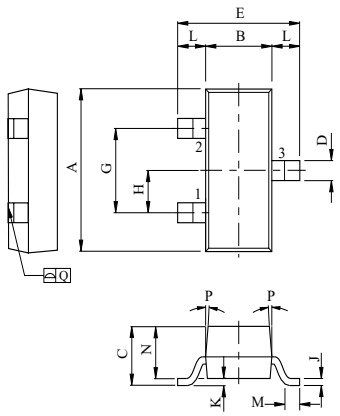
General Description

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 Load switch and Back-Light Inverter.



DIM	MILLIMETERS
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.40+0.15/-0.05
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00 ~ 0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°
Q	0.1 MAX

SOT-23

FEATURES

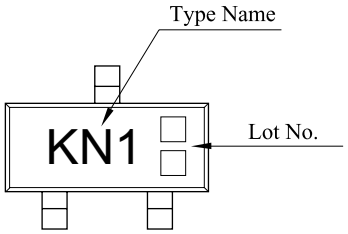
- V_{DSS}=40V, I_D=3.5A
- Drain-Source ON Resistance
  $R_{DS(ON)}$=45mΩ(Max.) @ V_{GS}=10V
  $R_{DS(ON)}$=62mΩ(Max.) @ V_{GS}=4.5V
- Super High Dense Cell Design

MAXIMUM RATING (Ta=25℃)

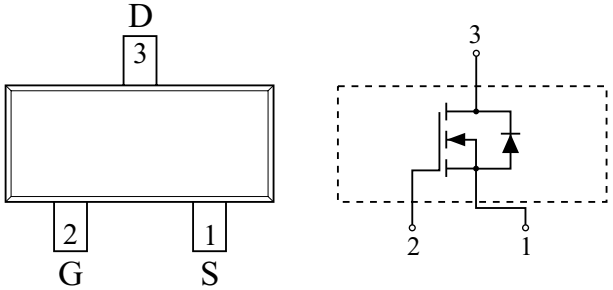
CHARACTERISTIC		SYMBOL	N-Ch	UNIT
Drain-Source Voltage		V_{DSS}	40	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC@Ta=25℃	I_D	3.5	A
	DC@Ta=70℃		2.8	
	Pulsed	I_{DP}	14	
Drain-Source-Diode Forward Current		I_S	1.0	A
Drain Power Dissipation	Ta=25℃	P_D	1.25	W
	Ta=70℃		0.8	
Maximum Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55 150	℃
Thermal Resistance, Junction to Ambient		R_{thJA}	100	℃/W

Note > *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}	I_{DS}=250 μA, V_{GS}=0V,	40	-	-	V
Drain Cut-off Current	I_{DSS}	V_{GS}=0V, V_{DS}=32V	-	-	0.5	μA
		V_{GS}=0V, V_{DS}=32V, Tj=55℃	-	-	10	
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	V_{th}	V_{DS}=V_{GS}, I_D=250 μA	1.0	-	3.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$*	V_{GS}=10V, I_D=3.5A	-	36	45	mΩ
		V_{GS}=4.5V, I_D=3.0A	-	56	62	
On-State Drain Current	$I_{D(ON)}$*	V_{GS}=10V, V_{DS}≥4.5V	6	-	-	A
Forward Transconductance	g_{fs}*	V_{DS}=10V, I_D=3.5A	-	10	-	S
Dynamic						
Input Capaclitance	C_{iss}	V_{DS}=20V, f=1MHz, V_{GS}=0V	-	315	-	pF
Ouput Capacitance	C_{oss}		-	69	-	
Reverse Transfer Capacitance	C_{rss}		-	39	-	
Total Gate Charge	Q_g*	V_{DS}=20V, V_{GS}=0V, I_D=3.5A	-	6.4	10	nC
Gate-Source Charge	Q_{gs}*		-	0.7	-	
Gate-Drain Charge	Q_{gd}*		-	2.1	-	
Turn-On Delat Time	$t_{d(on)}$*	V_{DD}=20V, V_{GS}=10V, I_D=1A, R_G=6Ω	-	5	10	ns
Turn-On Rise Time	t_r*		-	12	20	
Turn-Off Deley Time	$t_{d(off)}$*		-	20	30	
Turn-Off Fall Time	t_f*		-	15	25	
Source-Drain Diode Ratings						
Source-Drain Forward Voltage	V_{SDF}*	V_{GS}=0V, I_S=1A	-	0.8	1.2	V
Note > *Pulse Test : Pulse width <300μs , Duty cycle < 2%						

