

### General Description

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

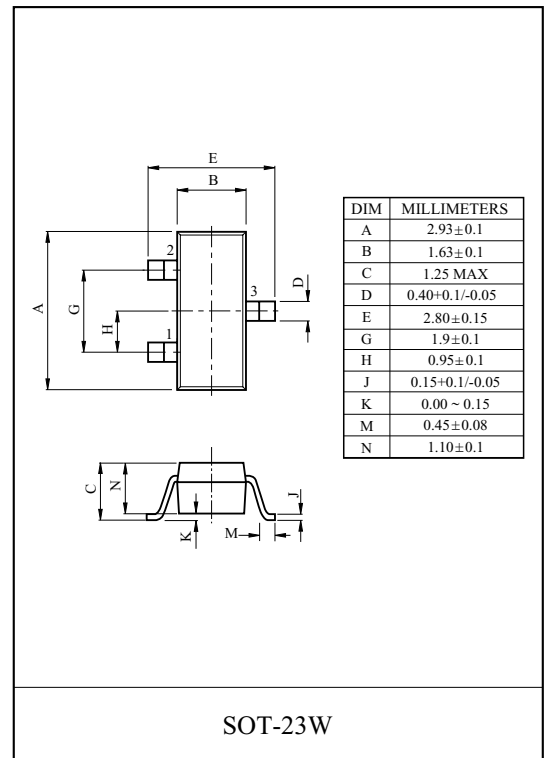
### FEATURES

- $V_{DSS} = -20V$ ,  $I_D = -2.3A$ .
- Drain-Source ON Resistance.
  - :  $R_{DS(ON)} = 130m\ \Omega$  (Max.) @  $V_{GS} = -4.5V$ .
  - :  $R_{DS(ON)} = 190m\ \Omega$  (Max.) @  $V_{GS} = -2.5V$ .

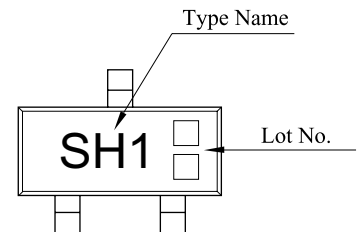
### MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	-20	V
Gate-Source Voltage		$V_{GSS}$	$\pm 10$	V
Drain Current	DC	$I_D^*$	-2.3	A
	Pulsed (Note1)	$I_{DP}^*$	-8	
Source-Drain Diode Current		$I_S^*$	-1.25	A
Drain Power Dissipation	Ta=25 °C	$P_D^*$	1.25	W
Maximum Junction Temperature		$T_j$	150	°C
Storage Temperature Range		$T_{stg}$	-55 ~ 150	°C
Thermal Resistance, Junction to Ambient		$R_{thJA}^*$	100	°C/W

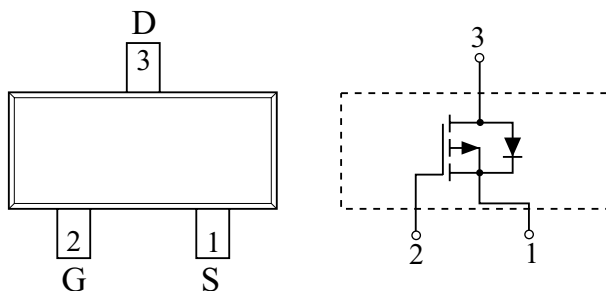
\* : Surface Mounted on 1" × 1" FR4 Board



