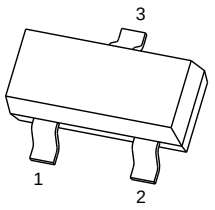
TKMP2305A

20V P-Channel MOSFET

Product Summary

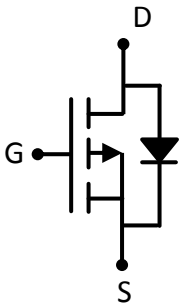
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	32mΩ@-4.5V	-4.1A
	42mΩ@-2.5V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Schematic diagram



Feature

TrenchFET Power MOSFET

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

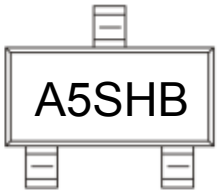
Application

DC/DC Converter

Load Switch for Portable Devices

Battery Switch

MARKING:



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	-4.1	A
Pulsed Drain Current (t=300μs)	I_{DM}	-16	A
Power Dissipation	P_D	1.0	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	-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} =±12V, V_{DS}= 0V			±100	nA
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 =-4.1A		32	42	mΩ
		V_{GS} =-2.5V, I_D =-3.0A		42	60	
Dynamic characteristics[b,c]						
Input Capacitance	C_{iss}	V_{DS} =-10V,V_{GS} =0V,f =1MHz		830		pF
Output Capacitance	C_{oss}			132		
Reverse Transfer Capacitance	C_{rss}			85		
Total Gate Charge	Q_g	V_{DS} =-10V,V_{GS} =-4.5V,I_D=-2.0A		8.8		nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			1.9		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-10V,V_{GEN}=-4.5V,I_D=-3.3A R_L=1.0Ω,R_{GEN}=1Ω		10		ns
Turn-on rise time	t_r			32		
Turn-off delay time	$t_{d(off)}$			50		
Turn-off fall time	t_f			51		
Source-Drain Diode characteristics						
Diode forward current	I_S	T_C=25℃			-4.1	A
Diode pulsed forward current[a]	I_{SM}				-16	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=-4.1A			-1.2	V

Note :

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

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

c. These parameters have no way to verify.

