

DP2301

DP2301 P-Channel MOSFET

General description

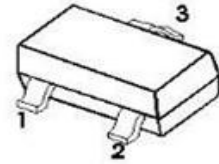
P-Channel MOSFET

Features:

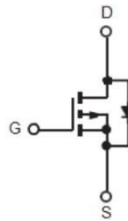
- $V_{DS} : -20V$
- $I_D : -3.1A$
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) < 90 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-3,3V$) < 100 mohm
- Trench Power MOSFET technology
- Low $R_{DS(ON)}$ @ $V_{GS}= -4.5V$
- High Current Handing Capability
- Halogen-free 、RoHS Compliant

Applications

- DC/DC Converter for Portable Devices
- High-side Load Switch
- High Speed line Driver



1. Gate
2. Source
3. Drain



Package : SOT-23

Device Marking Code:

Device Type	Device Marking
DP2301	S1 or A1SHB

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameters	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	-3.1	A
Pulsed Drain Current (note 1)	I_{DM}	-12	A
Maximum Power Dissipation	P_D	1.2	W
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	100	$^{\circ}C/W$
Junction and Storage Temperature	T_J, T_{STG}	-50~+150	$^{\circ}C$

DP2301

Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameters	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = - 250μA	-20	--	--	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = - 20V, V _{GS} = 0V	--	--	-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ± 10V, V _{DS} = 0V	--	--	±100	nA
Gate threshold voltage (note 3)	V _{GS(th)}	V _{DS} =V _{GS} , I _D = - 250μA	-0.4	-0.6	-1.0	V
Drain-source on-resistance (note 3)	R _{DSON}	V _{GS} = - 4.5V, I _D = -3A	--	70	90	mΩ
		V _{GS} = - 3.3V, I _D = - 2A	--	78	100	mΩ
Diode forward voltage (note 3)	V _{SD}	I _S = - 2A, V _{GS} = 0V	--	-0.85	-1.2	V
Dynamic Characteristics (note 4)						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} =0V, f =1MHz	--	330	--	pF
Output Capacitance	C _{oss}		--	50	--	pF
Reverse Transfer Capacitance	C _{rss}		--	45	--	pF
Switching Characteristics (note 4)						
Turn-on delay time	t _{d(on)}	V _{DD} = -10V, I _D = -3A, R _G = 3.3Ω, V _{GS} = -4.5V	--	11	--	ns
Turn-on rise time	t _r		--	12	--	ns
Turn-off delay time	t _{d(off)}		--	18	--	ns
Turn-off fall time	t _f		--	30	--	ns
Total Gate Charge	Q _g	V _{DS} = -10V, I _D =-3A, V _{GS} =-4.5V	--	6.6	--	nC
Gate-Source Charge	Q _{gs}		--	0.8	--	nC
Gate-Drain Charge	Q _{gd}		--	1.4	--	nC

Note:

- 1.Repetitive rating : Pluse width limited by maximum junction temperature
- 2.Surface Mounted on FR4 board , t ≤ 10 sec.
- 3.Pulse test : Pulse width ≤ 300μs, duty cycle ≤ 2%. Guaranteed by design, not subject to production.

