

20V N-Channel Mosfet

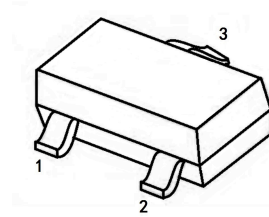
FEATURES

- $R_{DS(ON)} \leq 24m\Omega$ (21.6m Ω Typ.)
@ $V_{GS}=4.5V$
- $R_{DS(ON)} \leq 37m\Omega$ (27m Ω Typ.)
@ $V_{GS}=2.5V$

APPLICATIONS

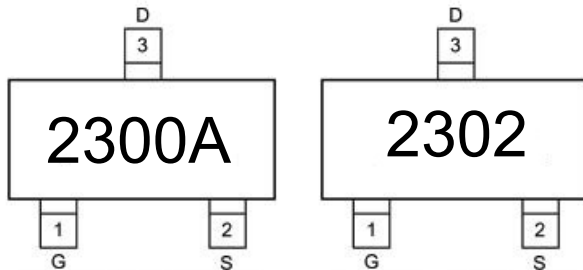
- PWM Applications
- Load Switch
- Power Management

SOT-23



1. GATE
2. SOURCE
3. DRAIN

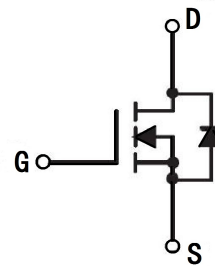
MARKING



2300A: Device code

2302: Device code

N-CHANNEL MOSFET



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

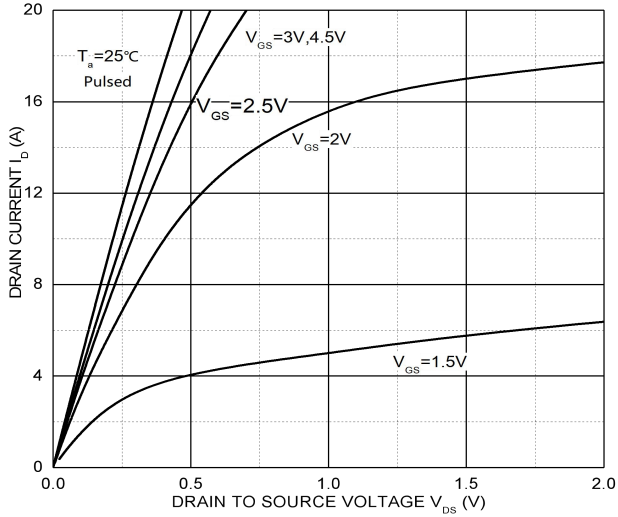
Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current	5	A
I_{DM}	Plused Drain Current	25	A
P_D	Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^{\circ}C/W$
T_J	Junction Temperature	150	$^{\circ}C$
T_{STG}	Storage Temperature	-55~ +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

