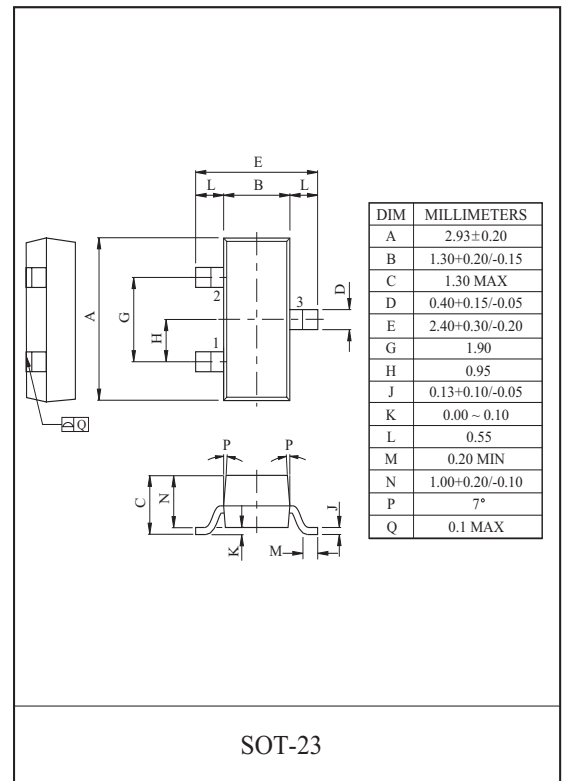


### General Description

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.

### FEATURES

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

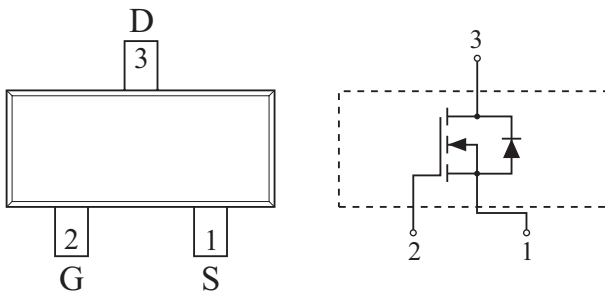


### MAXIMUM RATING (Ta=25°C)

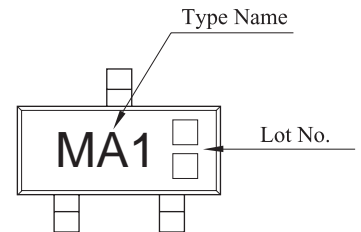
CHARACTERISTIC		SYMBOL	N-Ch	UNIT
Drain-Source Voltage		$V_{DSS}$	40	V
Gate-Source Voltage		$V_{GSS}$	± 20	V
Drain Current	DC@Ta=25°C	$I_D$	3.5	A
	DC@Ta=70°C		2.8	
	Pulsed	$I_{DP}$	14	
Drain-Source-Diode Forward Current		$I_S$	1.0	A
Drain Power Dissipation	Ta=25°C	$P_D$	1.25	W
	Ta=70°C		0.8	
Maximum Junction 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 1"× 1" FR4 Board, t ≤ 5sec

### PIN CONNECTION (TOP VIEW)



### Marking



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## ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_{DS}=250\mu A, V_{GS}=0V,$	40	-	-	V
Drain Cut-off Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=32V$	-	-	0.5	$\mu A$
		$V_{GS}=0V, V_{DS}=32V, T_j=55^\circ C$	-	-	10	
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	-	3.0	V
Drain-Source ON Resistance	$R_{DS(ON)}^*$	$V_{GS}=10V, I_D=3.5A$	-	36	45	m $\Omega$
		$V_{GS}=4.5V, I_D=3.0A$	-	56	62	
On-State Drain Current	$I_{D(ON)}^*$	$V_{GS}=10V, V_{DS} \geq 4.5V$	6	-	-	A
Forward Transconductance	$g_{fs}^*$	$V_{DS}=10V, I_D=3.5A$	-	10	-	S
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz, V_{GS}=0V$	-	315	-	pF
Output Capacitance	$C_{oss}$		-	69	-	
Reverse Transfer Capacitance	$C_{rss}$		-	39	-	
Total Gate Charge	$Q_g^*$	$V_{DS}=20V, V_{GS}=10V, I_D=3.5A$	-	6.4	10	nC
Gate-Source Charge	$Q_{gs}^*$		-	0.7	-	
Gate-Drain Charge	$Q_{gd}^*$		-	2.1	-	
Turn-On Delay Time	$t_{d(on)}^*$	$V_{DD}=20V, V_{GS}=10V$ $I_D=1A, R_G=6\Omega$	-	5	10	ns
Turn-On Rise Time	$t_r^*$		-	12	20	
Turn-Off Delay Time	$t_{d(off)}^*$		-	20	30	
Turn-Off Fall Time	$t_f^*$		-	15	25	
<b>Source-Drain Diode Ratings</b>						
Source-Drain Forward Voltage	$V_{SDF}^*$	$V_{GS}=0V, I_S=1A$	-	0.8	1.2	V
Note > *Pulse Test : Pulse width <300 $\mu s$ , Duty cycle < 2%						

