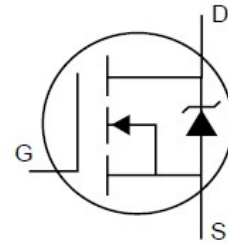


AP2300

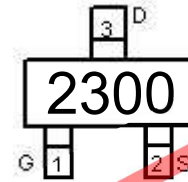
N-Channel Power MOSFET

Description

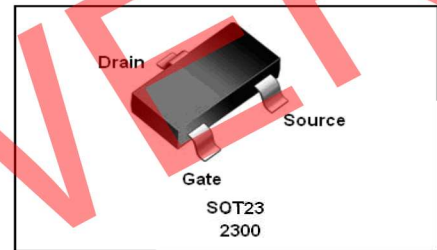
The 2300 designed by the trench processing techniques to achieve extremely low on-resistance. And fast switching speed and improved transfer effective . These features combine to make this design an extremely efficient and reliable device for variety of DC-DC applications.



Schematic diagram



Marking and pin Assignment



Features

- ◆ Ron(typ.)=25 mΩ @VGS=2.5V
- ◆ Ron(typ.)=21 mΩ @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 5.2 ^①	A
Mounted on Large Heat Sink			
I _{DM}	Pulse Drain Current Tested	T _c =25°C 1	A
I _D	Continuous Drain Current(VGS=10V)	T _c =25°C	5.2 ^①
		T _c =100°C	4.0
P _D	Maximum Power Dissipation	T _c =25°C	1.25
R _{θJA}	Thermal Resistance Junction-Ambient		135
			°C/W

AP2300
N-Channel Power MOSFET

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 (T _c =25°C)	V _{DS} =20V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current (T _c =125°C)	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} =2.5V, I _D =5.2A	--	25	35	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =6A	--	21	25	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)	T _c =25°C	--	--	5.2 ^①	A
I _{SDM}	Pulsed Source-drain current (Body Diode)		--	--	20 ^①	A
V _{SD}	Forward on voltage	T _J =25°C, I _{SD} =2.8A, V _{GS} =0V	--	0.85	1.3	V