### Marking



### PIN CONNECTION (TOP VIEW)



# KMA2D3P20S

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=-250\mu A, V_{GS}=0V,$	-20	-	-	V
Drain Cut-off Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=-16V$	-	-	-1	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{th}$	$V_{DS}=V_{GS}, I_D=-250\mu A$ (Note 1)	-0.5	-0.8	-1.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-2.3A$ (Note 1)	-	115	130	m $\Omega$
		$V_{GS}=-2.5V, I_D=-1.0A$ (Note 1)	-	175	190	
ON State Drain Current	$I_{D(ON)}$	$V_{GS}=-4.5V, V_{DS}=-5V$ (Note 1)	-5	-	-	A
Forward Transconductance	$g_{fs}$	$V_{DS}=-5V, I_D=-2.3A$ (Note 1)	-	6	-	S
Source-Drain Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1.25A$ (Note 1)	-	-0.85	-1.2	V
<b>Dynamic (Note 2)</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-10V, I_D=-2.3A$ $V_{GS}=-4.5V$ (Fig.1)	-	3.2	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.7	-	
Gate-Drain Charge	$Q_{gd}$		-	0.8	-	
Turn-on Delay time	$t_{d(on)}$	$V_{DS}=-10V, I_D=-1A$ $V_{GS}=-4.5V, R_G=6\Omega$ (Fig.2)	-	9.8	-	ns
Turn-on Rise time	$t_r$		-	10.8	-	
Turn-off Delay time	$t_{d(off)}$		-	79.1	-	
Turn-off Fall time	$t_f$		-	41.3	-	
Input Capacitance	$C_{iss}$	$V_{DS}=-20V, V_{GS}=0V$ $f = 1.0MHz$	-	290	-	pF
Output Capacitance	$C_{oss}$		-	60	-	
Reverse Transfer Capacitance	$C_{rss}$		-	45	-	

Note 1) Pulse test : Pulse width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

Note 2) Guaranteed by design. Not subject to production testing.