Typical Performance Characteristics

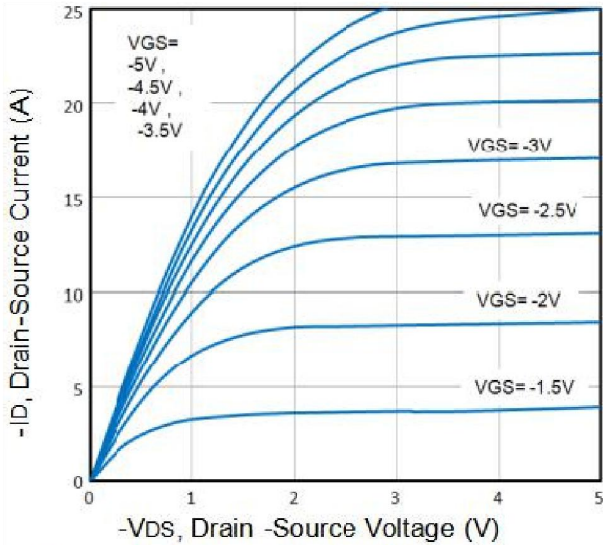


Fig1. Typical Output Characteristics

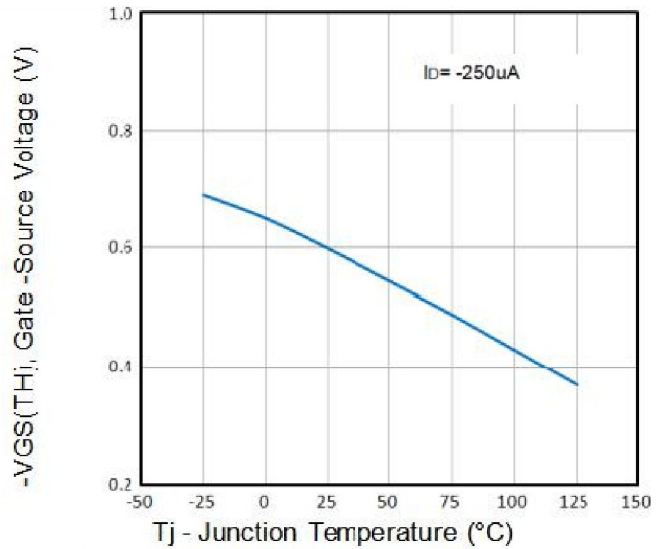


Fig2. Normalized Threshold Voltage Vs. Temperature

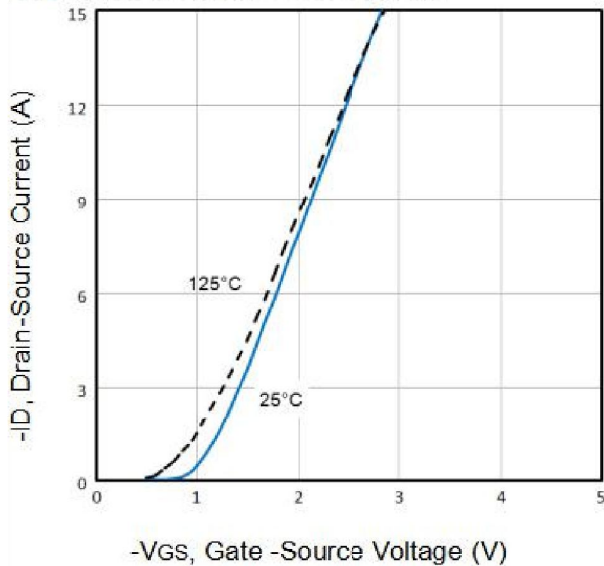


Fig3. Typical Transfer Characteristics

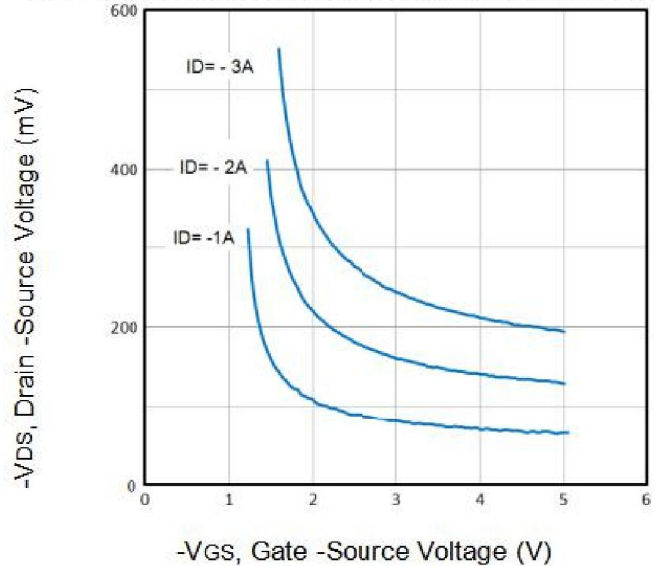


Fig4. Drain-Source Voltage vs Gate-Source Voltage

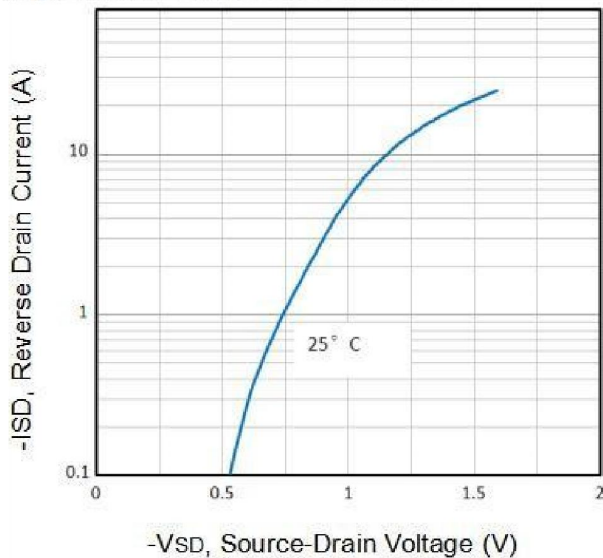


Fig5. Typical Source-Drain Diode Forward Voltage

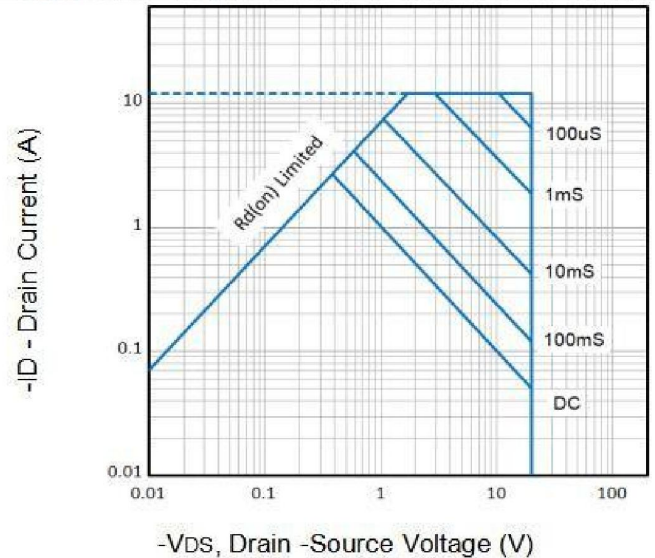


Fig6. Maximum Safe Operating Area