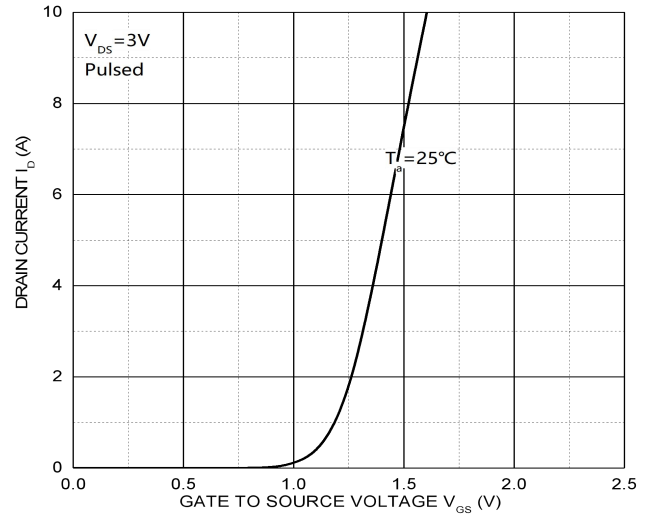
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 20V,$ $V_{GS} = 0V, T_J = 25^\circ C$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{GS} = \pm 12V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.66	1.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 4.5V, I_D = 4A$	-	21.6	24	m Ω
		$V_{GS} = 2.5V, I_D = 3A$	-	27	37	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1.0MHz$	-	800	-	pF
C_{oss}	Output Capacitance		-	155	-	pF
C_{rss}	Reverse Transfer Capacitance		-	125	-	pF
Q_g	Total Gate Charge	$V_{DS} = 10V, I_D = 4A,$ $V_{GS} = 4.5V,$	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	2.3	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	2.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = 4V, V_{DS} = 10V,$ $R_G = 10\Omega, I_D = 1A$	-	18	-	ns
t_r	Turn-On Rise Time		-	5	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	43	-	ns
t_f	Turn-Off Fall Time		-	20	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = 1.7A$	-	-	1.2	V

