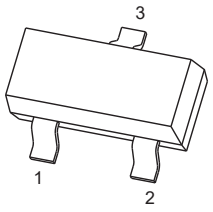
GP2302

20V N-Channel MOSFET

Product Summary

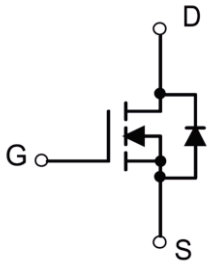
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	32mΩ@4.5V	4A
	43mΩ@2.5V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Schematic diagram



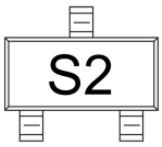
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

MARKING:



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	4	A
Plused Drain Current	I_{DM}	16	A
Continuous Source-Drain Current(Diode Conduction)	I_S	0.6	A
Power Dissipation	P_D	0.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	312.5	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	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			±0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.65	0.95	1.2	V
Drain-Source on-Resistance[a]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 3.6A		32	42	mΩ
		V_{GS} = 2.5V, I_D = 3.1A		43	65	
Forward Tranconductance[a]	g_{FS}	V_{DS} = 5V, I_D = 3.6A		8		S
Dynamic characteristics						
Input Capacitance[b]	C_{iss}	V_{DS} =10V,V_{GS} =0V,f=1MHz		260		pF
Output Capacitance[b]	C_{oss}			48		pF
Reverse Transfer Capacitance[b]	C_{rss}			27		pF
Total Gate charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D =3.0A		2.9	5	nC
Gate-Source Charge	Q_{gs}			0.4		nC
Gate-Drain Charge	Q_{gd}			0.6		nC
Switching Characteristics[b]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=10V, R_L=3.3Ω, V_{GEN}=4.5V,Rg=6Ω		2.5		ns
Turn-On Rise Time	t_r			3.2		ns
Turn-Off Delay Time	$t_{d(off)}$			21		ns
Turn-Off Fall Time	t_f			3		ns
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{DS}	V_{GS} =0V, I_S=0.94A		0.7	1.2	V

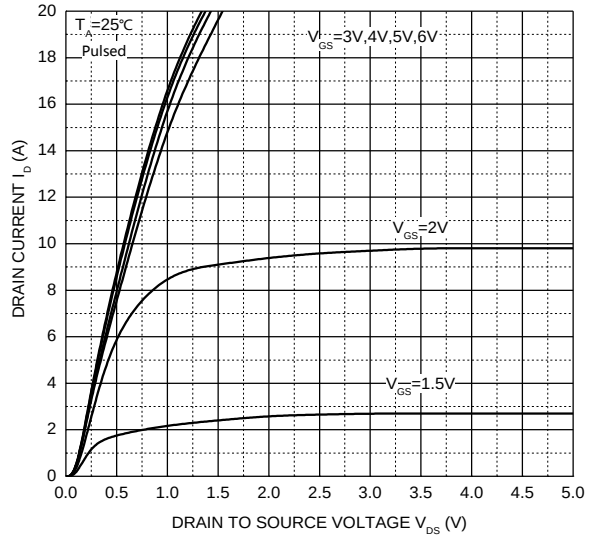
Notes :

a. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

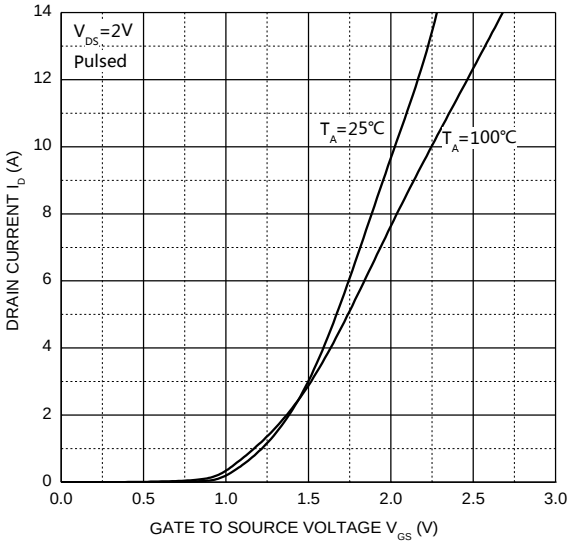
b. These parameters have no way to verify.

