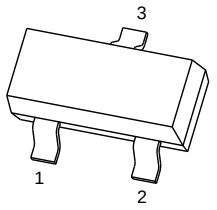
TKMP2301A

20V P-Channel MOSFET

Product Summary

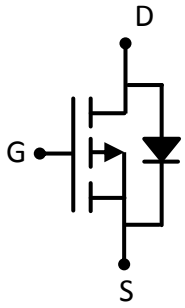
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	70mΩ@-4.5V	-3A
	110mΩ@-2.5V	

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: A1SHB

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}	±12	V
Continuous Drain Current	I_D	- 3	A
Pulsed Drain Current (t=300μs)	I_{DM}	-10	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} =±8V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.4	-0.7	-1	V
Drain-source on-resistance[a]	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-3A		70	90	mΩ
		V_{GS} =-2.5V, I_D =-2A		110	140	
Forward tranconductance[a]	g_{FS}	V_{DS} =-5V, I_D =-2A	5			S
Dynamic characteristics[b]						
Input Capacitance	C_{iss}	V_{DS} =-10V,V_{GS} =0V,f =1MHz		405		pF
Output Capacitance	C_{oss}			75		
Reverse Transfer Capacitance	C_{rss}			55		
Gate resistance	R_g	f =1MHz		6		Ω
Total Gate Charge	Q_g	V_{DS} =-10V,V_{GS} =-2.5V,I_D=-3A		3.3	12	nC
Gate-Source Charge	Q_{gs}			0.7		
Gate-Drain Charge	Q_{gd}			1.3		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-10V,V_{GEN}=-4.5V,I_D=-1A R_L=10Ω,R_{GEN}=1Ω		11		ns
Turn-on rise time	t_r			35		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode forward current	I_S	T_C=25℃			-2.3	A
Diode pulsed forward current[a]	I_{SM}				-10	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=-1.3A			-1.2	V

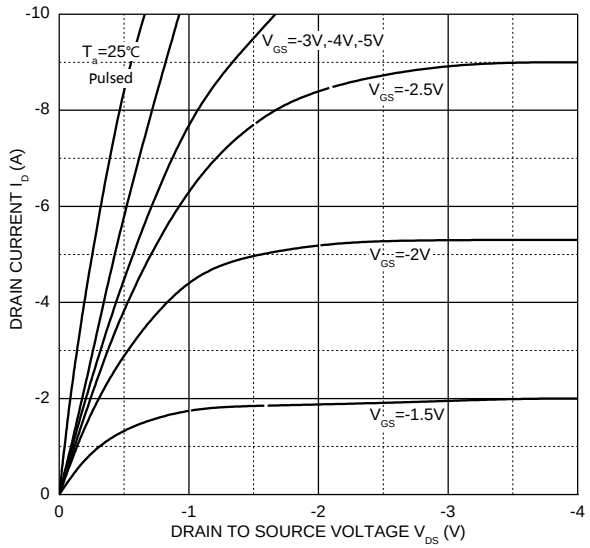
Notes :

a.Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

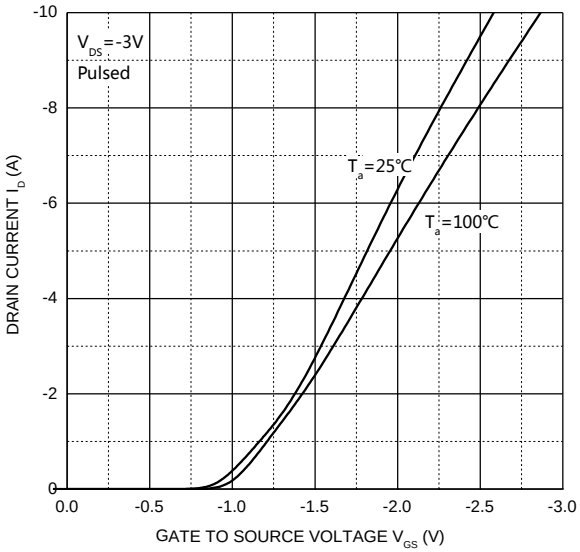
b.Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

