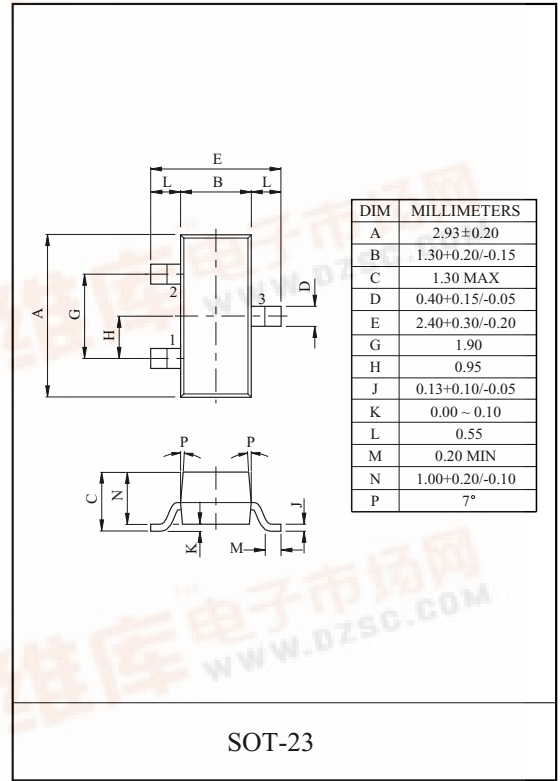


General Description

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for portable equipment and SMPS.

FEATURES

- $V_{DSS}=20V$ ,  $I_D=3A$
- Drain-Source ON Resistance  
 $R_{DS(ON)}=60m\ \Omega$  (Max.) @  $V_{GS}=4.5V$   
 $R_{DS(ON)}=120m\ \Omega$  (Max.) @  $V_{GS}=2.5V$
- Super Hige Dense Cell Design

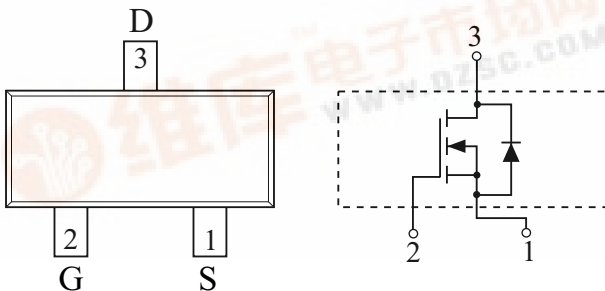


MAXIMUM RATING (Ta=25 °C)

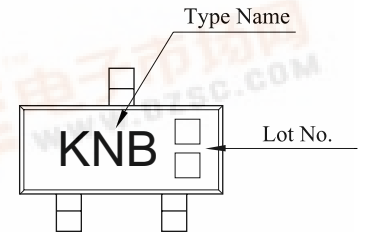
CHARACTERISTIC		SYMBOL	N-Ch	UNIT
Drain-Source Voltage		$V_{DSS}$	20	V
Gate-Source Voltage		$V_{GSS}$	±10	V
Drain Current	DC	$I_D$	3	A
	Pulsed	$I_{DP}$	12	
Drain-Source-Diode Forward Current		$I_S$	1.25	A
Drain Power Dissipation	$T_A=25\ ^\circ C$	$P_D$	1.25	W
	$T_A=70\ ^\circ C$		0.8	
Maximum Junction Temperature		$T_j$	150	°C
Storage Temperature Range		$T_{stg}$	-55 ~ 150	°C
Thermal Resistance, Junction to Ambient		$R_{thJA}$	100	°C/W

Note : Surface Mounted on FR4 Board,  $t \leq 10sec.$

PIN CONNECTION (TOP VIEW)



