

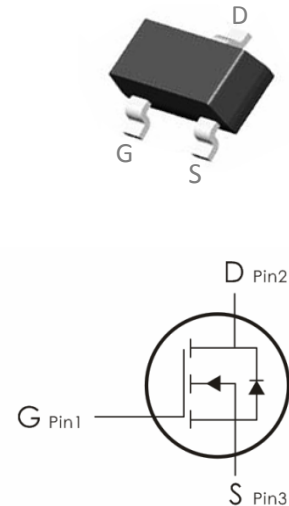
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=20V, I_D=5.2A, R_{DS(ON)} < 25m\Omega @ V_{GS}=4.5V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current- $T_j=150^\circ C$	5.2	A
	Continuous Drain Current- $T_C=100^\circ C$	20	
P_D	Power Dissipation	1.25	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-50 to +155	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	135	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DO2300B	2300	SOT-23

Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	20	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =20V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 12V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	0.5	0.7	1.5	V
R _{DS(ON)}	Drain-Source On Resistance ¹	V _{GS} =4.5V, I _D =6A	---	21	25	m Ω
		V _{GS} =2.5V, I _D =5.2A	---	25	35	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	---	630	---	pF
C _{oss}	Output Capacitance		---	150	---	
C _{rss}	Reverse Transfer Capacitance		---	60	---	
Q _g	Gate Charge	V _{DS} =10V, I _D =2.8A, V _{GS} =4.5V	---	11	---	nC
Q _{gs}	Gate-Source Charge		---	1.6	---	
Q _{gd}	Gate-Drain Charge		---	2.7	---	
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	Rise Time		---	46	---	ns
t _{d(off)}	Turn-Off Delay Time		---	52	---	ns
t _f	Fall Time		---	39	---	ns
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =2.8A	---	0.85	1.3	V
LSD	Source-drain current(Body Diode)	T _c =25℃	---	---	5.2	A
I _{sm}	Pulsed Source-drain current Bod. Diode		---	---	20	A