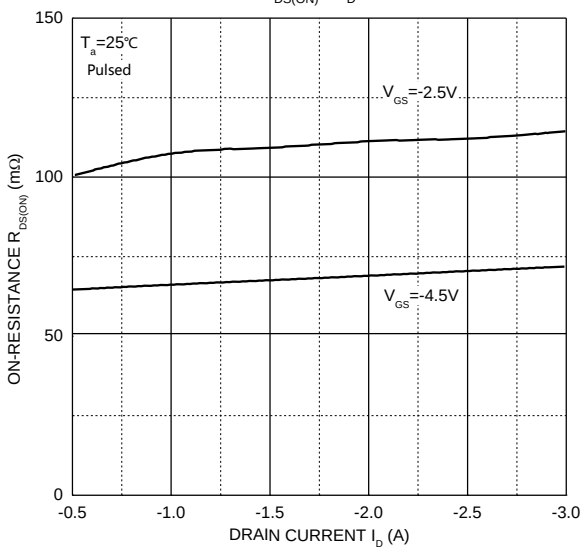
Output Characteristics



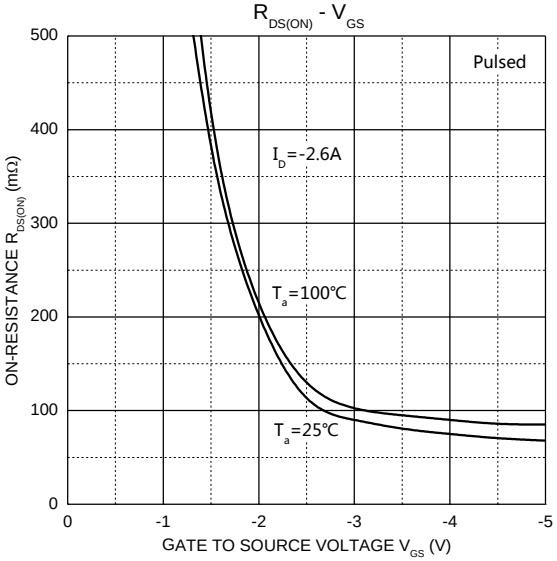
Transfer Characteristics



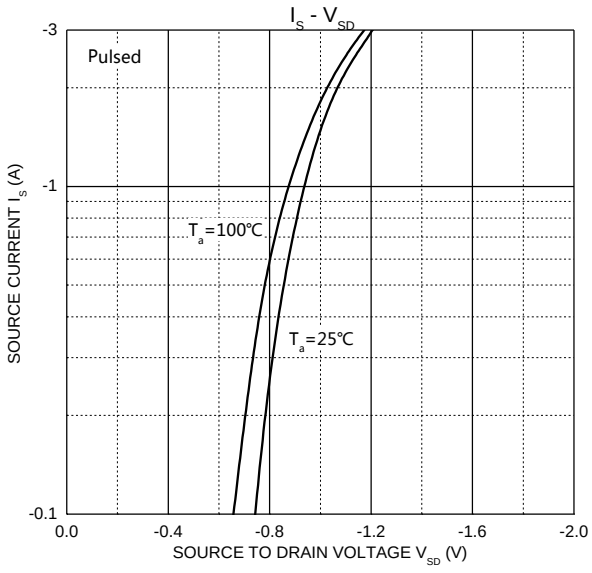
$R_{DS(ON)}$ – I_D



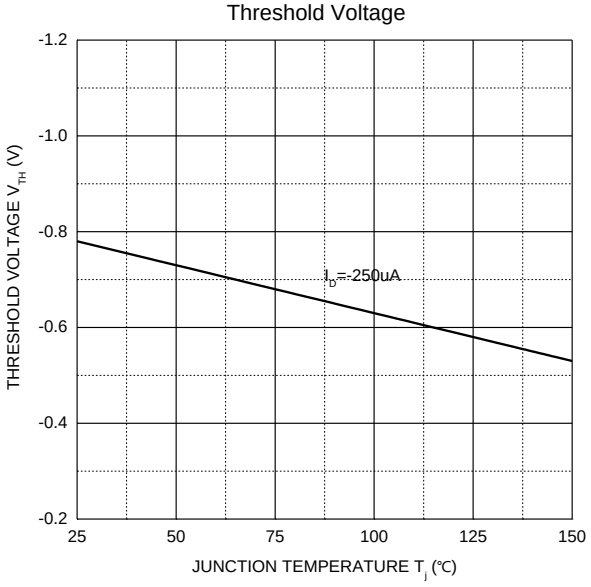
$R_{DS(ON)}$ - V_{GS}

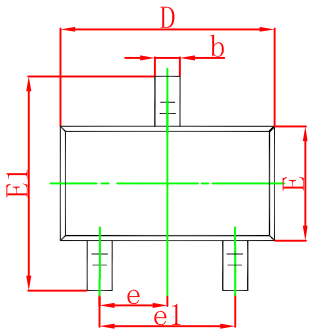


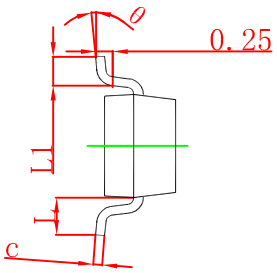
I_S - V_{SD}

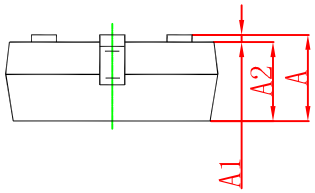


Threshold Voltage



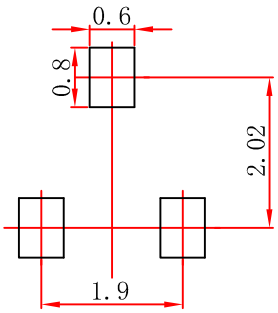






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.