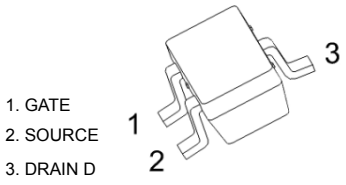
GP05P04

40V P-Channel MOSFET

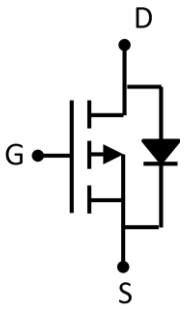
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	63mΩ@-10V	-5.3A
	98mΩ@-4.5V	

SOT-23-3L



Schematic diagram



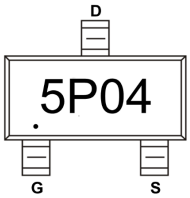
Feature

- TrenchFET Power MOSFET
- Exceptional on-resistance and maximum DC current capability

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}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-5.3	A
Power Dissipation	P_D	1	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	125	℃/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	-40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-40V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			100	nA
Gate threshold voltage(1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-2.1	-3.0	V
Drain-source on-resistance(1)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5.0A		63	82	mΩ
		V_{GS} =-4.5V, I_D =-4.0A		98	126	
Forward tranconductance	g_{FS}	V_{DS} =-5V, I_D =-4.1A		7		S
Dynamic characteristics(2)						
Input Capacitance	C_{iss}	V_{DS} =-20V,V_{GS} =0V,f =1MHz		650		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			70		
Total Gate Charge	Q_g	V_{DS}=-20V,I_D=-3.1A, V_{GS}=-10V		14		nC
Gate-Source Charge	Q_{gs}			2.9		
Gate-Drain Charge	Q_{gd}			3.8		
Switching characteristics(2)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-20V, ,R_L=2Ω V_{GS}=-10V,R_{GEN}=3Ω		8		ns
Turn-on rise time	t_r			9		
Turn-off delay time	$t_{d(off)}$			28		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward voltage(1)	V_{DS}	V_{GS} =0V, I_S=-2.5A		-0.87	-1.2	V

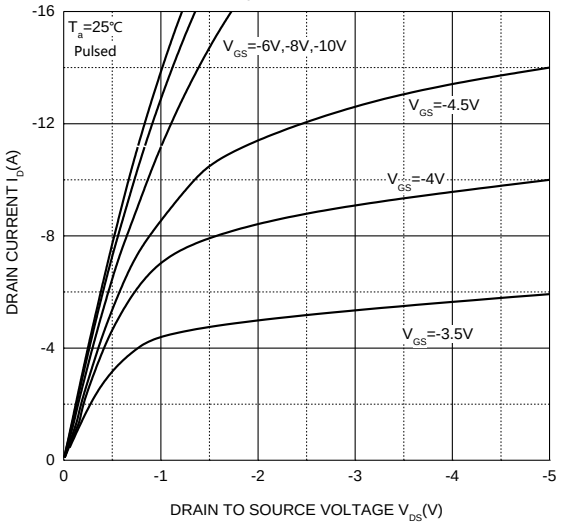
Notes:

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

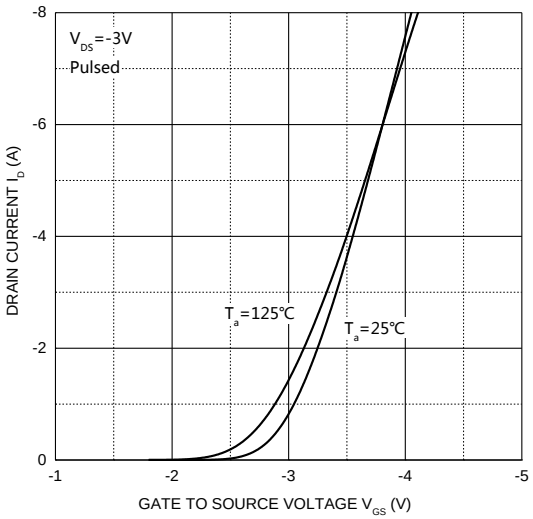
2. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

