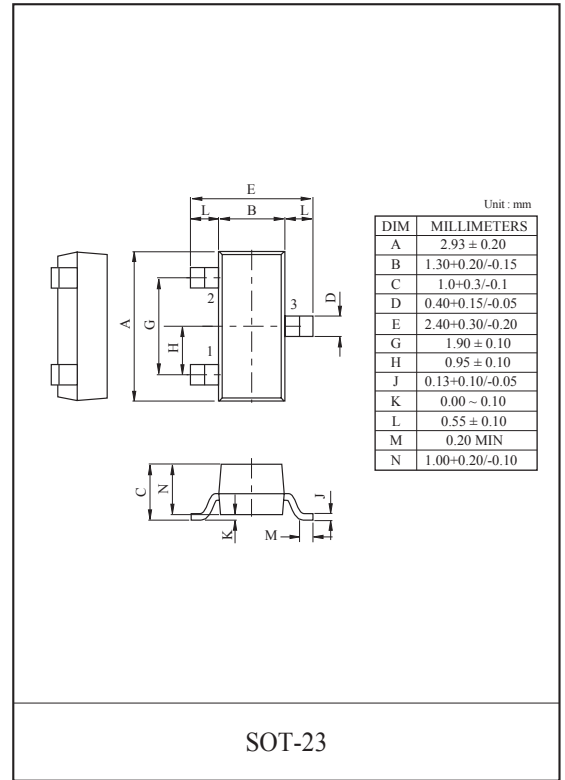


General Description

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.

FEATURES

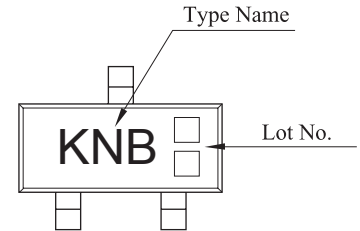
- $V_{DSS}=20V$, $I_D=3A$
- Drain to Source on-state Resistance
 $R_{DS(ON)}=55m\Omega$ (Max.) @ $V_{GS}=4.5V$
 $R_{DS(ON)}=110m\Omega$ (Max.) @ $V_{GS}=2.5V$
- Super Hige Dense Cell Design
- Suffix U : Qualified to AEC-Q101.
 ex) KMA3D0N20SA-RTK/HU



MAXIMUM RATING (Ta=25°C)

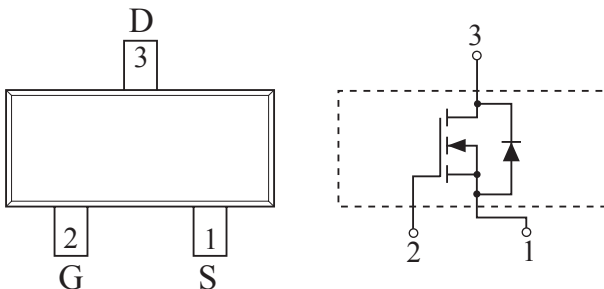
CHARACTERISTIC	SYMBOL	N-Ch	UNIT
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	±12	V
Drain Current	DC@Ta=25°C (Note1)	I_D	3
	Pulsed (Note1)	I_{DP}	12
Drain Power Dissipation	Ta=25°C (Note1)	P_D	1.25
	Ta=70°C (Note1)		0.8
Maximum Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C
Thermal Resistance, Junction to Ambient (Note1)	R_{thJA}	100	°C/W

Marking



Note1) Surface Mounted on 1" x 1" FR4 Board, t ≤ 5sec.

PIN CONNECTION (TOP VIEW)



KMA3D0N20SA

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain to 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	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}= \pm 10V, V_{DS}=0V$	-	-	± 100	nA
Gate to Source Threshold Voltage	V_{th}	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.8	1.5	V
Drain to Source On Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=2.5A$ (Note2)	-	38	55	m Ω
		$V_{GS}=2.5V, I_D=1A$ (Note2)	-	55	110	
On State Drain Current	$I_{D(ON)}$	$V_{GS}=4.5V, V_{DS}=5V$ (Note2)	12	-	-	A
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=2.5A$ (Note2)	-	6	-	S
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	-	280	-	pF
Output Capacitance	C_{oss}		-	64	-	
Reverse Transfer Capacitance	C_{rss}		-	34	-	
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=2.5A$ (Note2)	-	4.0	-	nC
Gate to Source Charge	Q_{gs}		-	0.9	-	
Gate to Drain Charge	Q_{gd}		-	0.9	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V, I_D=1A, R_G=6\Omega$ (Note2)	-	6.3	-	ns
Turn-On Rise Time	t_r		-	7.0	-	
Turn-Off Delay Time	$t_{d(off)}$		-	7.3	-	
Turn-Off Fall Time	t_f		-	6.2	-	
Source-Drain Diode Ratings						
Continuous Source Current	I_S	-	-	-	3.0	A
Pulsed Source Current	I_{SP}	-	-	-	12	A
Source to Drain Forward Voltage	V_{SDF}	$V_{GS}=0V, I_S=1.25A$	-	-	1.2	V
NOTE 2) Pulse Test : Pulse width <300 μs , Duty cycle < 2%						