Typical Performance Characteristics

Figure1: Output Characteristics

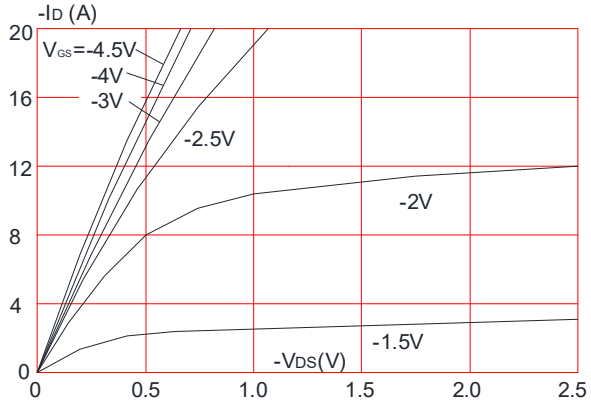


Figure 2: Typical Transfer Characteristics

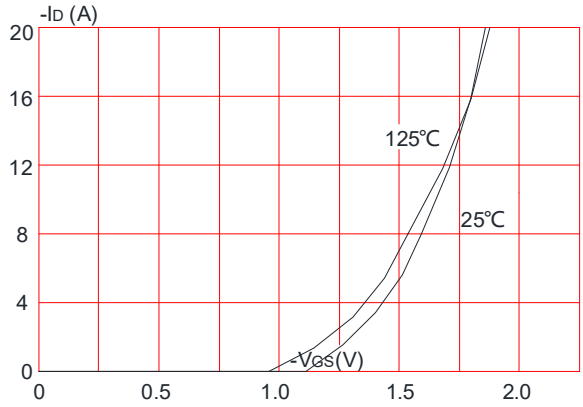


Figure 3: On-resistance vs. Drain Current

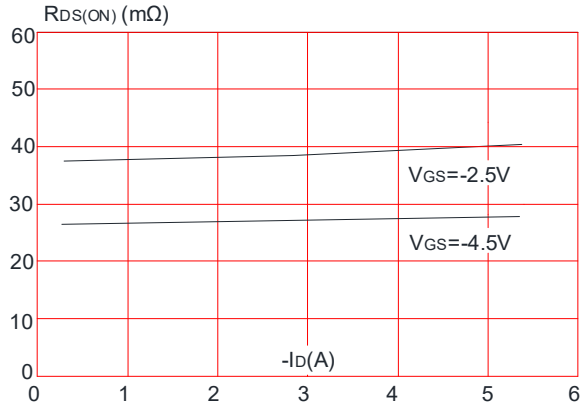


Figure 4: Body Diode Characteristics

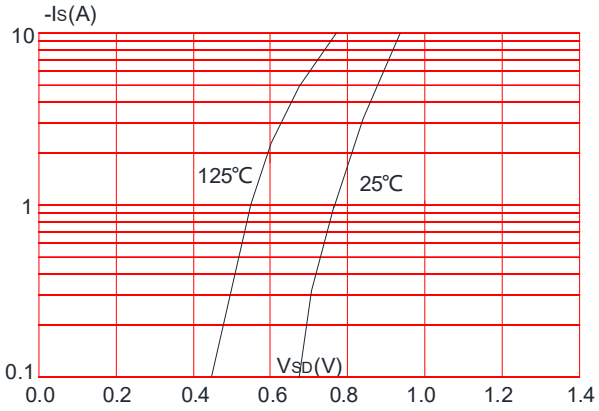


Figure 5: Gate Charge Characteristics

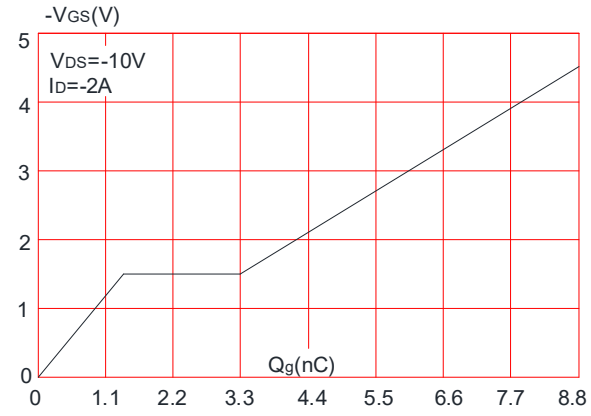


Figure 6: Capacitance Characteristics

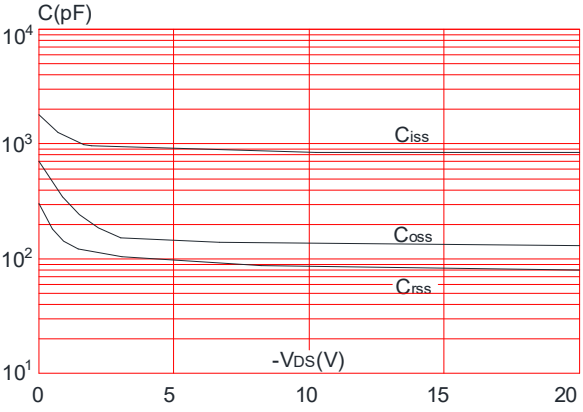


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

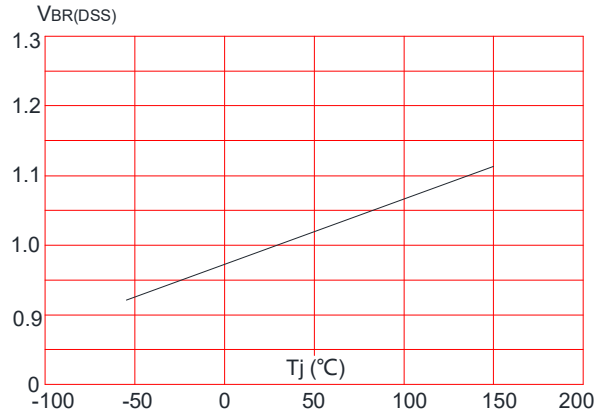


