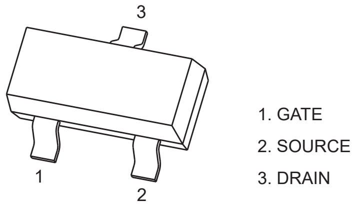
GP2312

20V N-Channel MOSFET

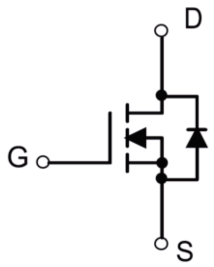
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	17mΩ@4.5V	6A
	20mΩ@2.5V	
	30mΩ@1.8V	

SOT-23



Schematic diagram



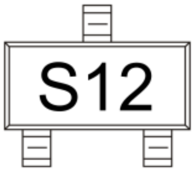
Feature

- 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}	±8	V
Continuous Drain Current	I_D	6	A
Pulsed Drain Current (t=300μs)	I_{DM}	20	A
Continuous Source-Drain Diode Current	I_S	1.04	A
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{θJA}$	90	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off 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} = ±8V, V_{DS} = 0V			±0.1	μA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.4	0.7	1.0	V
Drain-Source On-Resistance[a]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 5.0A		17	32	mΩ
		V_{GS} = 2.5V, I_D = 4.7A		20	36	
		V_{GS} = 1.8V, I_D = 4.3A		30	42	
Forward Tranconductance[a]	g_{FS}	V_{DS} =10V, I_D =5A	6			S
Dynamic Characteristics[b]						
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		536	1000	pF
Output Capacitance	C_{oss}			112		
Reverse Transfer Capacitance	C_{rss}			104		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz	0.5		4.8	Ω
Switching Characteristics[b]						
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 5A		9.1		nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			3.3		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10V, V_{GS} = 4.5V, I_D = 3A, R_G = 3Ω		7		ns
Turn-On Rise Time	t_r			17		
Turn-Off Delay Time	$t_{d(off)}$			26		
Turn-Off Fall Time	t_f			9		
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 4A		0.75	1.2	V

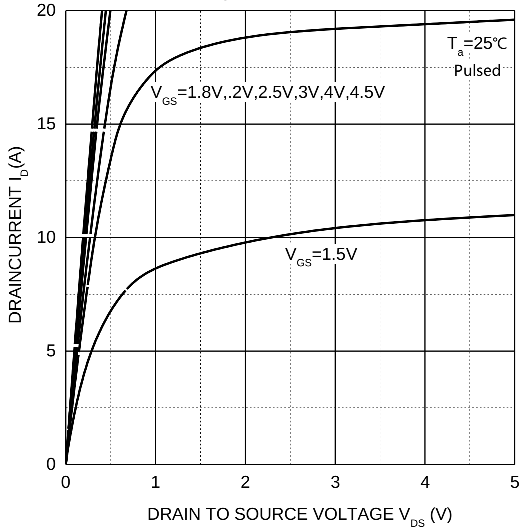
Notes :

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

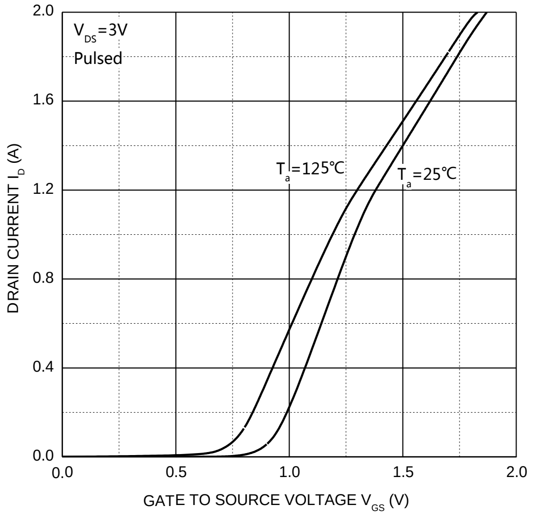
b. These parameters have no way to verify.