AP2300

N-Channel Power MOSFET

Typical Characteristics

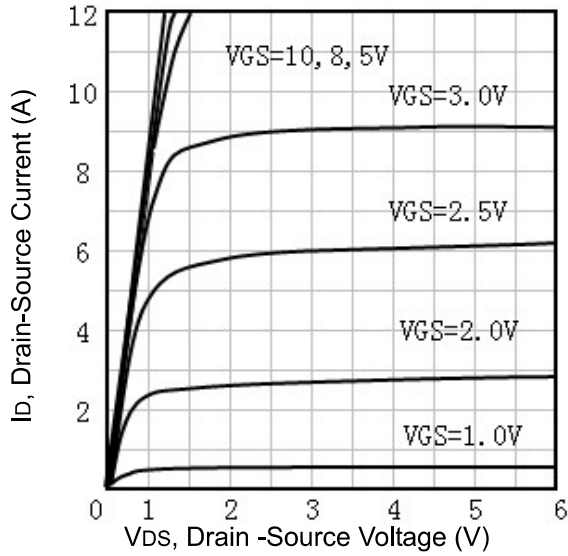


Fig1. Typical Output Characteristics

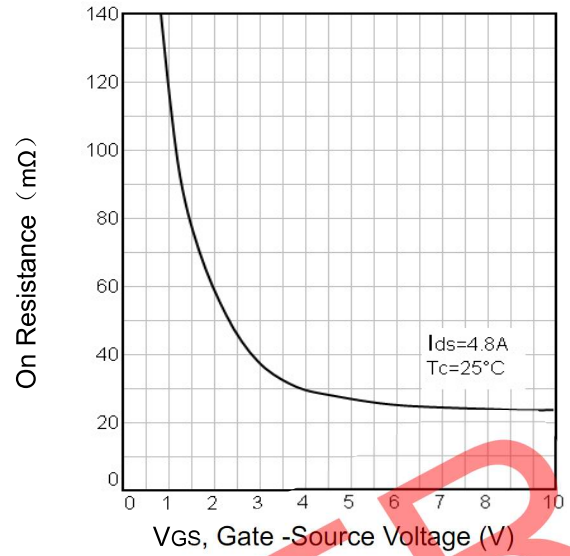


Fig2. Typical Transfer Characteristics

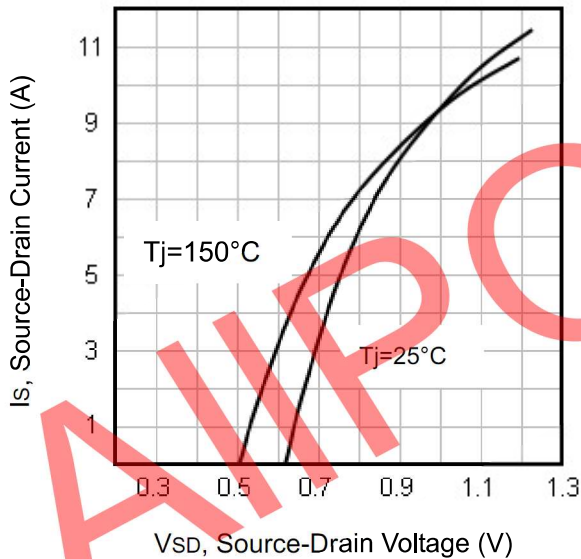


Fig7. Typical Source-Drain Diode Forward Voltage

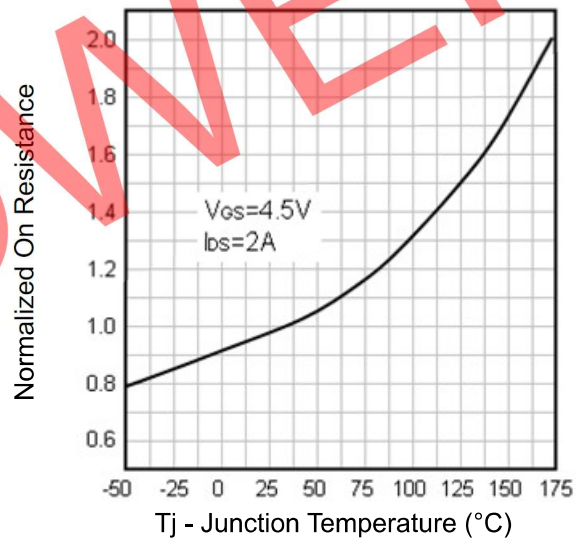


Fig4. Normalized On-Resistance Vs. Temperature

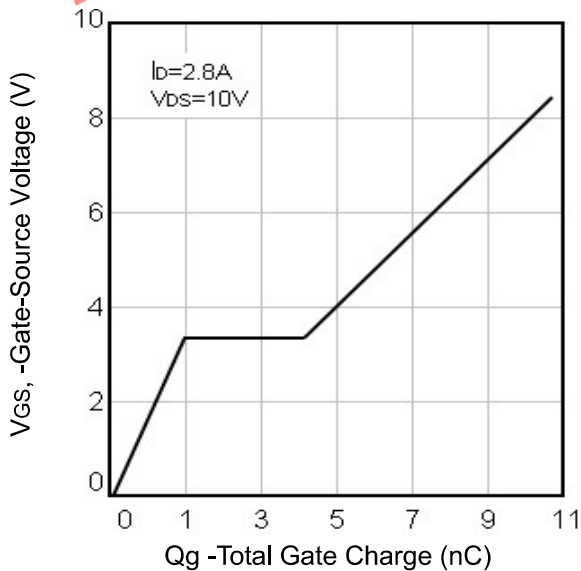


Fig5. Typical Gate Charge Vs. Gate-Source Voltage

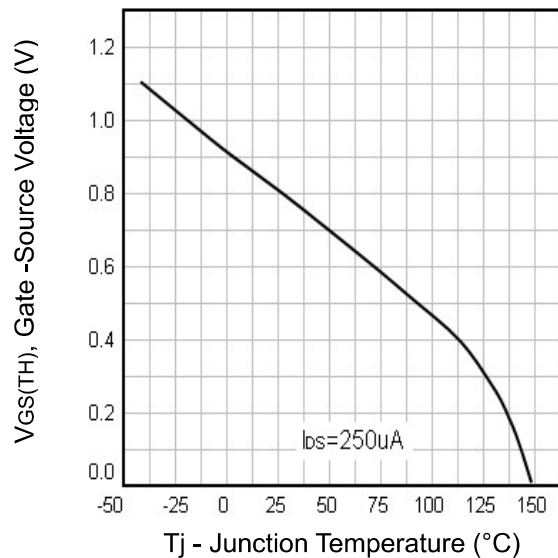


Fig6. Threshold Voltage Vs. Temperature