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Fig1. $I_D - V_{DS}$

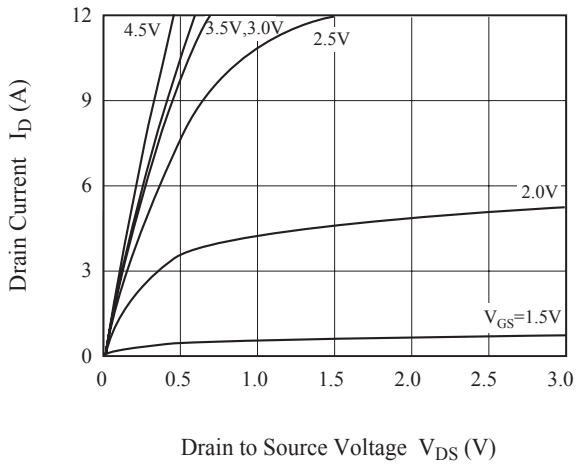


Fig2. $R_{DS(on)} - I_D$

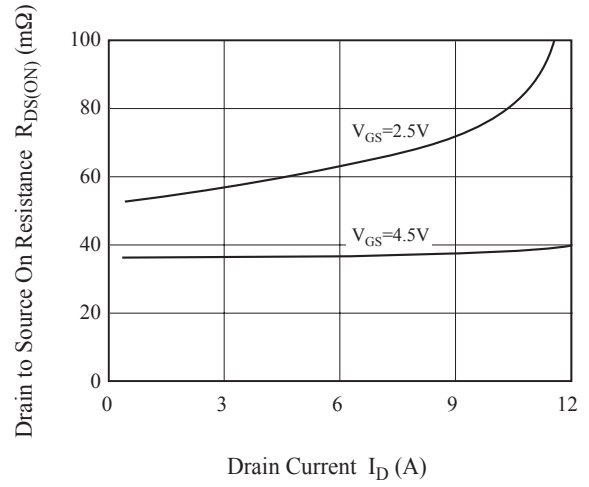


Fig3. $I_D - V_{GS}$

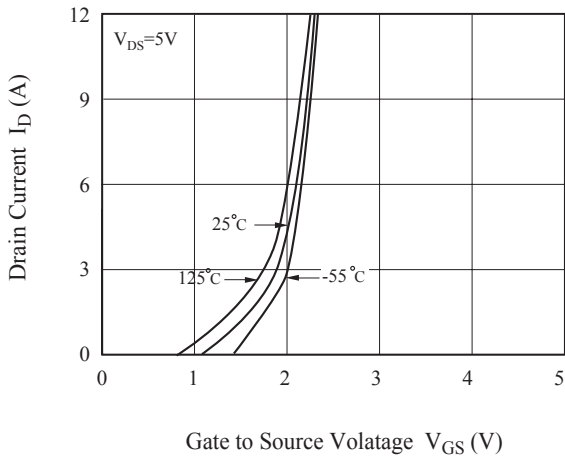


Fig4. $R_{DS(on)} - T_j$

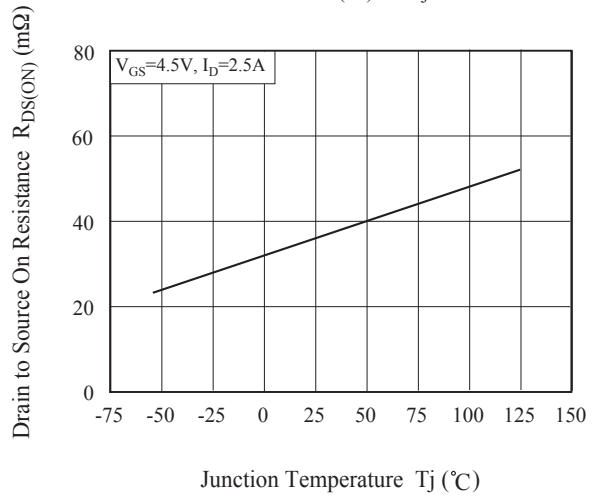


Fig5. $V_{th} - T_j$

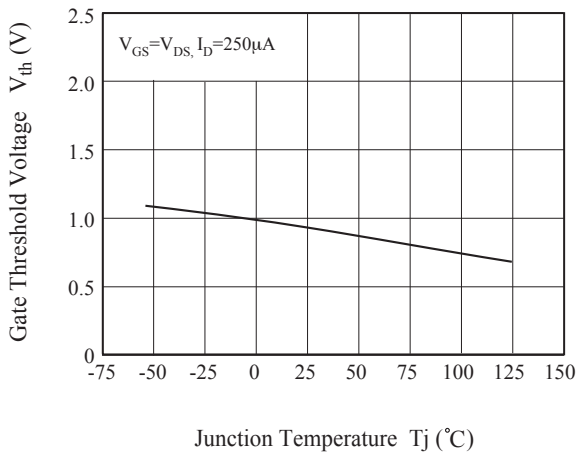
