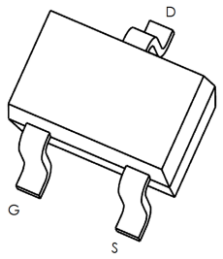
GP2102

20V N-Channel MOSFET

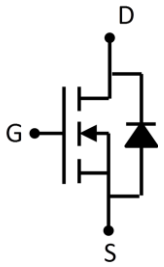
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	59mΩ@4.5V	2.1A
	70mΩ@2.5V	

SOT-323



Schematic diagram



Feature

TrenchFET Power MOSFET

Excellent $R_{DS(on)}$ and Low Gate Charge

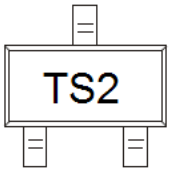
Application

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	2.1	A
Pulsed Drain Current (t=300μs)	I_{DM}	6.3	A
Power Dissipation	P_D	0.2	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	625	℃/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} =±8V, 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[1]	$R_{DS(on)}$	V_{GS} =4.5V, I_D =3.6A		59	78	mΩ
		V_{GS} =2.5V, I_D =3.1A		70	105	
Forward tranconductance[1]	g_{FS}	V_{DS} =5V, I_D =3.6A		9		S
Dynamic characteristics						
Input Capacitance[2]	C_{iss}	V_{DS} =10V,V_{GS} =0V,f=1MHz		305		pF
Output Capacitance[2]	C_{oss}			122		
Reverse Transfer Capacitance[2]	C_{rss}			83		
Total gate charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D =3.6A		2	12	nC
Gate-source charge	Q_{gs}			0.67		
Gate-drain charge	Q_{gd}			1.3		
Switching Characteristics[2]						
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V, R_L=5.5Ω,I_D=3.6A V_{GEN}=4.5V,Rg=6Ω		8	16	ns
Turn-on rise time	t_r			56	79	
Turn-off delay time	$t_{d(off)}$			17	65	
Turn-off fall time	t_f			11	26	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=0.94A			1.2	V

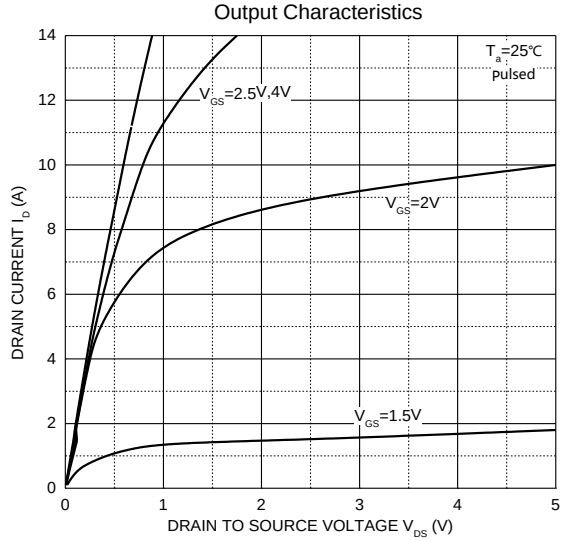
Notes:

1. Pulse test; pulse width≤300μs, duty cycle≤2%.

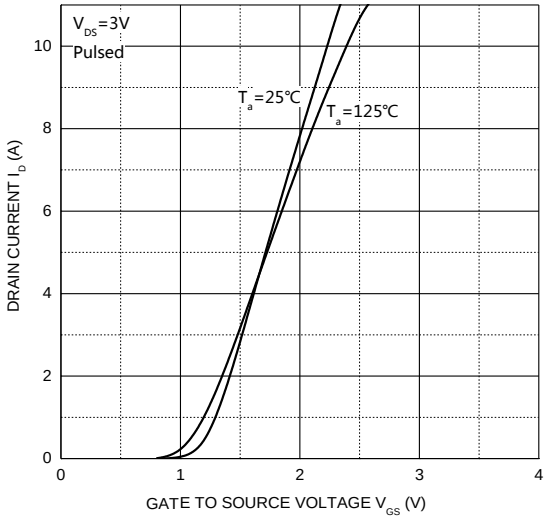
2. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