Fig1. I_D - V_{DS}

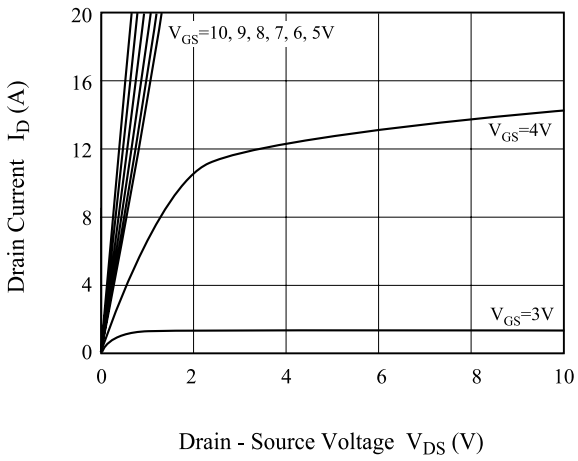


Fig2. $R_{DS(ON)}$ - I_D

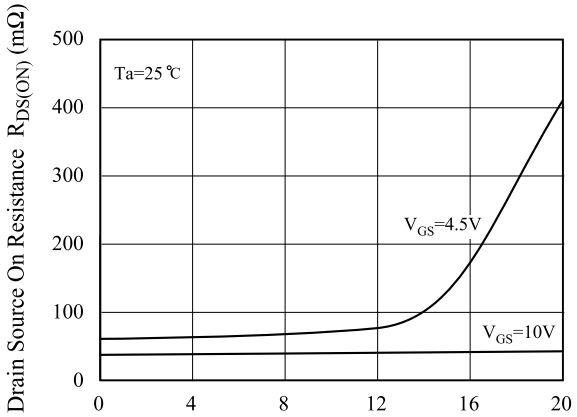


Fig3. I_D - V_{GS}

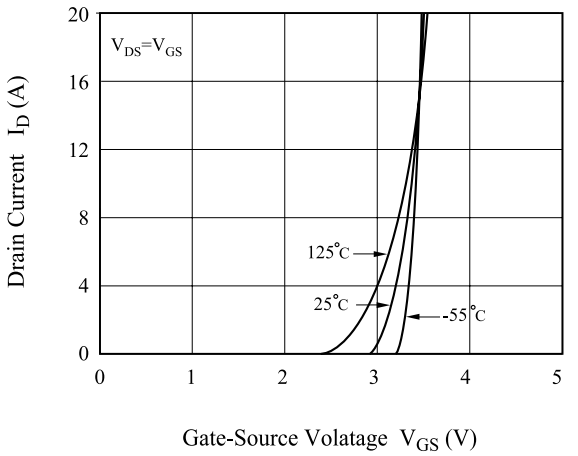


Fig4. $R_{DS(ON)}$ - T_j

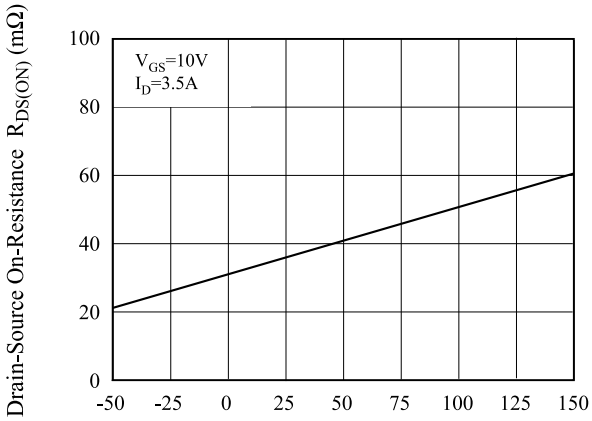


Fig5. V_{th} - T_j