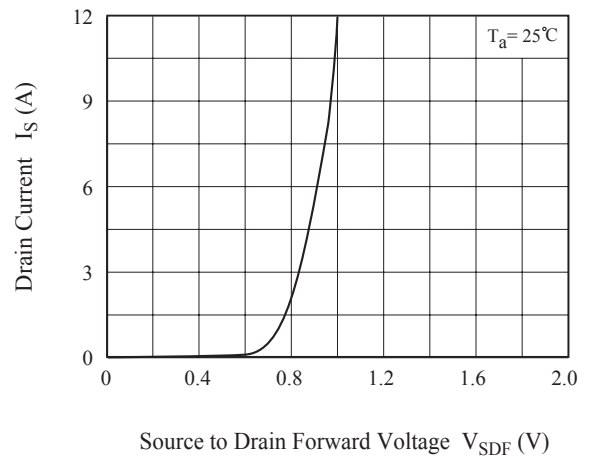


Fig6. $I_S - V_{SDF}$



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Fig7. C - V_{DS}

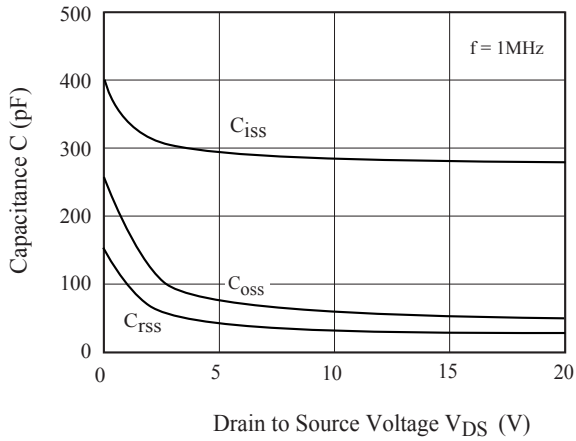


Fig8. Q_g - V_{GS}

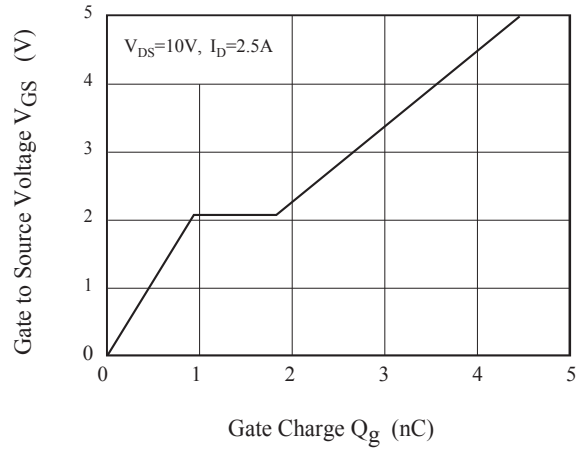


Fig9. Safe Operation Area

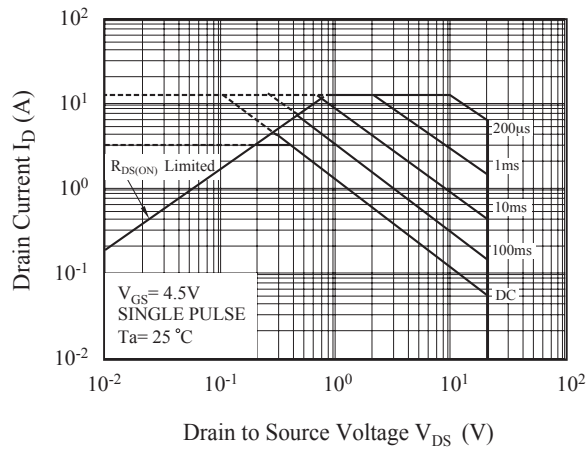


Fig10. Transient Thermal Response Curve