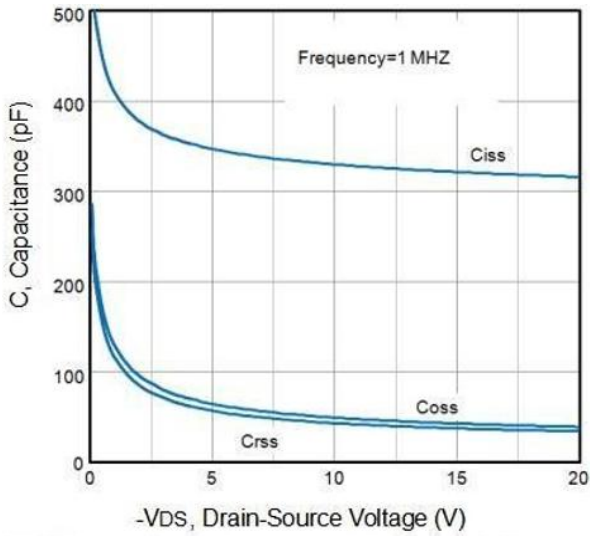


Fig7. Typical Capacitance Vs. Drain-Source Voltage

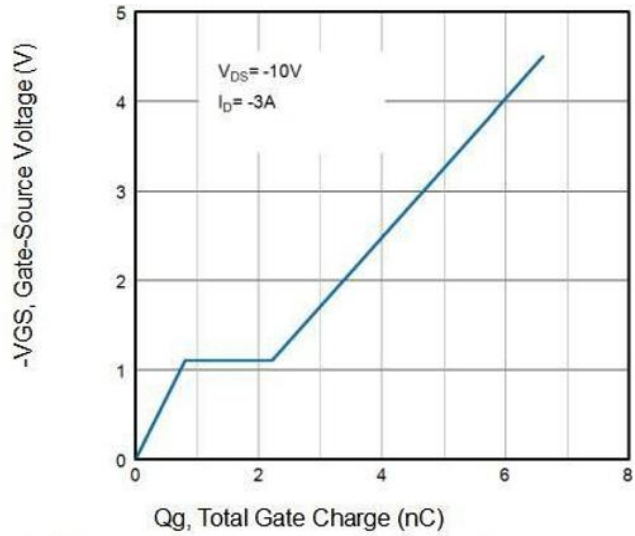
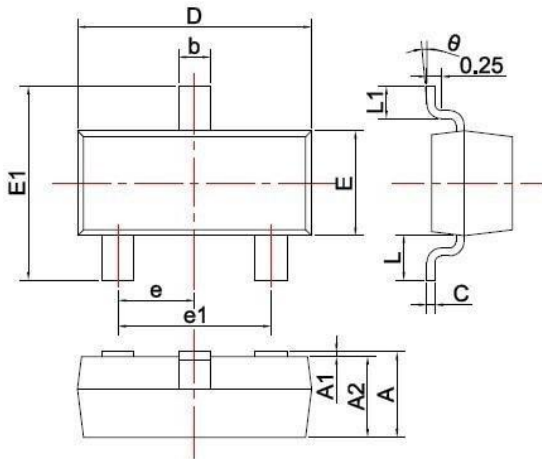


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

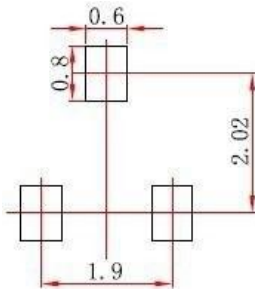
SOT-23 Package Outline Dimensions



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

Precautions: PCB Design



- Note:
1. Controlling dimension: In millimeters.
 2. General tolerance: ± 0.05 mm.
 3. The pad layout is for reference purposes only.

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