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Fig1.  $I_D - V_{DS}$

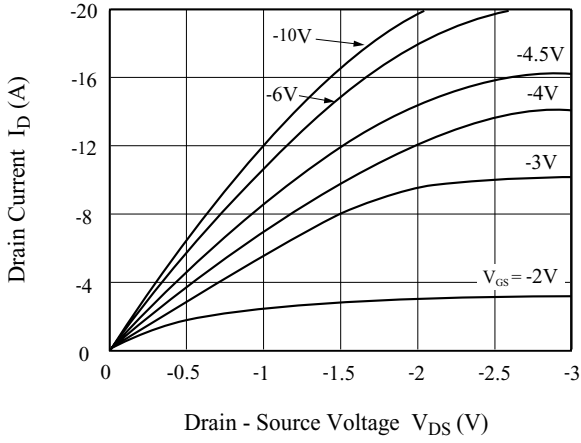


Fig2.  $I_D - V_{GS}$

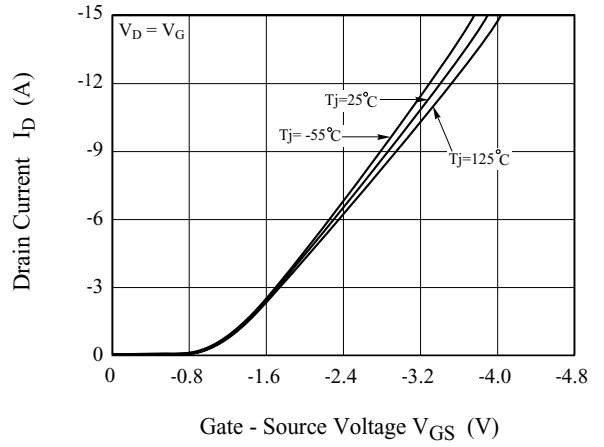


Fig3.  $V_{th} - T_j$

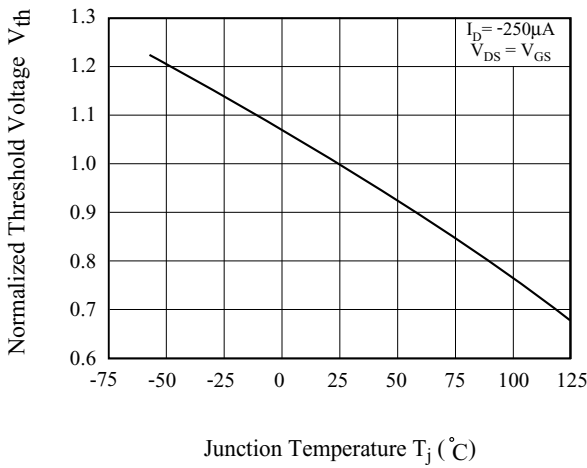


Fig4.  $I_S - V_{SD}$

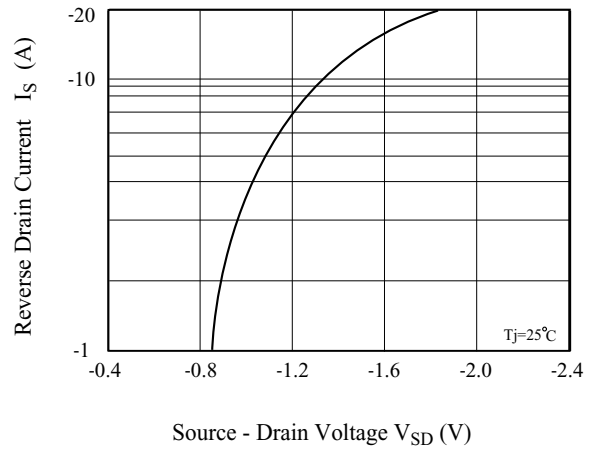


Fig5.  $R_{DS(ON)} - T_j$

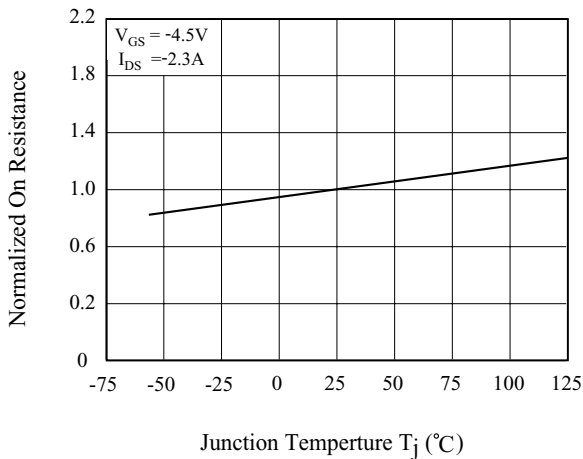
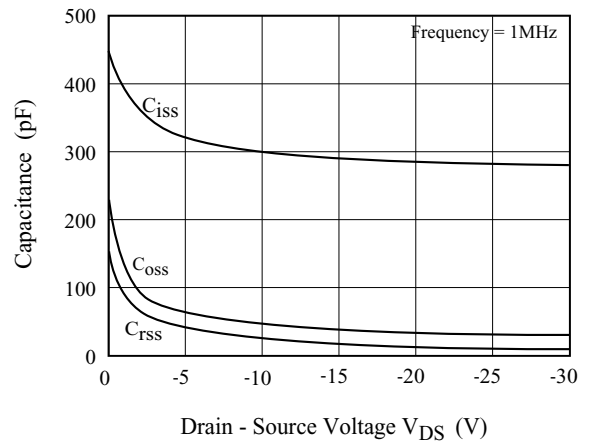