Figure 8: Normalized on Resistance vs. Junction Temperature

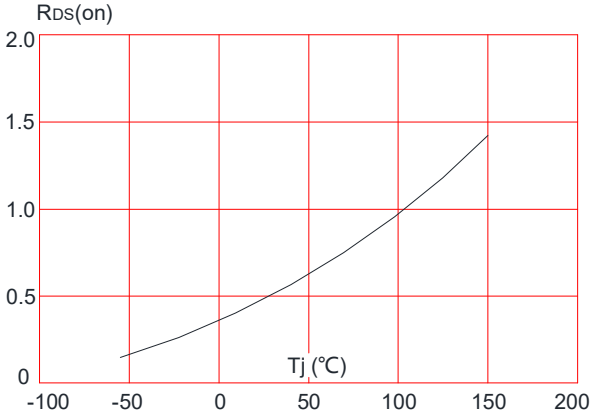


Figure 9: Maximum Safe Operating Area

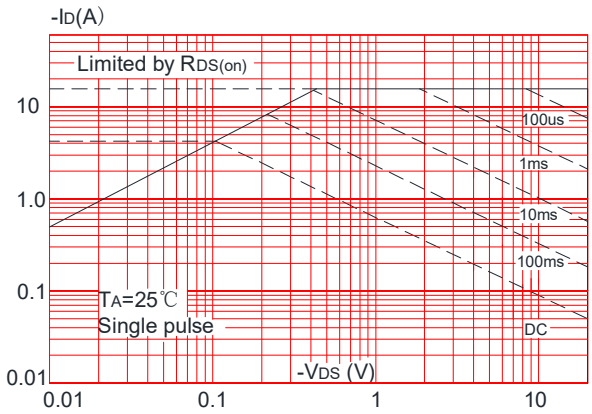


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

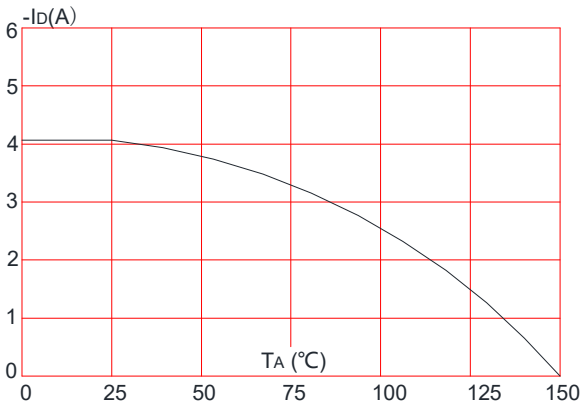
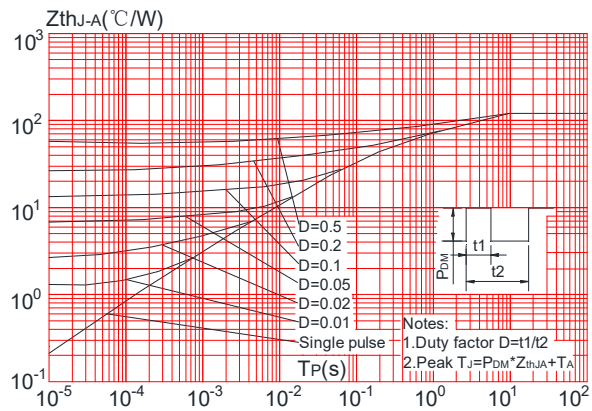
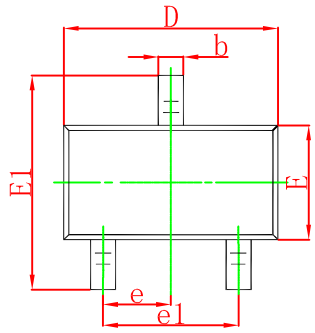
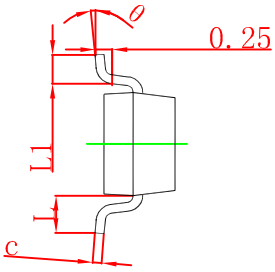
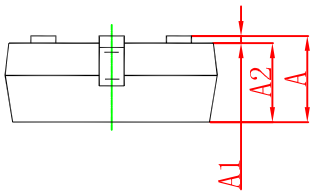


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



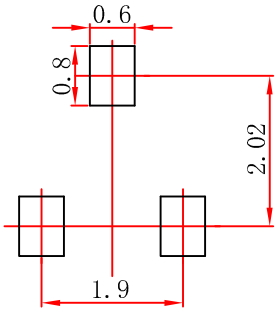






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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.