Typical Characteristics

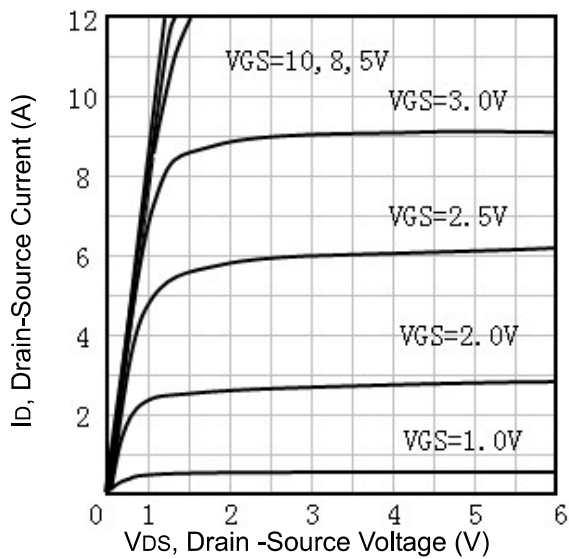


Fig1. Typical Output Characteristics

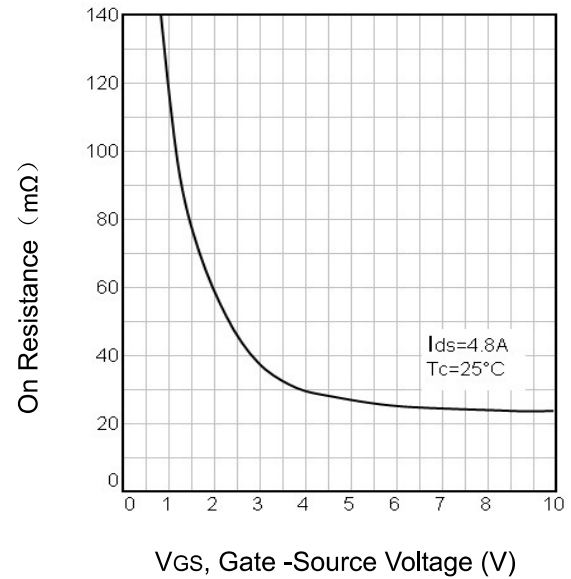


Fig2. Typical Transfer Characteristics

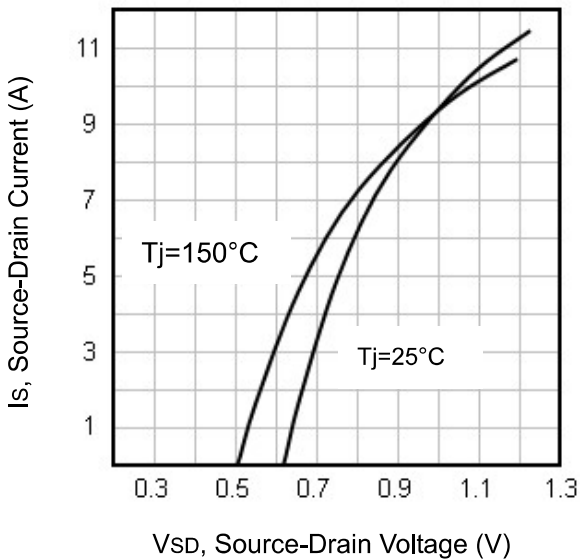


Fig7. Typical Source-Drain Diode Forward Voltage

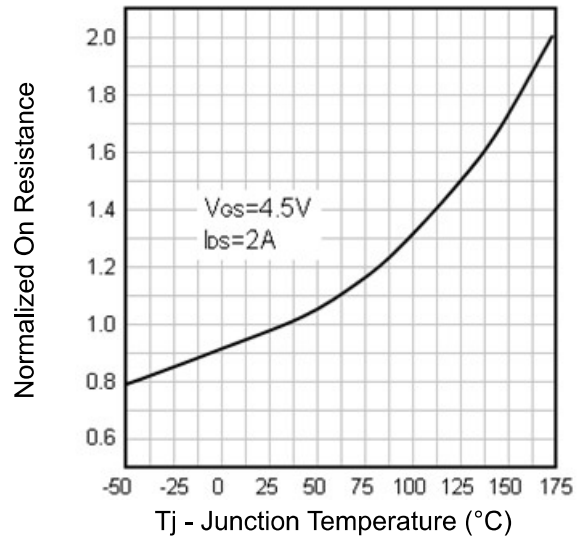


Fig4. Normalized On-Resistance Vs. Temperature

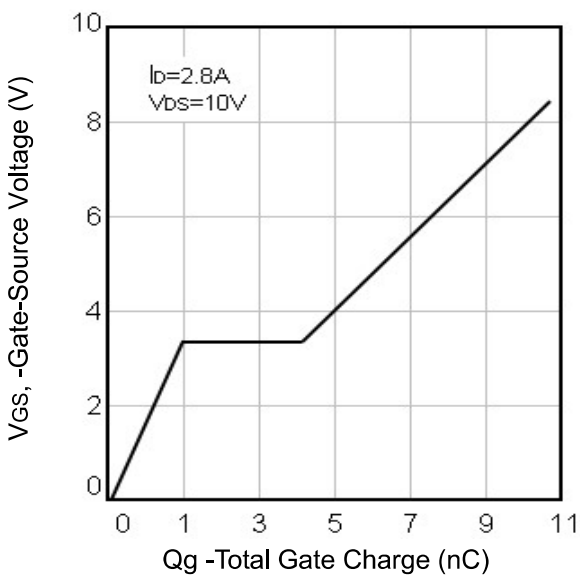


Fig5. Typical Gate Charge Vs. Gate-Source Voltage

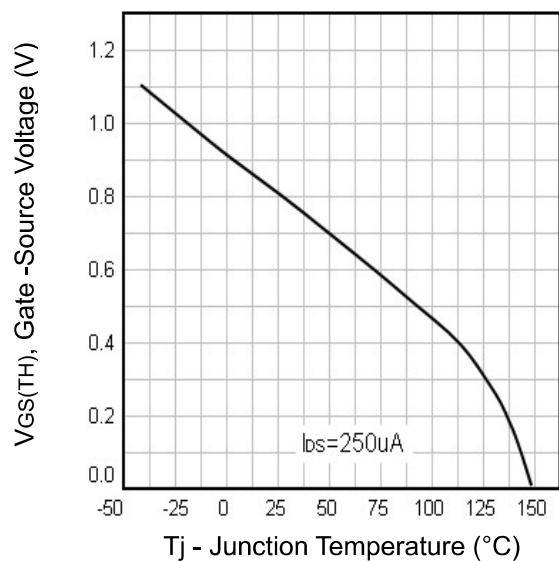


Fig6. Threshold Voltage Vs. Temperature