TYPICAL PERFORMANCE CHARACTERISTICS

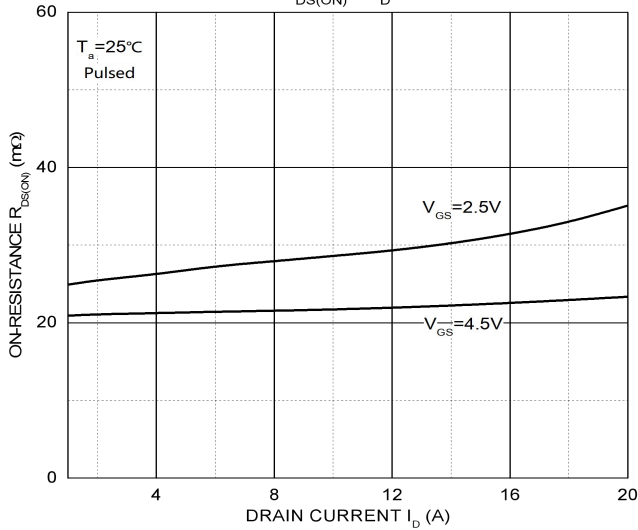
Output Characteristics



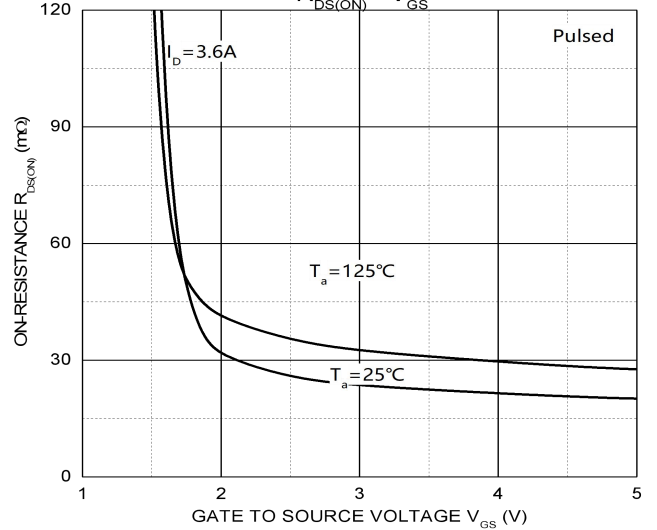
Transfer Characteristics



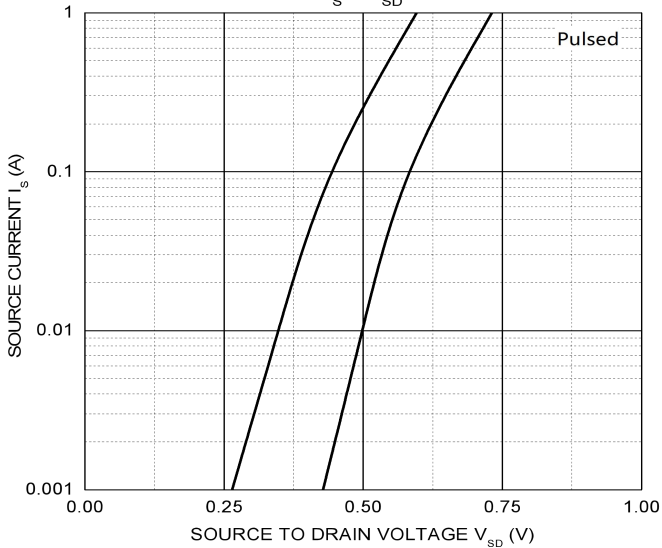
$R_{DS(ON)} - I_D$



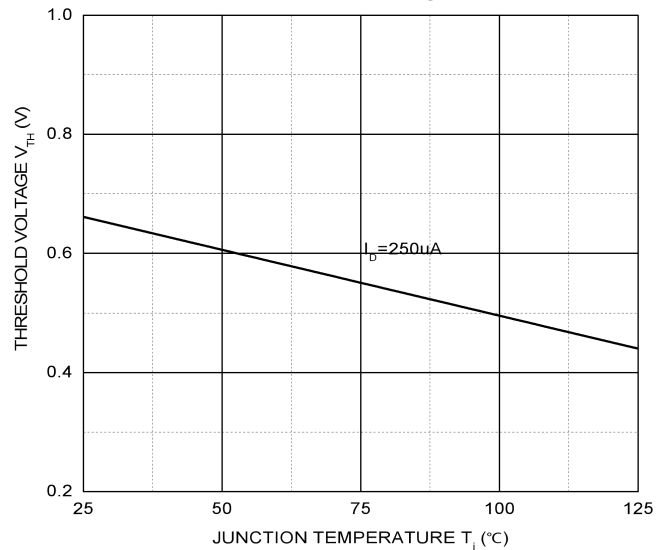
$R_{DS(ON)} - V_{GS}$



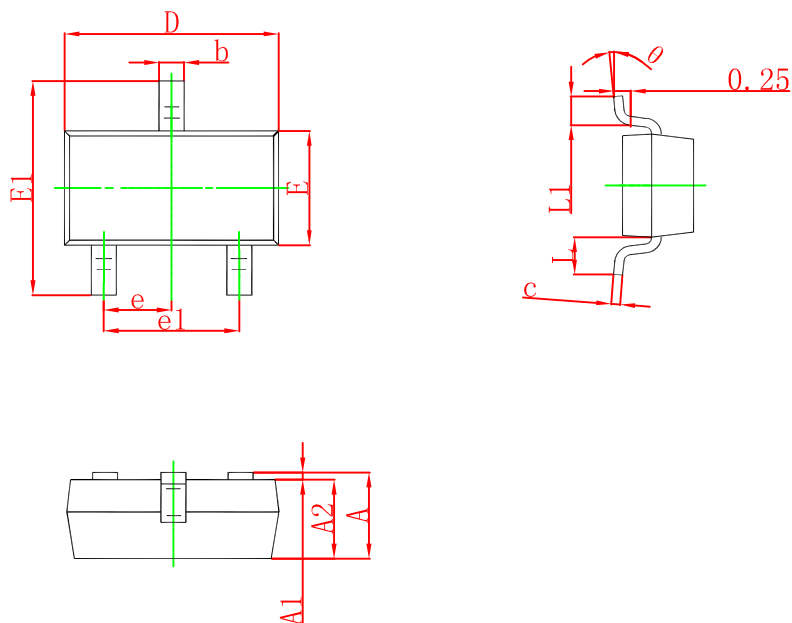
$I_S - V_{SD}$



Threshold Voltage



SOT-23 PACKAGE OUTLINE DRAWING



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°