KMA2D4P20SA

P-Ch Trench MOSFET

General Description

It's mainly suitable for use as a load switch in battery powered applications.

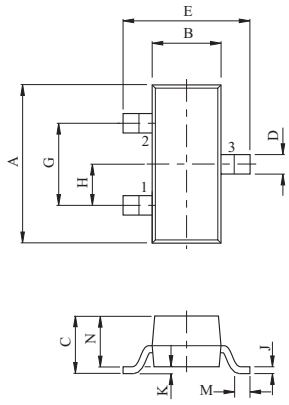
FEATURES

· V_{DSS}=-20V, I_D=-2.4A.

· Drain-Source ON Resistance.

: $R_{DS(ON)}$=100mΩ(Max.) @ V_{GS}=-4.5V.

: $R_{DS(ON)}$=175mΩ(Max.) @ V_{GS}=-2.5V.



DIM	MILLIMETERS
A	2.926±0.05
B	1.626±0.05
C	1.25 MAX
D	0.40±0.05
E	2.80±0.15
G	1.90±0.10
H	0.95±0.05
J	0.15±0.05
K	0.00 ~ 0.10
M	0.45±0.08
N	1.10±0.05

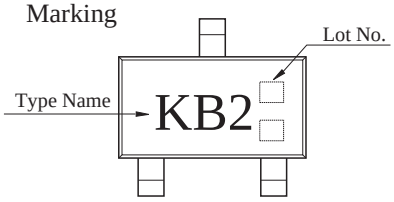
SOT-23

MAXIMUM RATING (Ta=25℃)

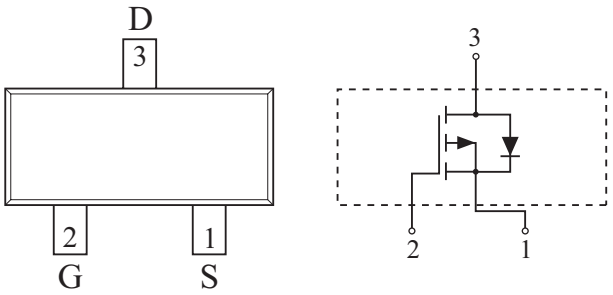
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current	DC@Ta=25℃	I_D*	-2.4	A
	Pulsed	I_{DP}*	-9	
Source-Drain Diode Current		I_S*	-0.9	A
Drain Power Dissipation	Ta=25℃	P_D*	1.25	W
	Ta=100℃		0.6	
Maximum Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55~150	℃
Thermal Resistance, Junction to Ambient		R_{thJA}*	100	℃/W

* : Surface Mounted on 1"×1" FR4 Board, t≤5sec.

Marking



PIN CONNECTION (TOP VIEW)



ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250㎂	-20	-	-	V
Drain Cut-off Current	I_{DSS}	V_{GS}=0V, V_{DS}=-20V	-	-	-1	㎂
		V_{GS}=0V, V_{DS}=-16V, Tj=70℃	-	-	-5	
Gate Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	V_{th}*	V_{DS}=V_{GS}, I_D=-250㎂	-0.6	-	-	V
Drain-Source ON Resistance	$R_{DS(ON)}$*	V_{GS}=-4.5V, I_D=-2.4A	-	83	100	mΩ
		V_{GS}=-2.5V, I_D=-1.8A	-	145	175	
ON State Drain Current	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS}=-5V	-9	-	-	A
Forward Transconductance	g_{fs}*	V_{DS}=-5V, I_D=-2.4A	-	4	-	S
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=-15V, f=1MHz, V_{GS}=0V	-	292	-	pF
Output Capacitance	C_{oss}		-	60	-	
Reverse Transfer Capacitance	C_{rss}		-	33	-	
Total Gate Charge	Q_g*	V_{DS}=-15V, R_D=5.6Ω, V_{GS}=-4.5V	-	4	-	nC
Gate-Source Charge	Q_{gs}*		-	0.6	-	
Gate-Drain Charge	Q_{gd}*		-	1.4	-	
Turn-on Delay time	$t_{d(on)}$*	V_{DD}=-15V, V_{GS}=-4.5V, I_D=-2.4A, R_G=6Ω	-	6.5	-	ns
Turn-on Rise time	t_r*		-	13	-	
Turn-off Delay time	$t_{d(off)}$*		-	15	-	
Turn-off Fall time	t_f*		-	20	-	
Source-Drain Diode Ratings						
Source-Drain Forward Voltage	V_{SDF}*	V_{GS}=0V, I_S=-2.4A	-	-	-1.3	V
Note>* Pulse Test : Pulse width <300㎲, Duty cycle < 2%						