Marking



# KMA3D0N20SA

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_{DS}=250\mu A, V_{GS}=0V,$	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	$V_{th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.8	1.5	V
Drain-Source ON Resistance	$R_{DS(ON)}^*$	$V_{GS}=4.5V, I_D=2.5A$	-	50	60	m $\Omega$
		$V_{GS}=2.5V, I_D=1A$	-	90	120	
On-State Drain Current	$I_{D(ON)}^*$	$V_{GS}=4.5V, V_{DS}=5V$	8	-	-	A
Forward Transconductance	$g_{fs}^*$	$V_{DS}=5V, I_D=2.5A$	-	6	-	S
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, f=1MHz,$	-	330	-	pF
Output Capacitance	$C_{oss}$		-	110	-	
Reverse Transfer Capacitance	$C_{rss}$		-	60	-	
Total Gate Charge	$Q_g^*$	$V_{DS}=10V, V_{GS}=4.5V, I_D=2.5A$	-	4.7	-	nC
Gate-Source Charge	$Q_{gs}^*$		-	1.6	-	
Gate-Drain Charge	$Q_{gd}^*$		-	1.3	-	
Turn-On Delay Time	$t_{d(on)}^*$	$V_{DD}=10V, V_{GS}=4.5V$ $I_D=1A, R_G=6\Omega$ (NOTE 1)	-	9.2	-	ns
Turn-On Rise Time	$t_r^*$		-	6.8	-	
Turn-On Delay Time	$t_{d(off)}^*$		-	6.1	-	
Turn-On Fall Time	$t_f^*$		-	8.3	-	
<b>Source-Drain Diode Ratings</b>						
Source-Drain Forward Voltage	$V_{SDF}^*$	$V_{GS}=0V, I_{DR}=1.25A$	-	0.81	1.2	V
NOTE 1) * : Pulse Test : Pulse width <300 $\mu s$ , Duty cycle < 2%						

