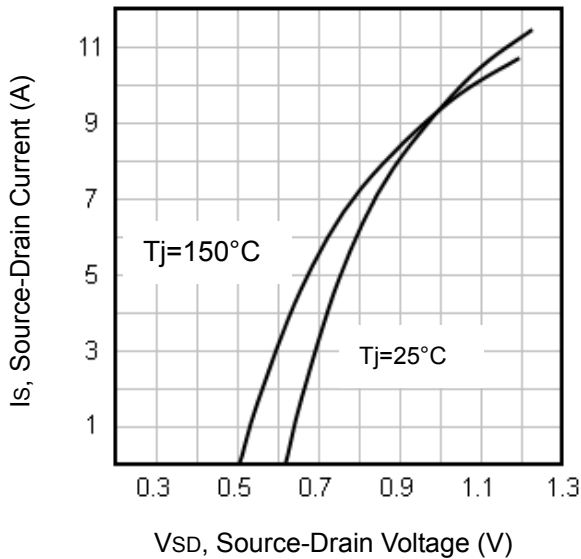

Fig2. Typical Transfer Characteristics

Fig7. Typical Source-Drain Diode Forward Voltage

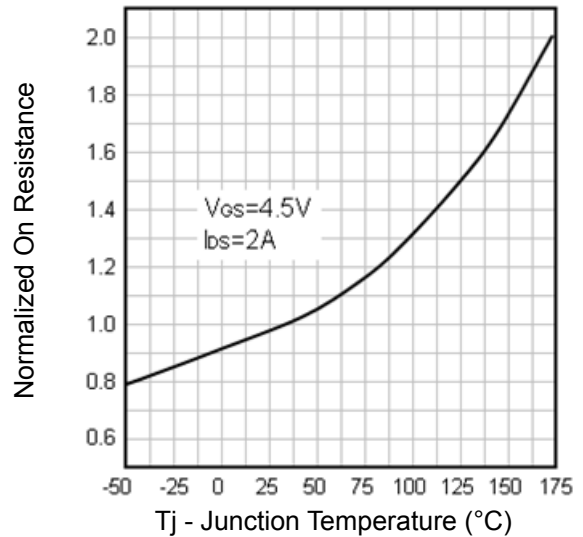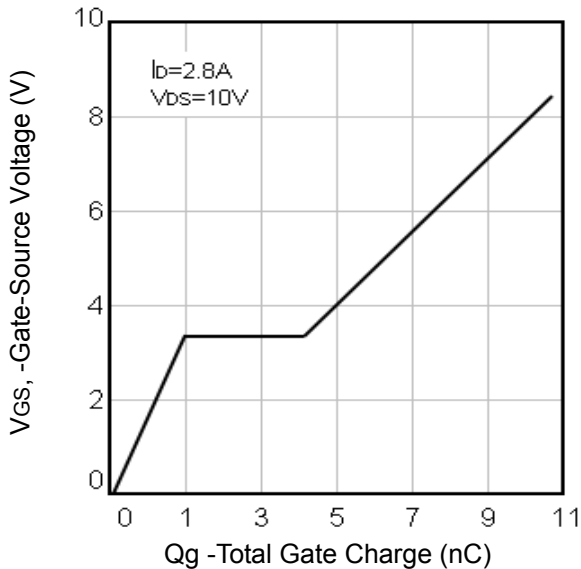
Fig4. Normalized On-Resistance Vs. Temperature

Fig5. Typical Gate Charge Vs.Gate-Source Voltage

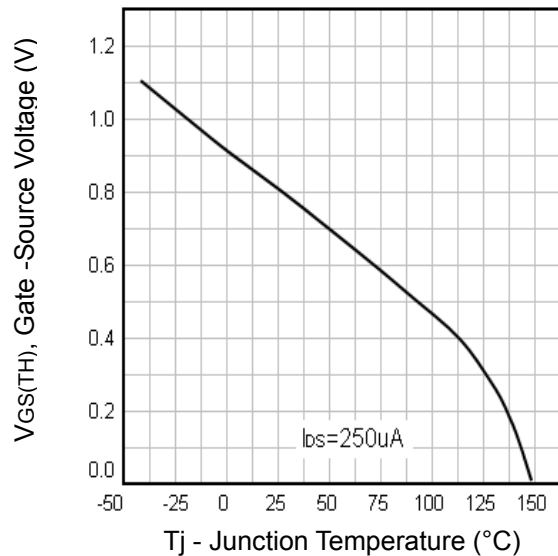Fig6. Threshold Voltage Vs. Temperature

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