Fig1. I_D - V_{DS}

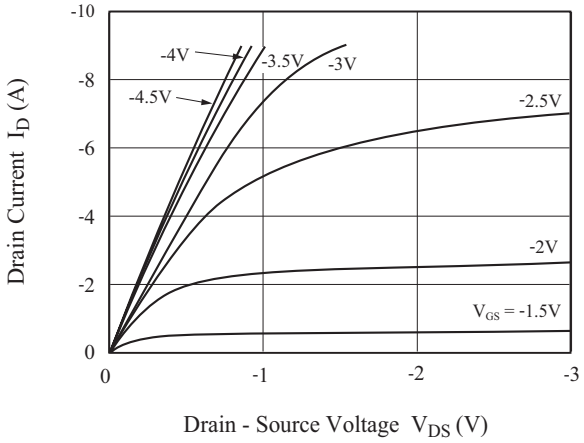


Fig2. $R_{DS(ON)}$ - I_D

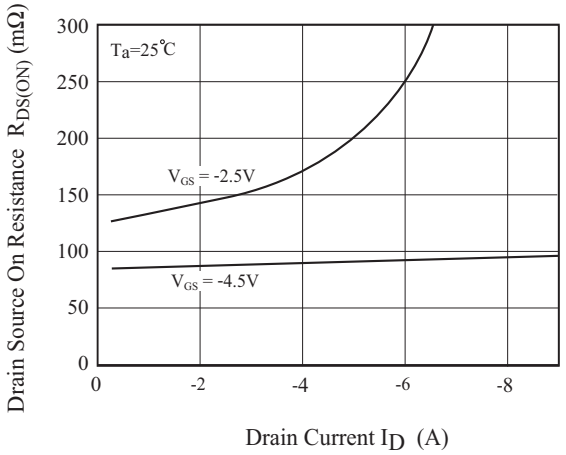


Fig3. I_D - V_{GS}

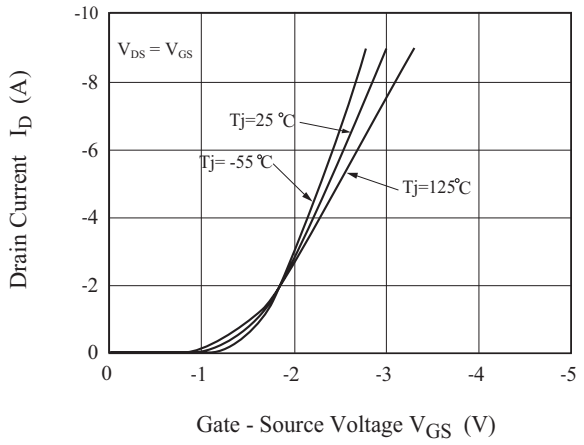


Fig4. $R_{DS(ON)}$ - T_j

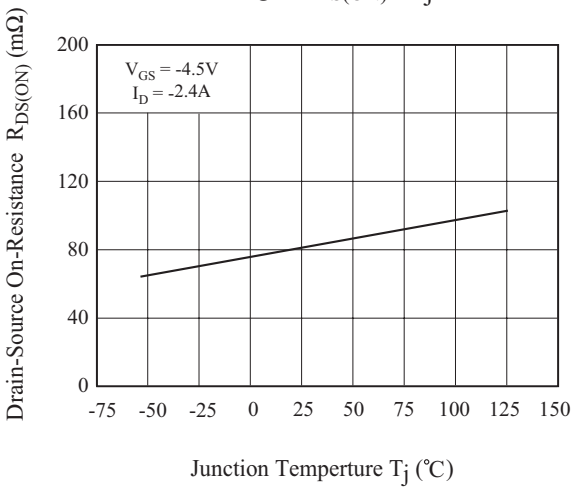