# KMA3D0N20SA

Fig1.  $I_D - V_{DS}$

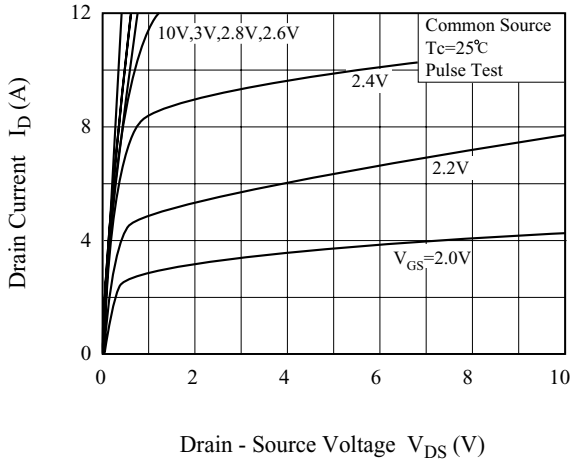


Fig2.  $R_{DS(on)} - I_D$

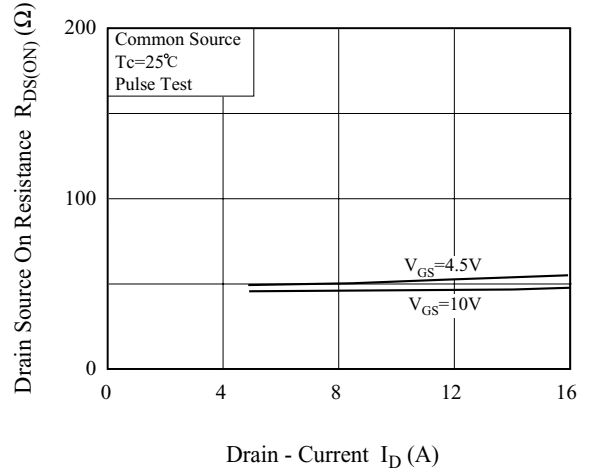


Fig3.  $I_D - V_{GS}$

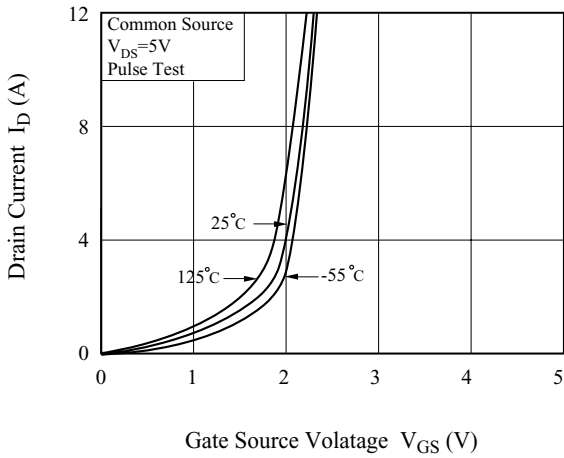


Fig4.  $R_{DS(on)} - T_j$

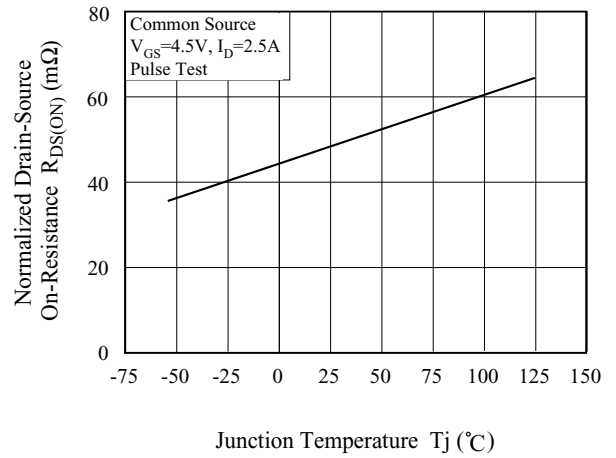


Fig5.  $V_{th} - T_j$

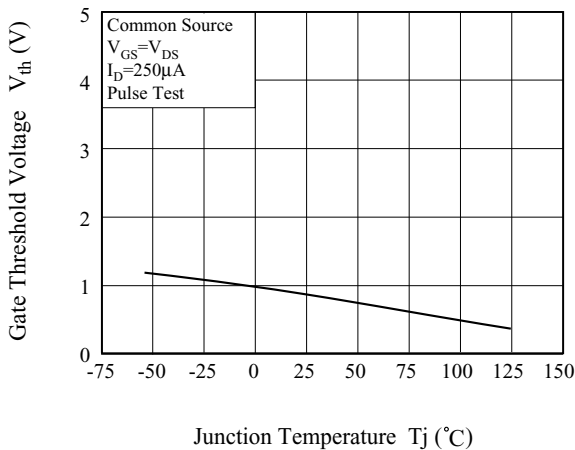
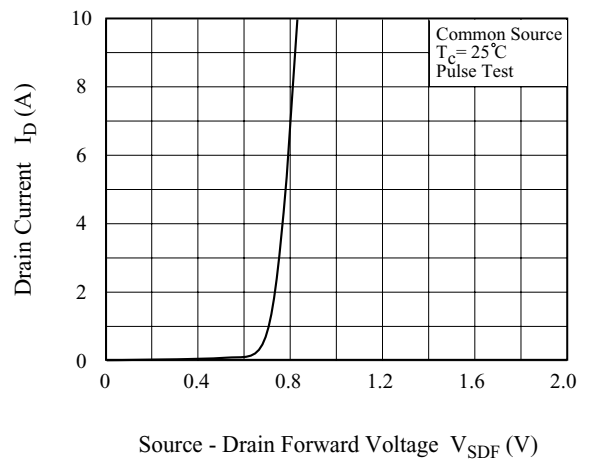