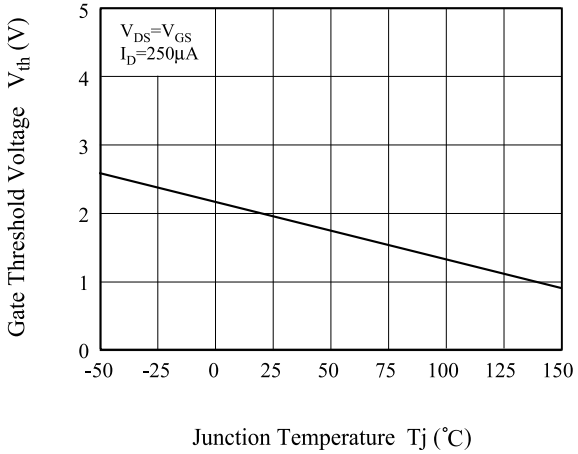


Fig6. I_S-V_{SDF}

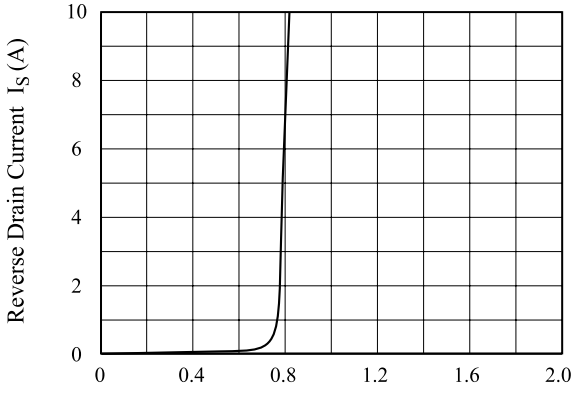


Fig7. V_{GS} - Q_g

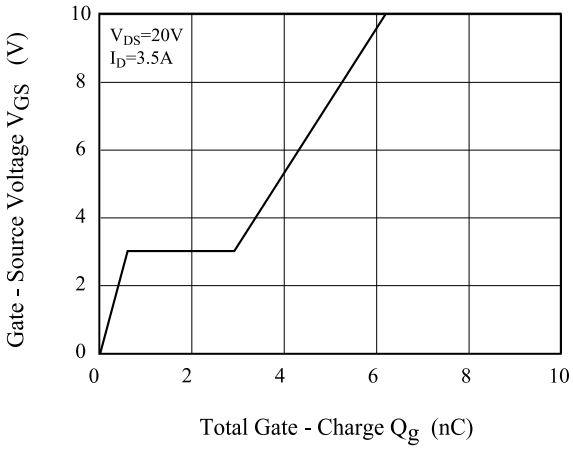


Fig8. C - V_{DS}

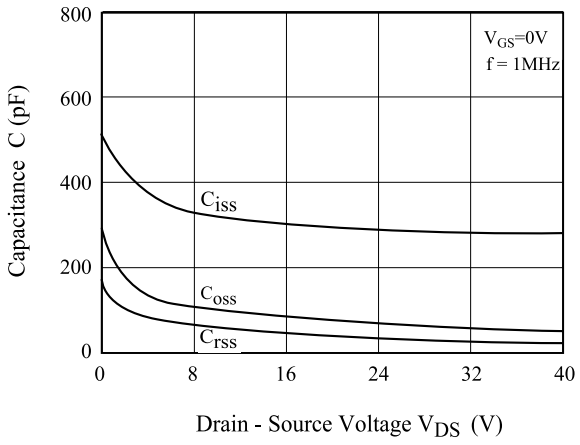


Fig9. Safe Operation Area