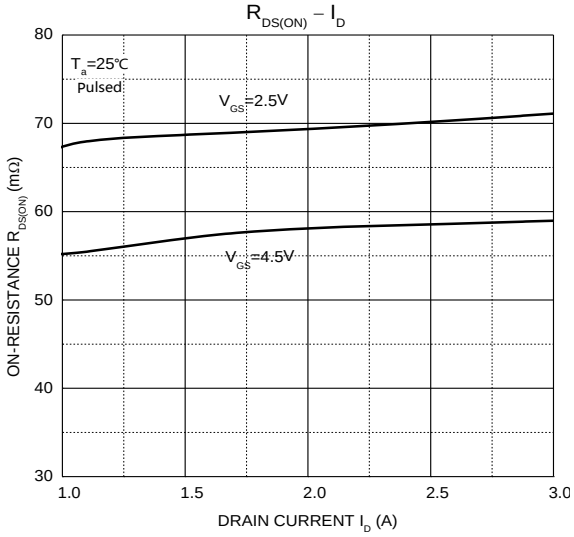
Output Characteristics



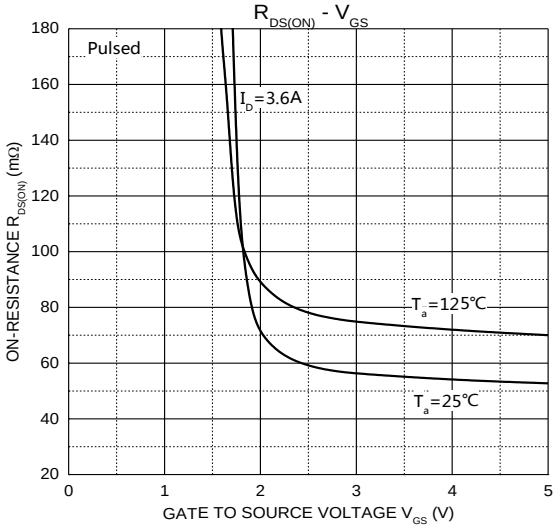
Transfer Characteristics



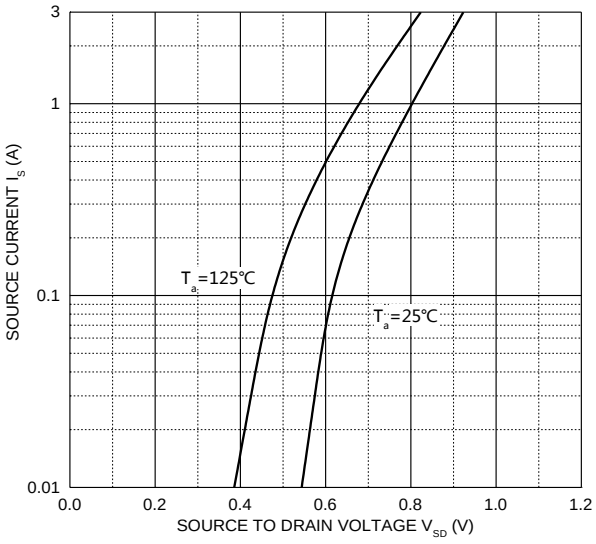
$R_{DS(ON)}$ – I_D



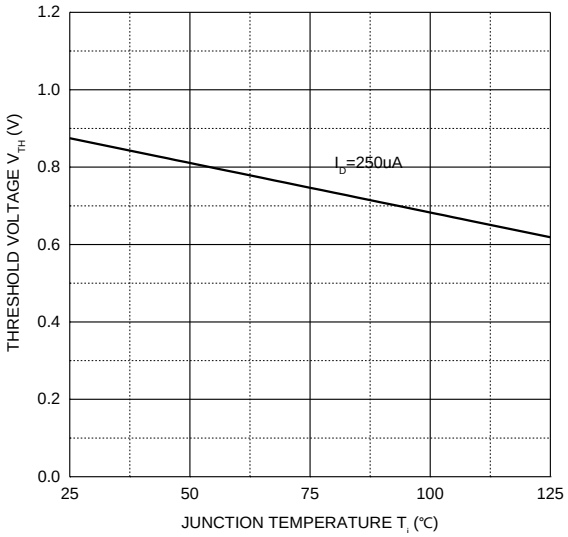
$R_{DS(ON)}$ - V_{GS}



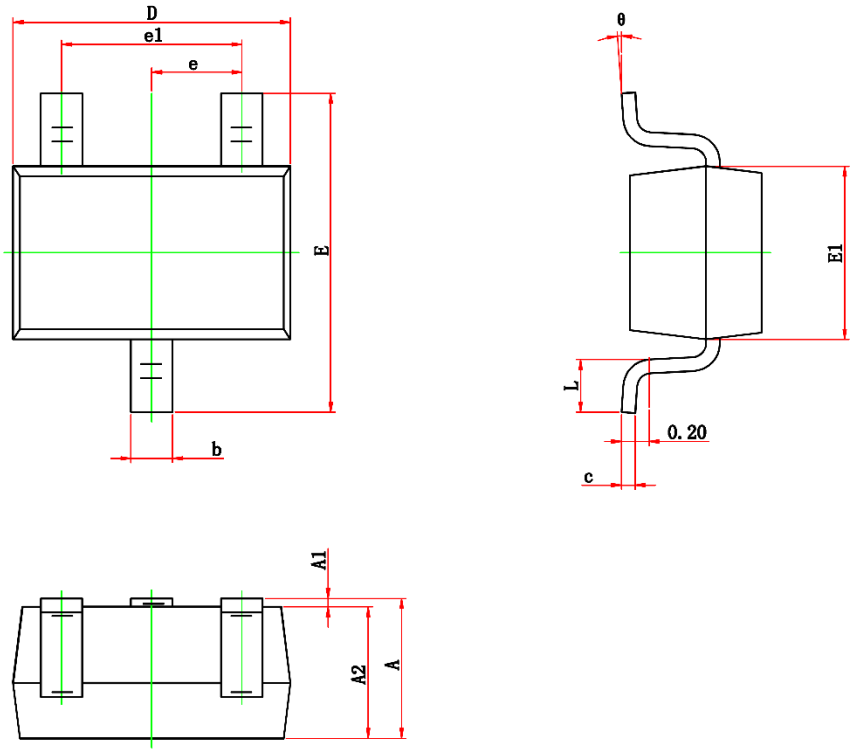
I_S - V_{SD}



Threshold Voltage



SOT-323 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.050	0.150	0.002	0.006
D	1.900	2.200	0.075	0.087
E	2.000	2.450	0.079	0.096
E1	1.150	1.350	0.045	0.053
e	0.650TYP.		0.026TYP.	
e1	1.200	1.400	0.047	0.055
L	0.200	0.460	0.008	0.018
θ	0°	8°	0°	8°