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Fig1.  $I_D - V_{DS}$

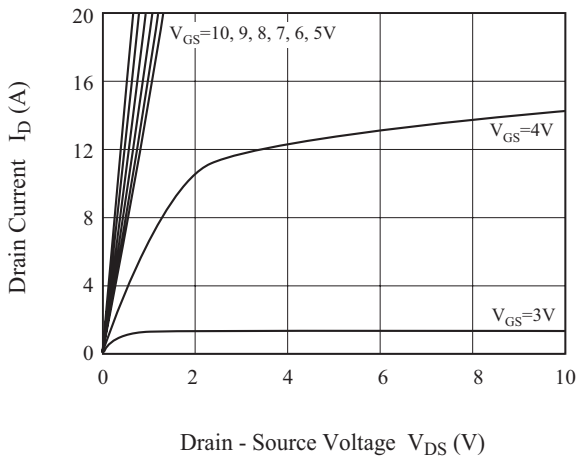


Fig2.  $R_{DS(ON)} - I_D$

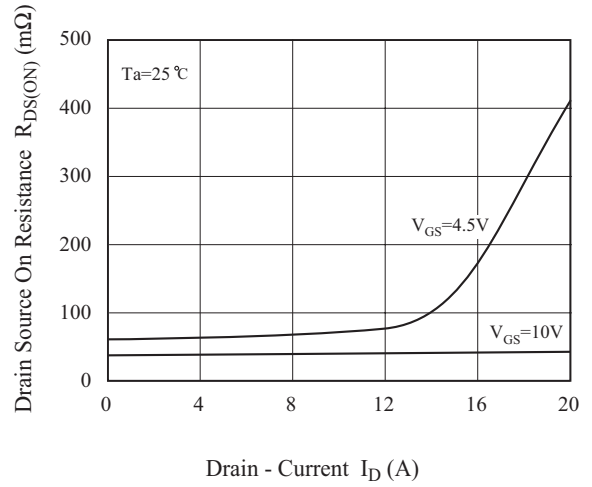


Fig3.  $I_D - V_{GS}$

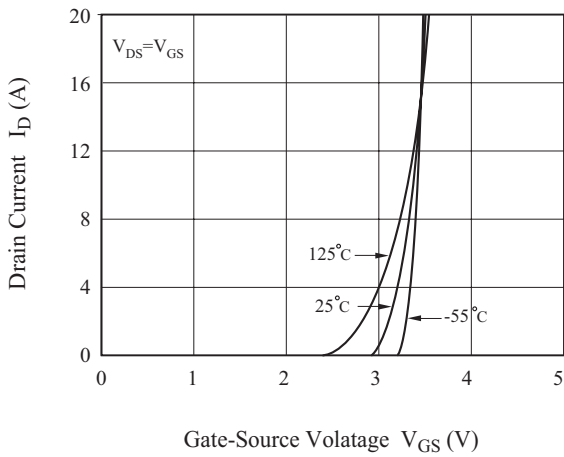


Fig4.  $R_{DS(ON)} - T_j$

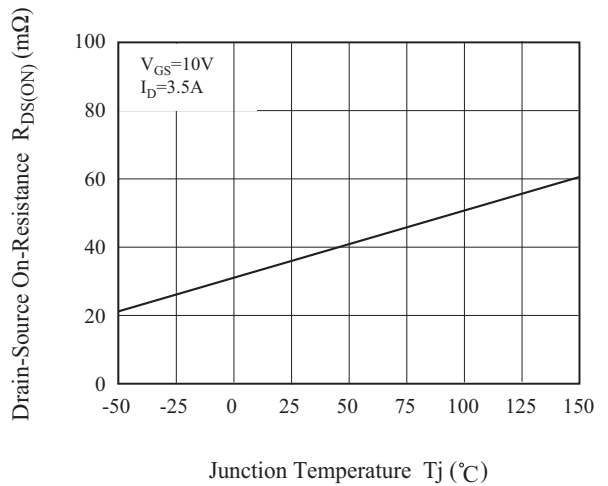