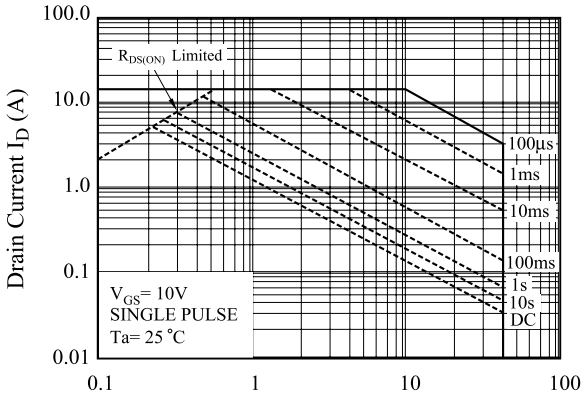


Fig10. Transient Thermal Response Curve

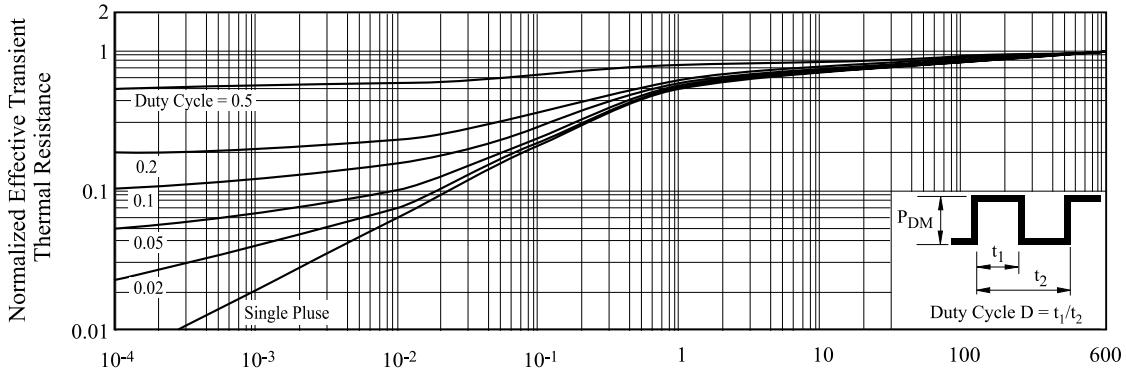
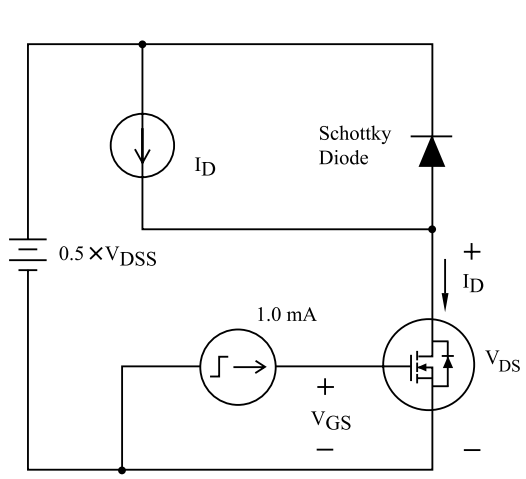


Fig11. Gate Charge Circuit and Wave Form



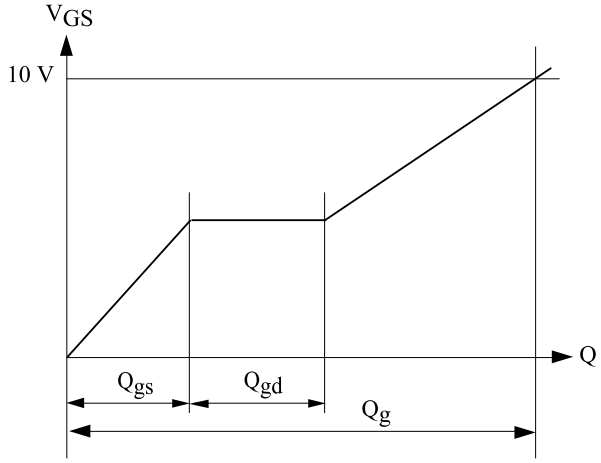


Fig12. Resistive Load Switching