Typical Electrical and Thermal Characteristics

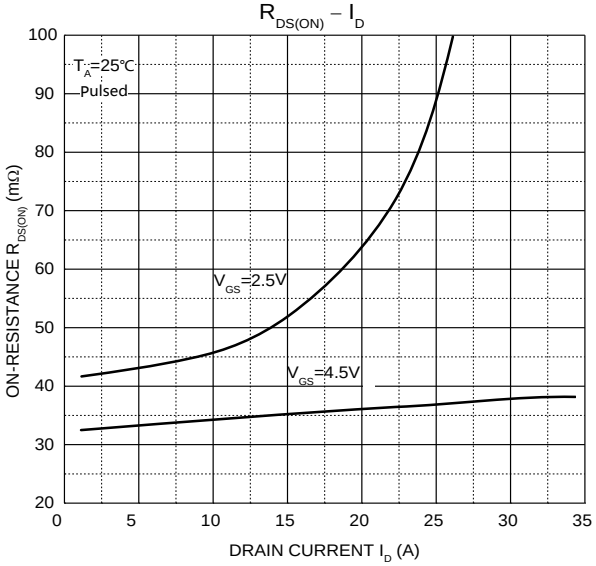
Output Characteristics



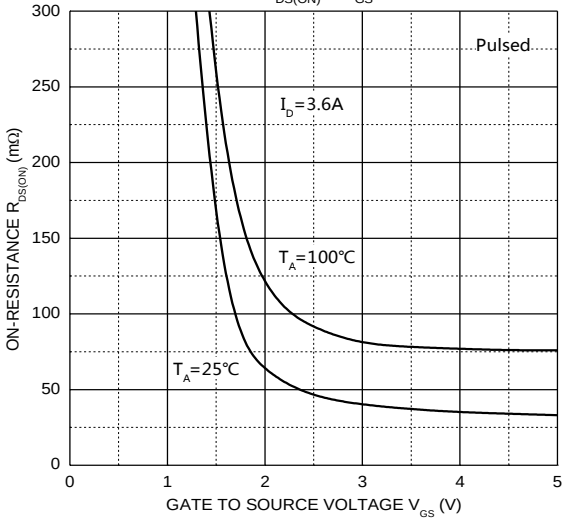
Transfer Characteristics



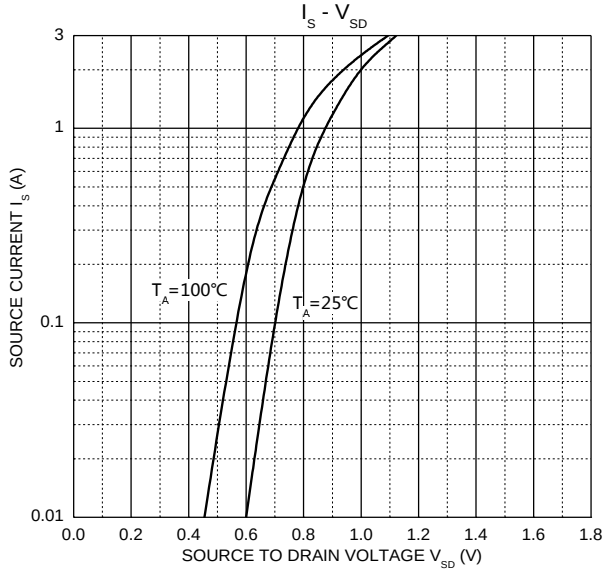
$R_{DS(ON)}$ – I_D



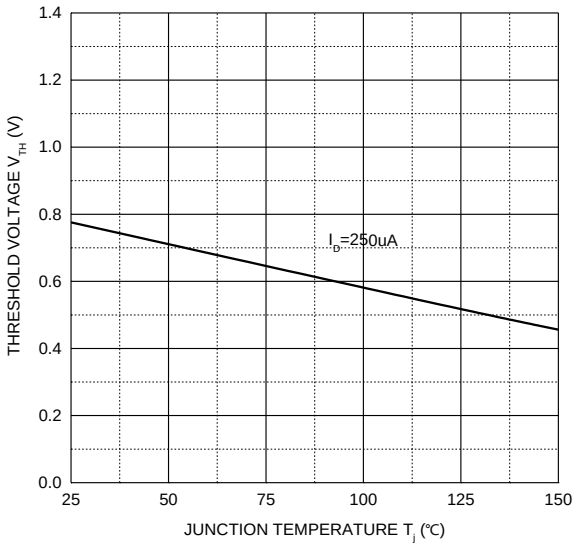
$R_{DS(ON)}$ - V_{GS}

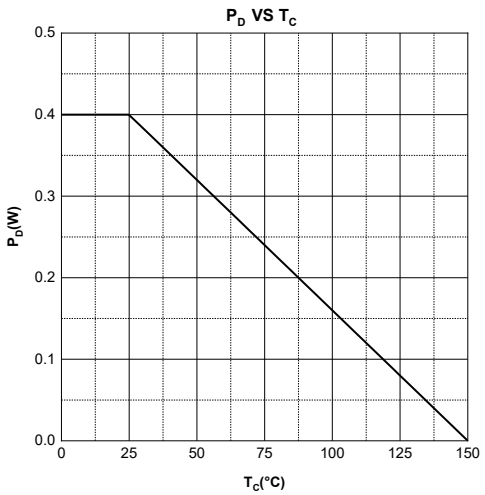


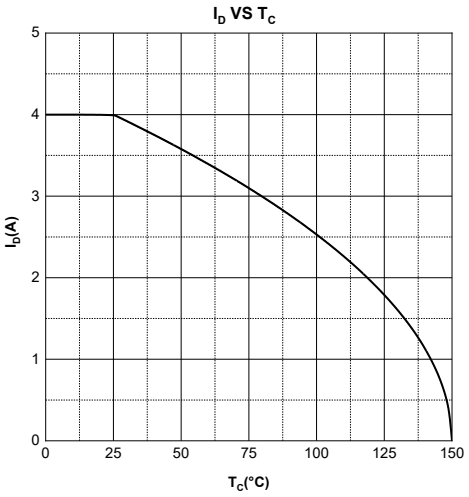
I_S - V_{SD}



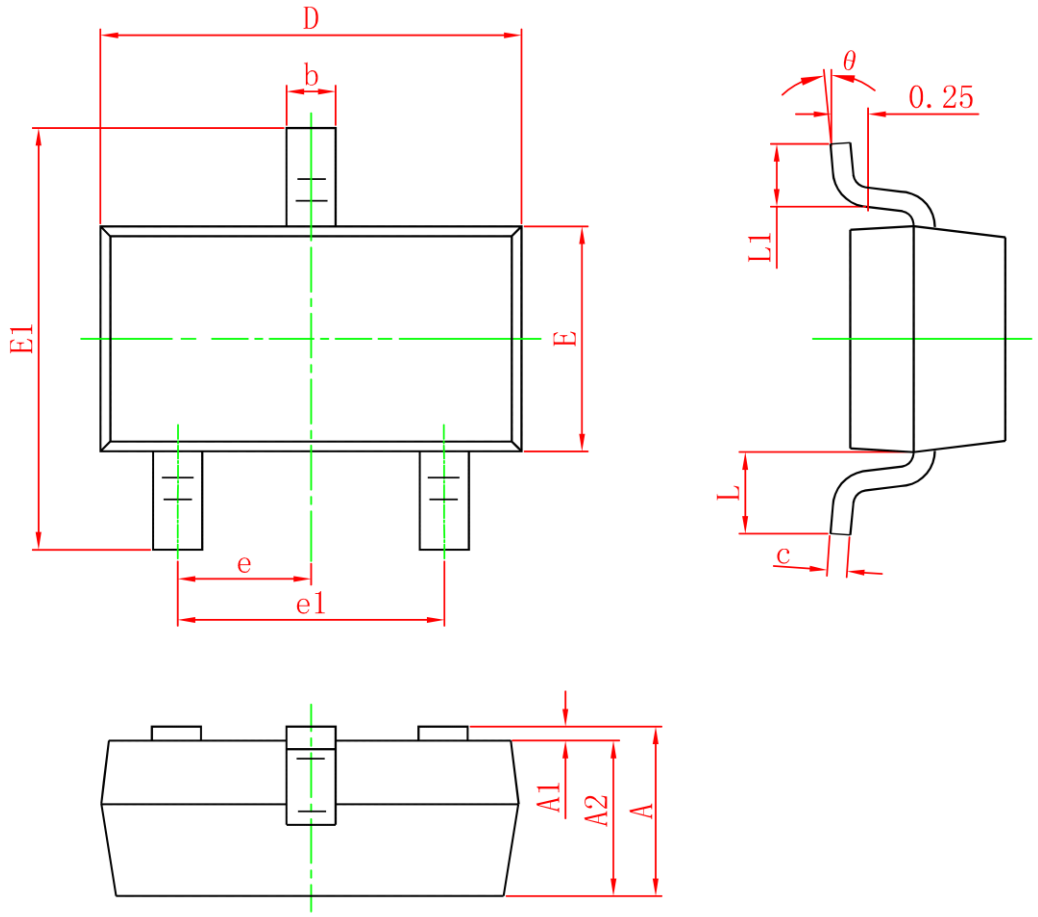
Threshold Voltage




P_D VS T_C
0.5
0.4
0.3
0.2
0.1
0.0
P_D(W)
0
25
50
75
100
125
150
T_C(°C)


I_D VS T_C
5
4
3
2
1
0
I_D(A)
0
25
50
75
100
125
150
T_C(°C)

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0	0.100	0	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	1.150	1.500	0.045	0.059
E1	2.250	2.650	0.089	0.104
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Attention：

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
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