Fig6.  $I_S - V_{SDF}$



# KMA3D0N20SA

Fig7. Transient Thermal Response Curve

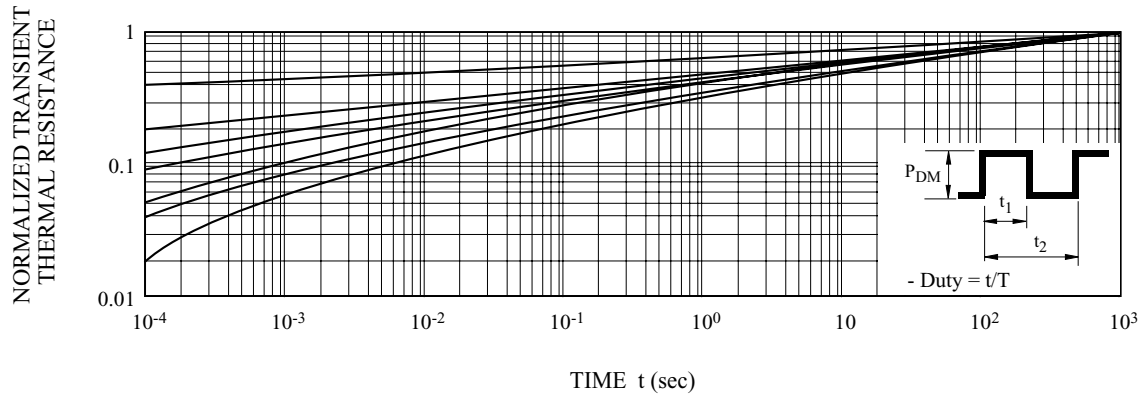
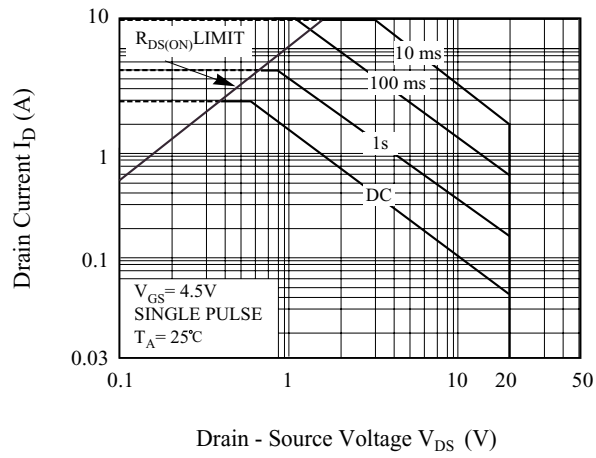


Fig8. Safe Operation Area



# KMA3D0N20SA

Fig9. Gate Charge Circuit and Wave Form

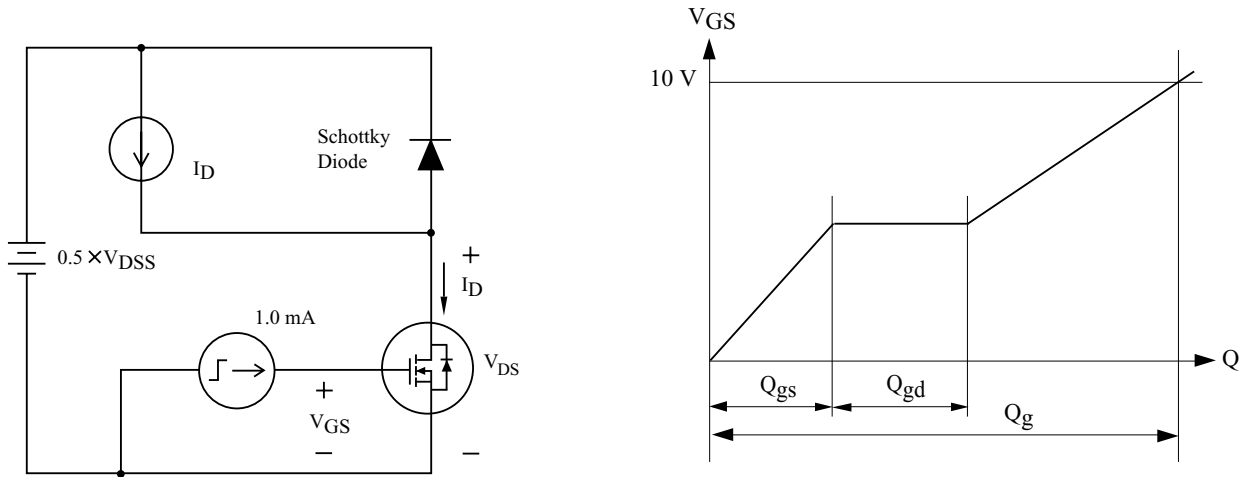


Fig10. Resistive Load Switching