Fig6.  $C - V_{DS}$



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Fig7.  $Q_g - V_{GS}$

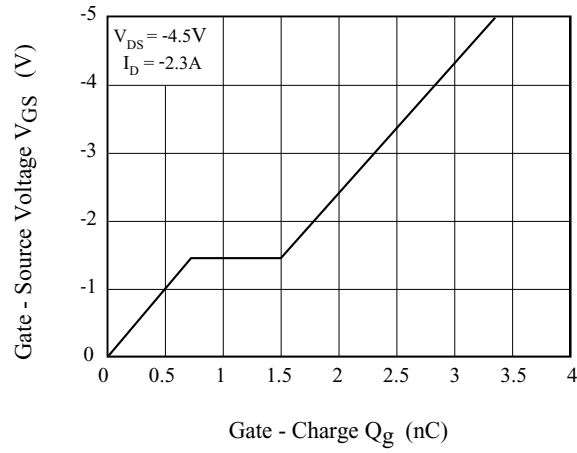


Fig8. Safe Operation Area

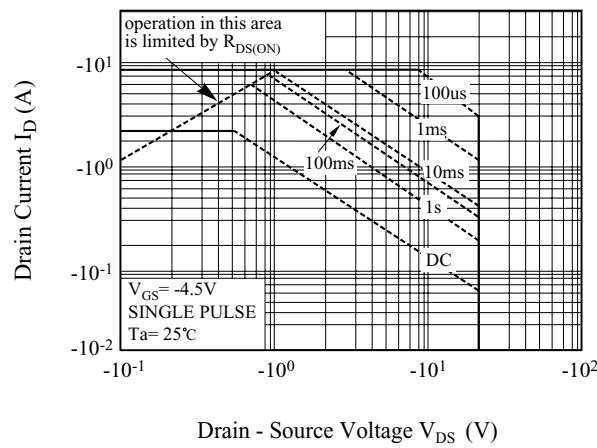


Fig9. Transient Thermal Response Curve

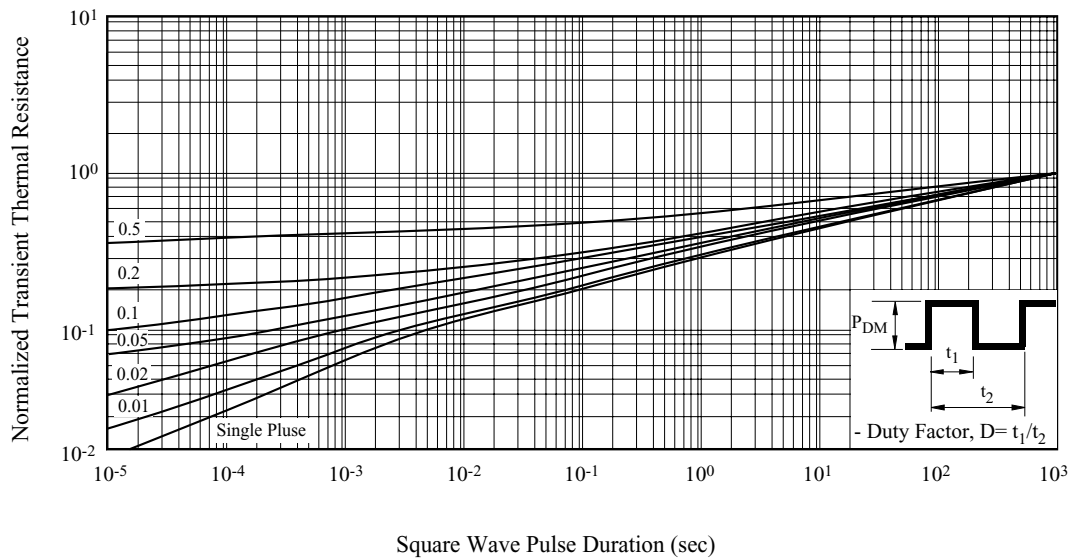


Fig10. Gate Charge

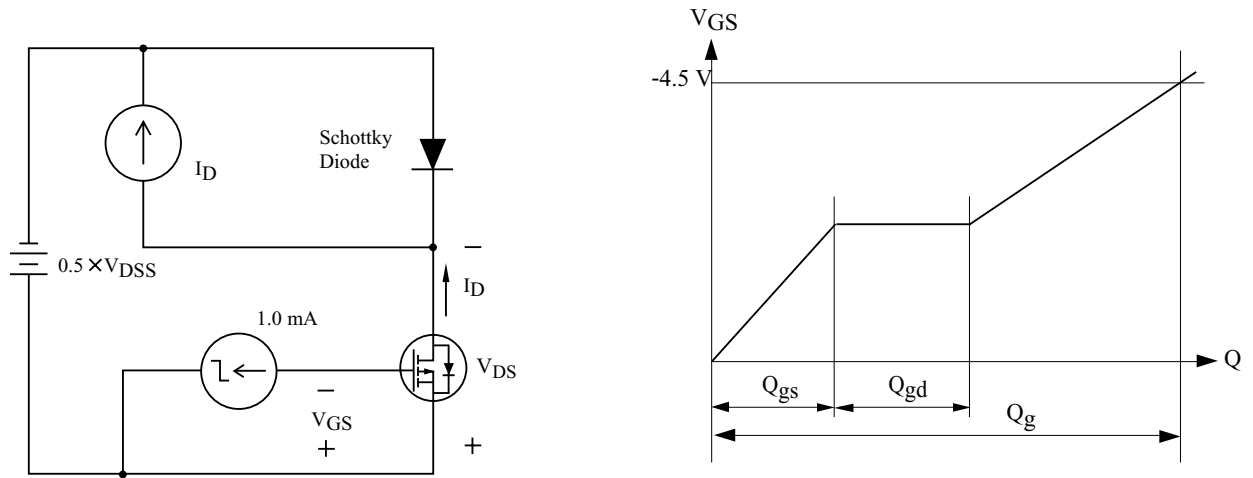


Fig11. Resistive Load Switching