Fig5. V_{th} - T_j

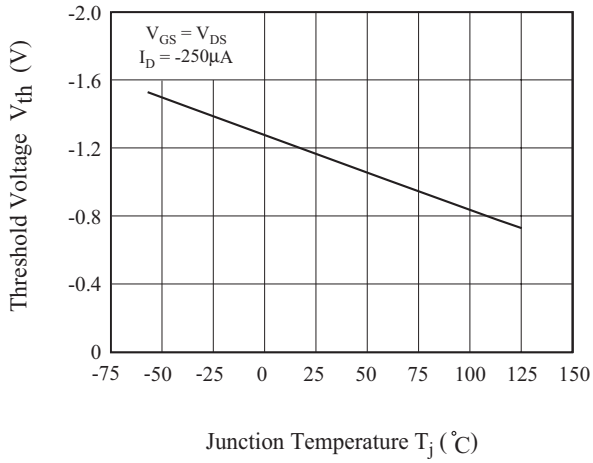


Fig6. I_S - V_{SDF}

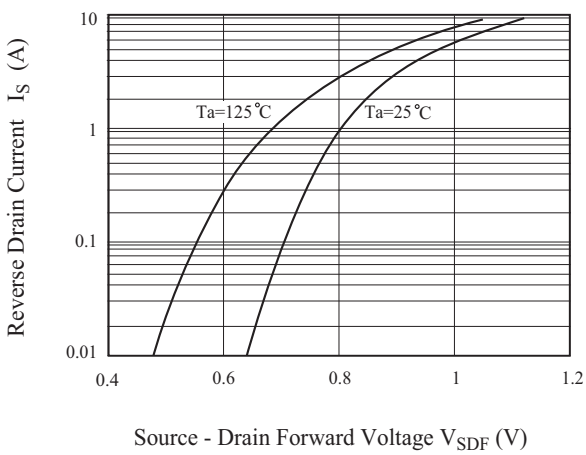


Fig7. Q_g - V_{GS}

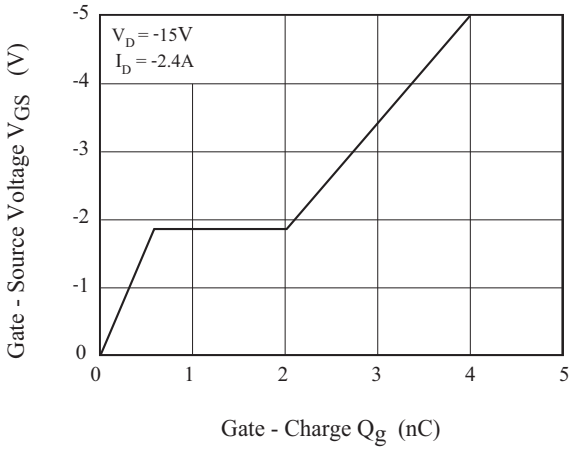


Fig8. C - V_{DS}

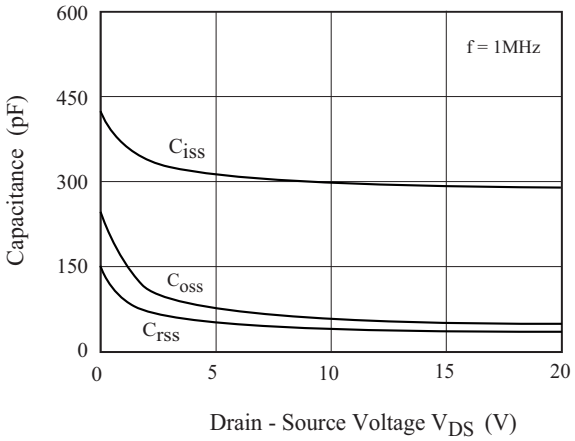


