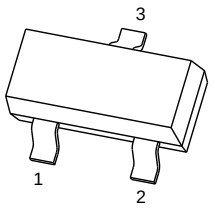
GP2305

12V P-Channel MOSFET

Product Summary

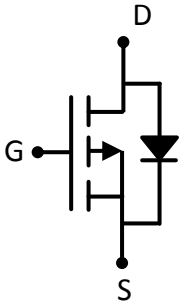
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-12V	30mΩ@-4.5V	-4.1A
	40mΩ@-2.5V	
	60mΩ@-1.8V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Schematic diagram



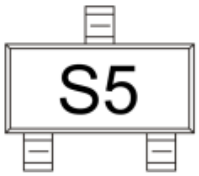
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge

Application

- Load Switch
- DC/DC Converter

MARKING:



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-12	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	-4.1	A
Pulsed Drain Current (t=300μs)	I_{DM}	-15	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	℃/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	-12			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -12V, V_{GS} = 0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±100	nA
On Characteristics[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.5	-0.65	-0.9	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -3.5A		30	45	mΩ
		V_{GS} = -2.5V, I_D = -3.0A		40	60	
		V_{GS} = -1.8V, I_D = -2.0A		60	90	
Forward Tranconductance	g_{FS}	V_{DS} =-5V, I_D =-4.1A	6			S
Dynamic Characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} = -6V, V_{GS} = 0V, f = 1MHz		1091		pF
Output Capacitance	C_{oss}			287		
Reverse Transfer Capacitance	C_{rss}			270		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		27		Ω
Switching Characteristics[4]						
Total Gate Charge	Q_g	V_{DS} = -10V, V_{GS} = -4.5V, I_D = -3.5A		14.6		nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			5.6		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -4V, V_{GEN} = -4.5V, R_G = 1Ω，I_D=-3.3A		13		ns
Turn-On Rise Time	t_r			35		
Turn-Off Delay Time	$t_{d(off)}$			32		
Turn-Off Fall Time	t_f			10		
Source-Drain Diode Characteristics						
Diode Forward Current	I_S	T_C=25℃			-4.1	A
Diode Pulsed Forward Current	I_{SM}	T_C=25℃			-15	A
Diode Forward Voltage[3]	V_{SD}	V_{GS} = 0V, I_S = -3.3A			-1.2	V

Notes :

1.The maximum current rating is limited by package.

2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

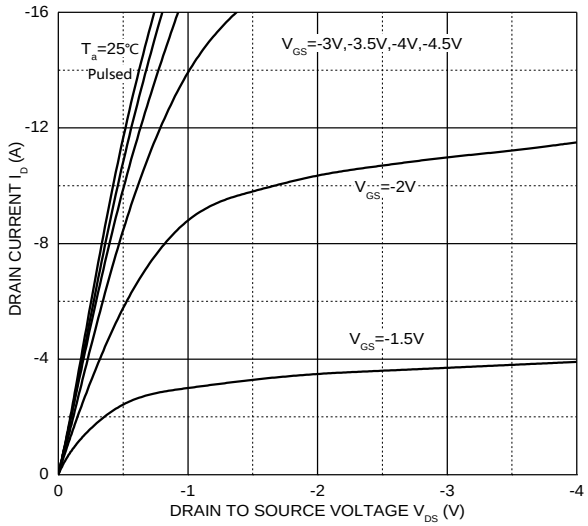
3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

4.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.