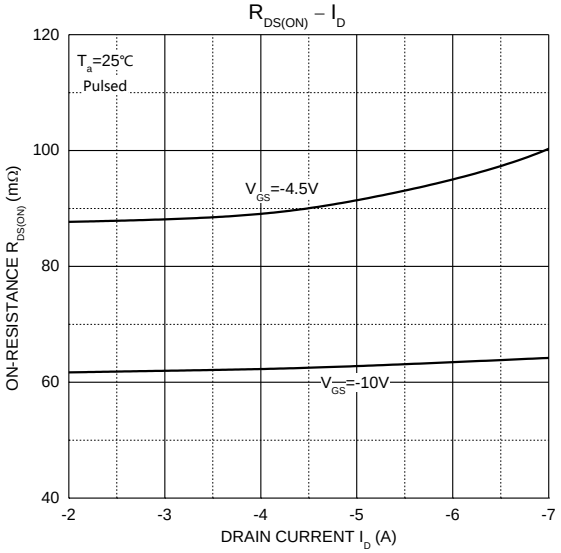
Output Characteristics



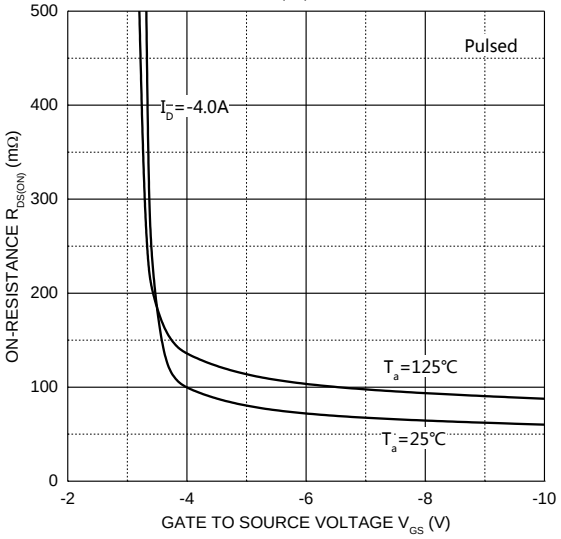
Transfer Characteristics



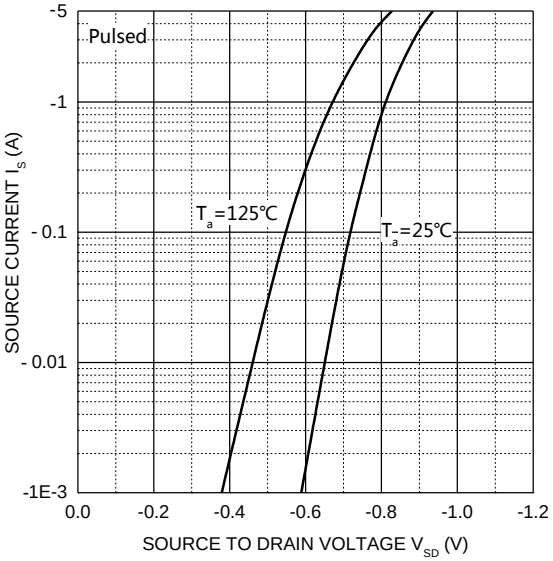
$R_{DS(ON)}$ – I_D



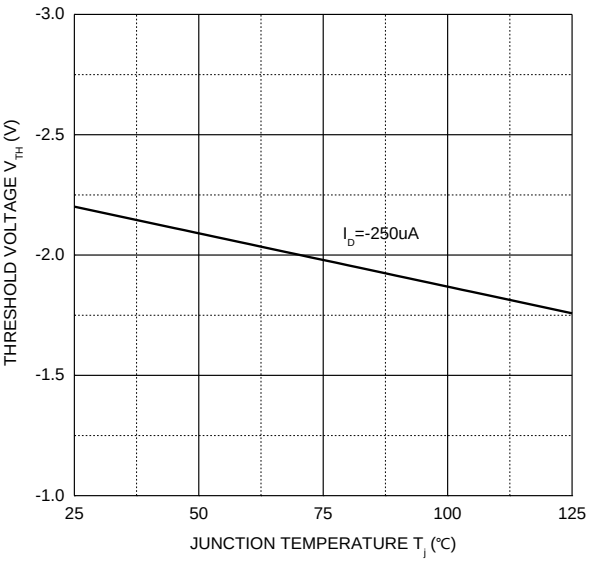
$R_{DS(ON)}$ - V_{GS}

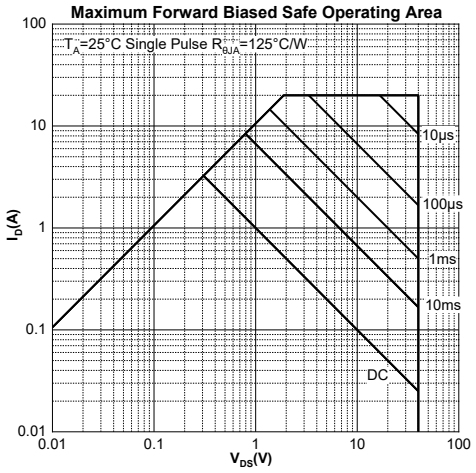


I_S - V_{SD}

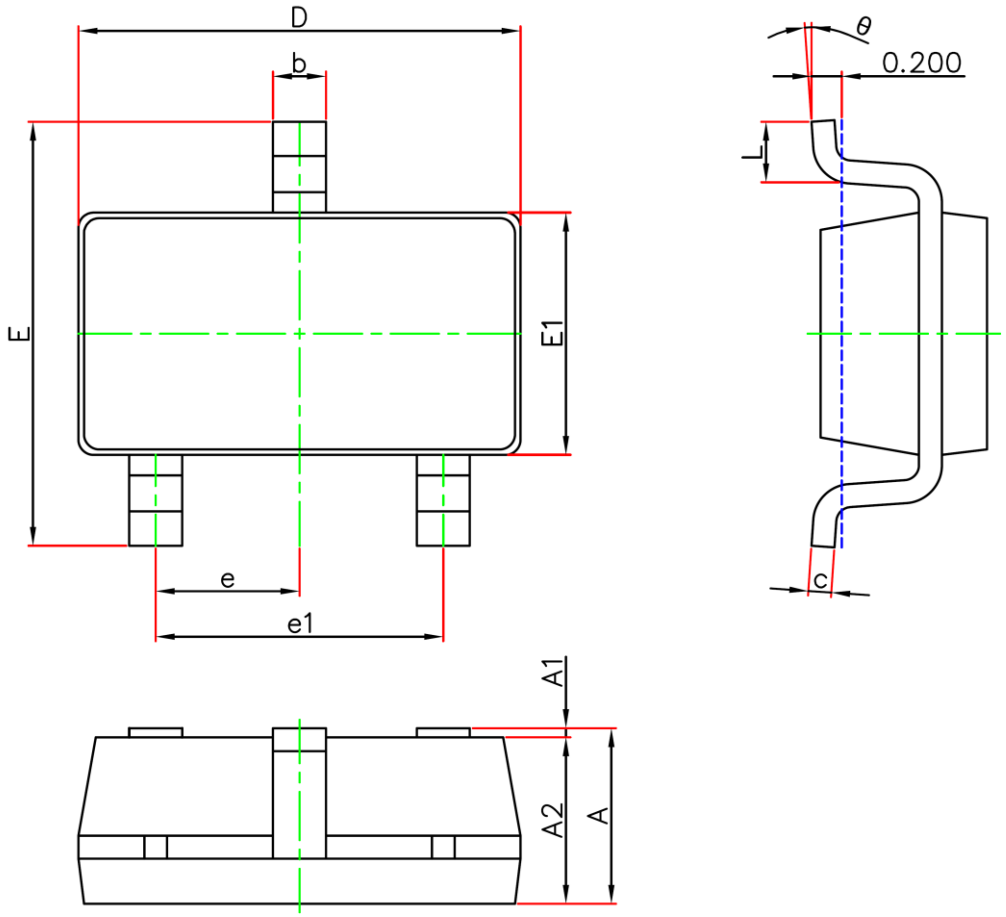


Threshold Voltage




Maximum Forward Biased Safe Operating Area
T_A=25°C Single Pulse $R_{\theta JA}$=125°C/W
100
10
1
0.1
0.01
I_D(A)
0.01
0.1
1
10
100
V_{DS}(V)
10μs
100μs
1ms
10ms
DC

SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.450	0.035	0.057
A1	0	0.150	0	0.006
A2	0.900	1.300	0.035	0.051
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	2.600	3.000	0.102	0.118
E1	1.500	1.700	0.059	0.067
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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