Typical Electrical and Thermal Characteristics

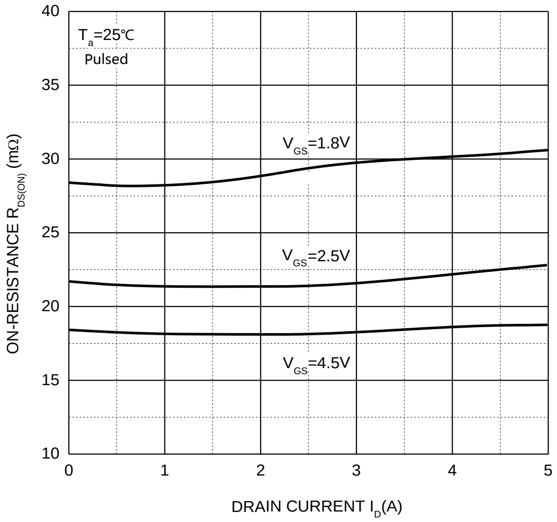
Output Characteristics



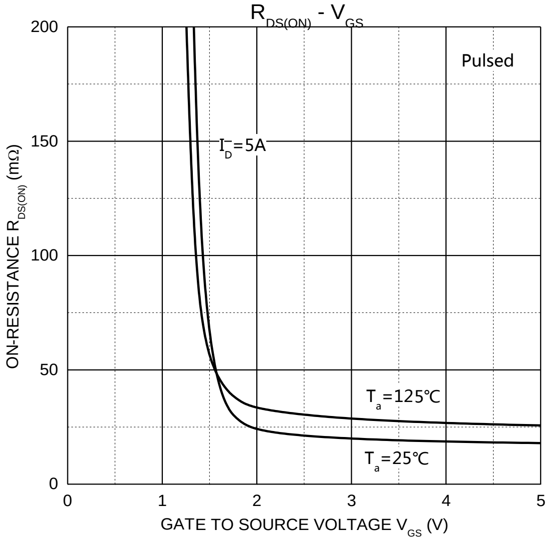
Transfer Characteristics



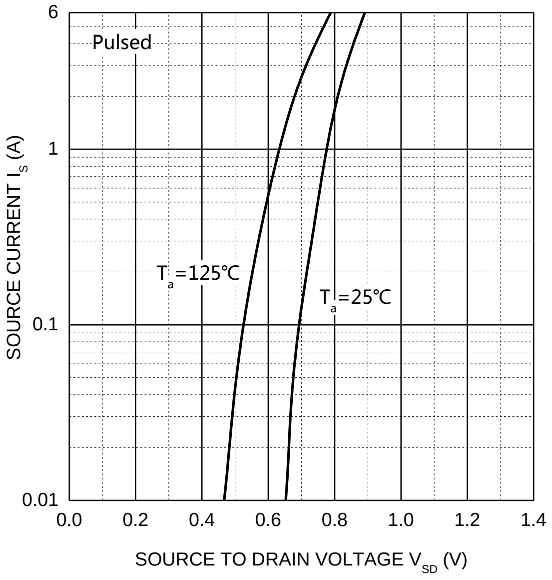
R$_{DS(ON)}$ – I$_D$



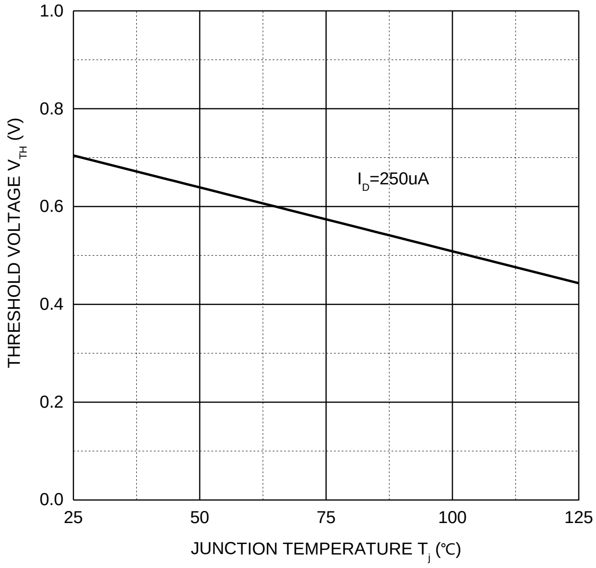
R$_{DS(ON)}$ - V$_{GS}$



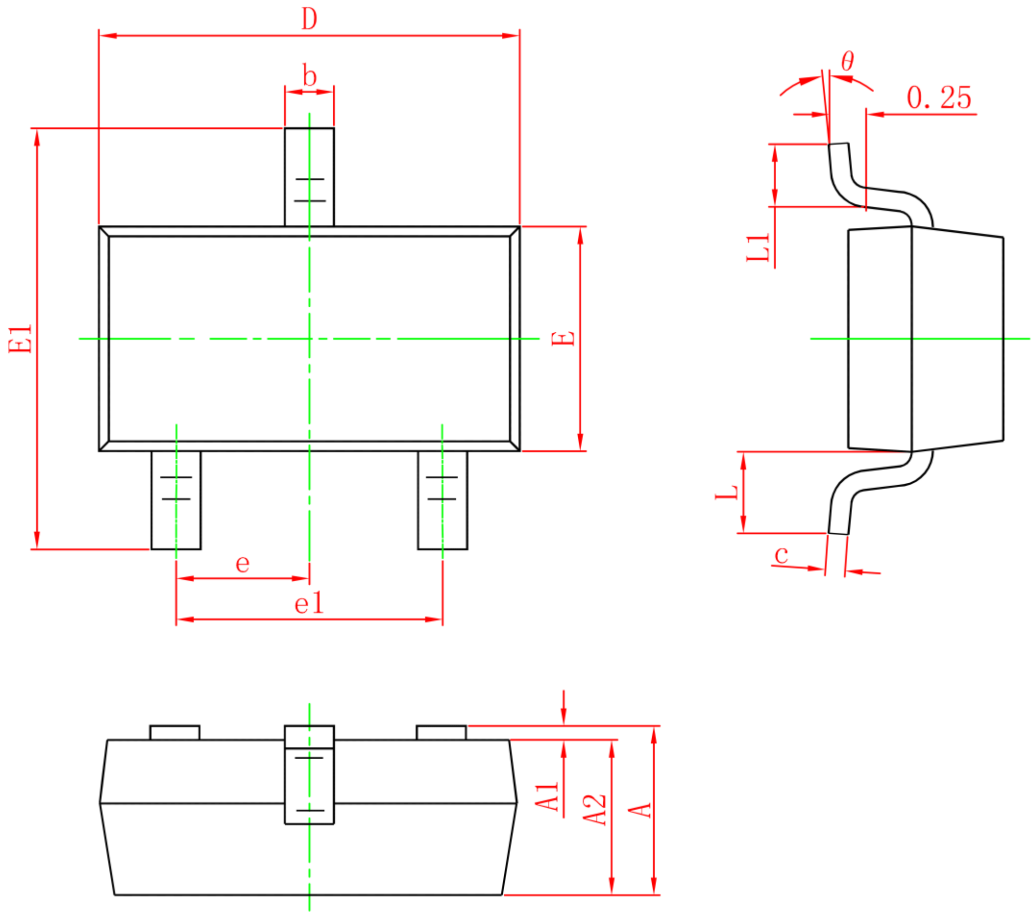
I$_S$ - V$_{SD}$



Threshold Voltage



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.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.