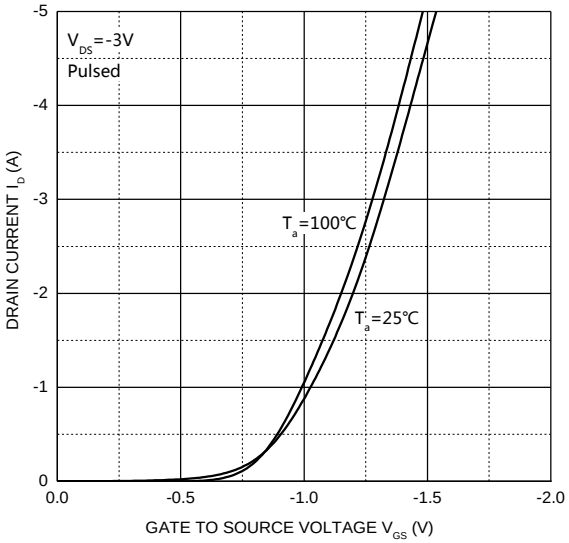
5.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Electrical and Thermal Characteristics

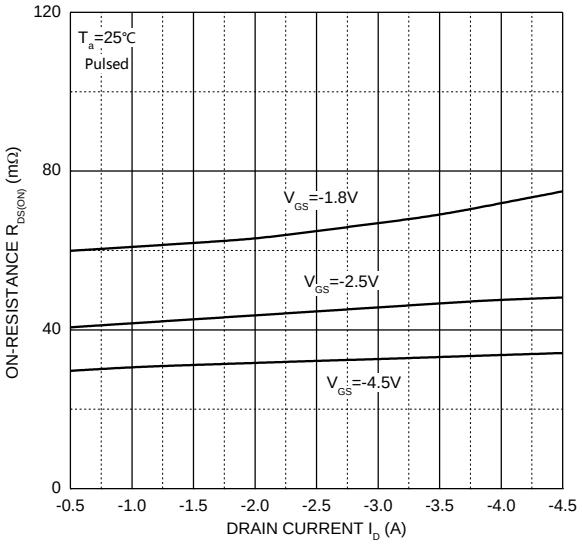
Output Characteristics



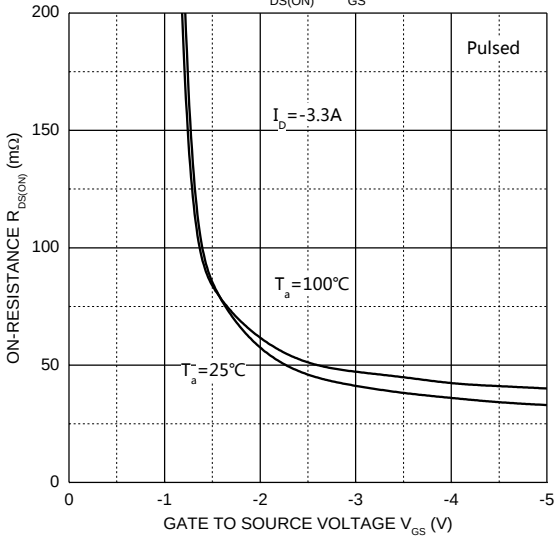
Transfer Characteristics