Fig9. Safe Operation Area

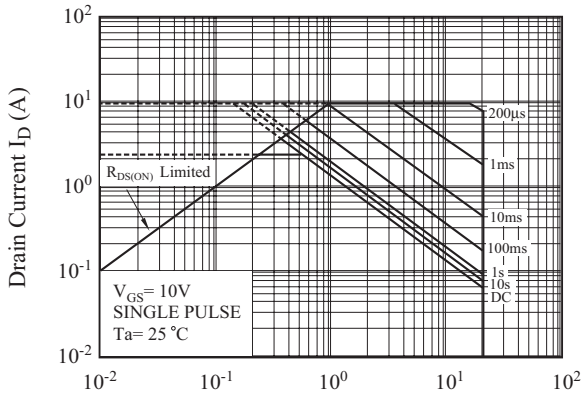


Fig10. Transient Thermal Response Curve

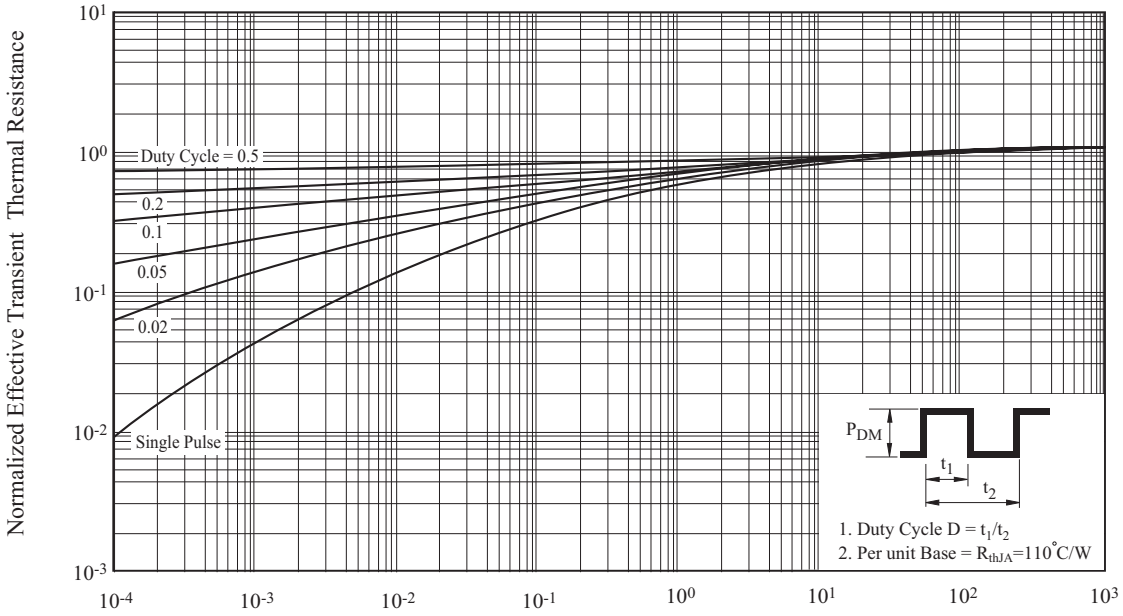


Fig. 1 Gate Charge

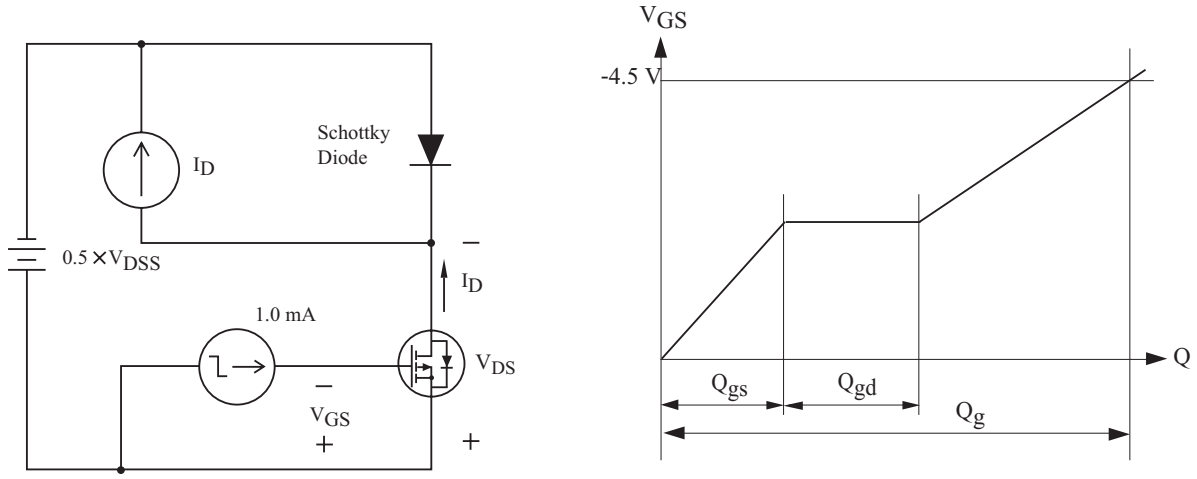


Fig. 2 Resistive Load Switching