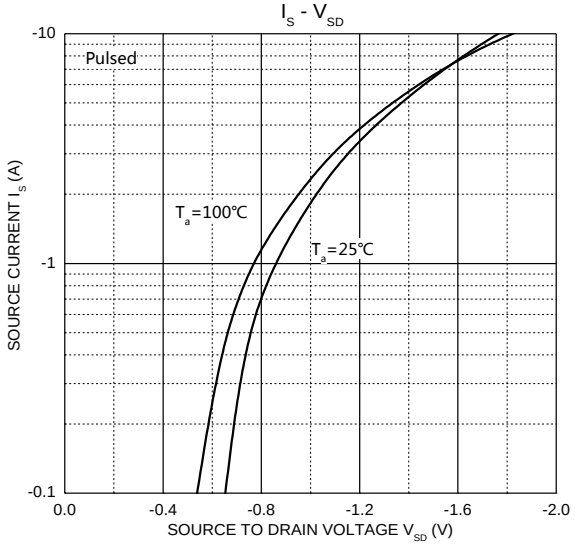
$R_{DS(ON)}$ – I_D



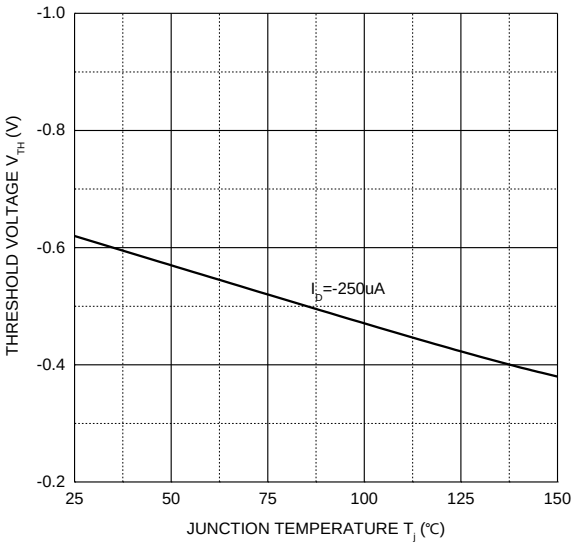
$R_{DS(ON)}$ - V_{GS}



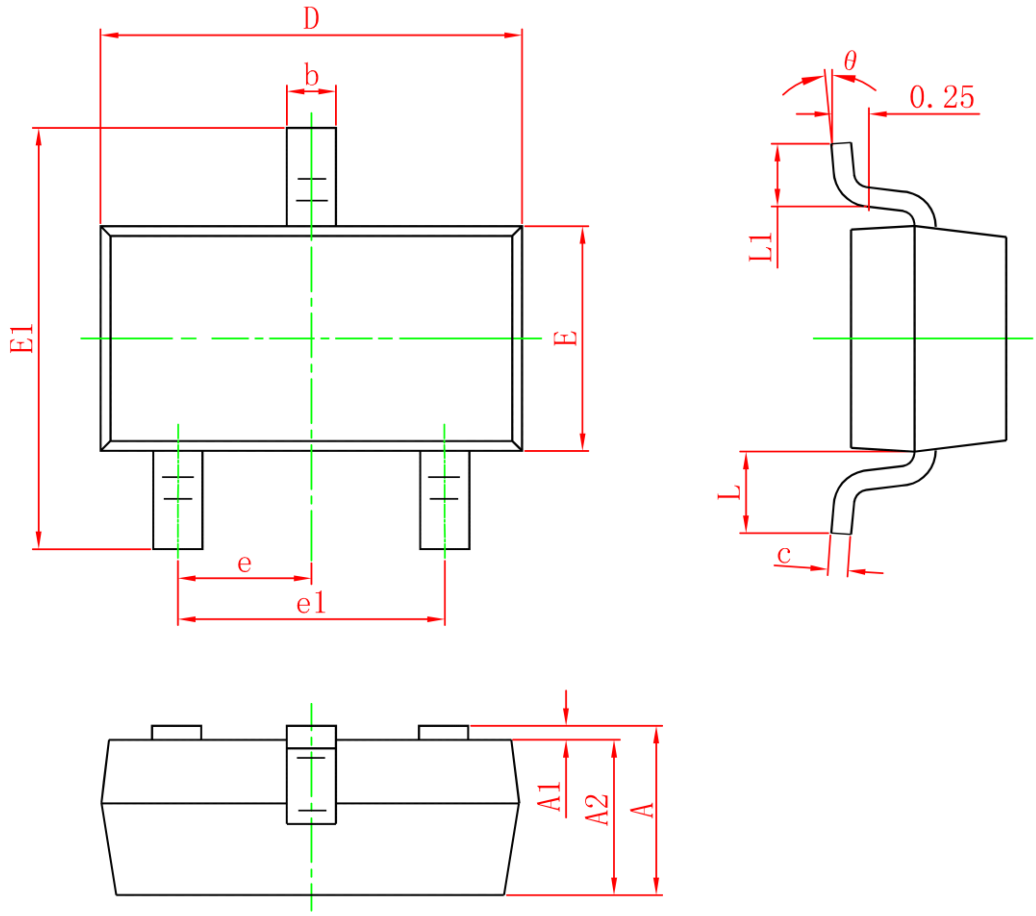
I_S - V_{SD}



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.
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