Fig5.  $V_{th} - T_j$

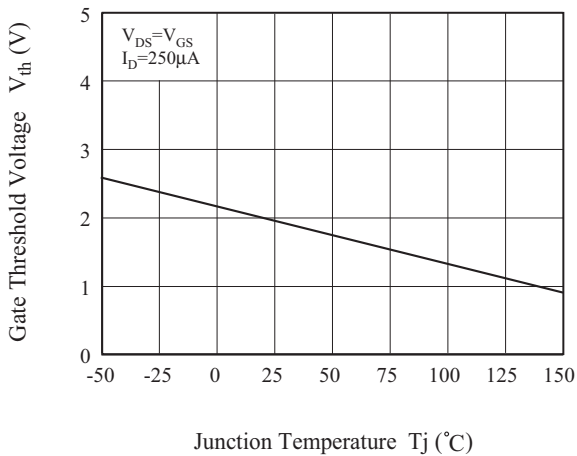
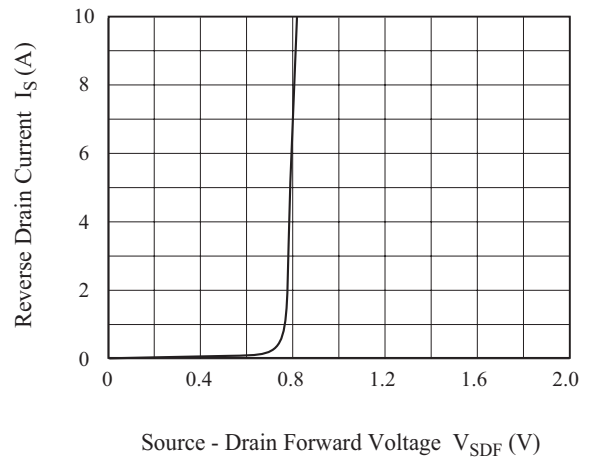


Fig6.  $I_S - V_{SDF}$



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Fig7.  $V_{GS} - Q_g$

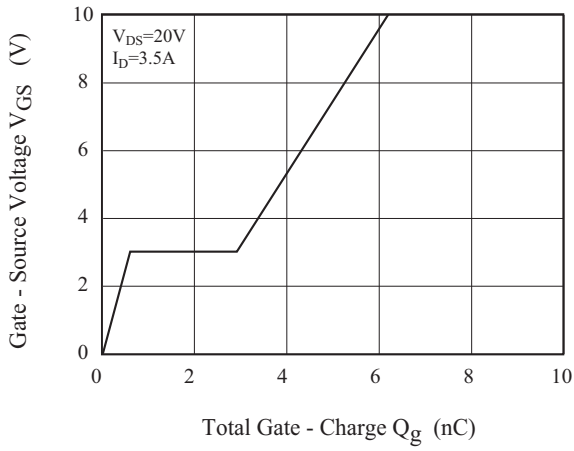


Fig8.  $C - V_{DS}$

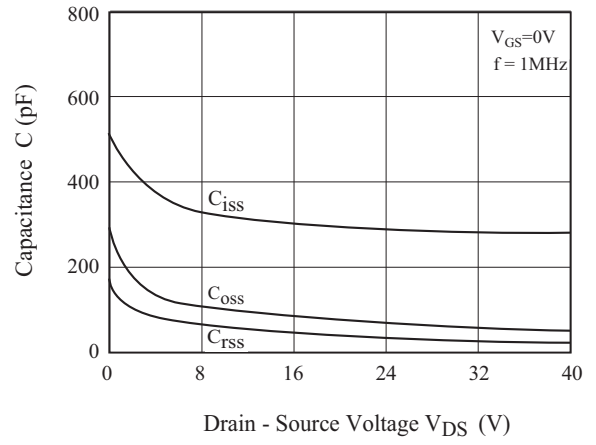


Fig9. Safe Operation Area

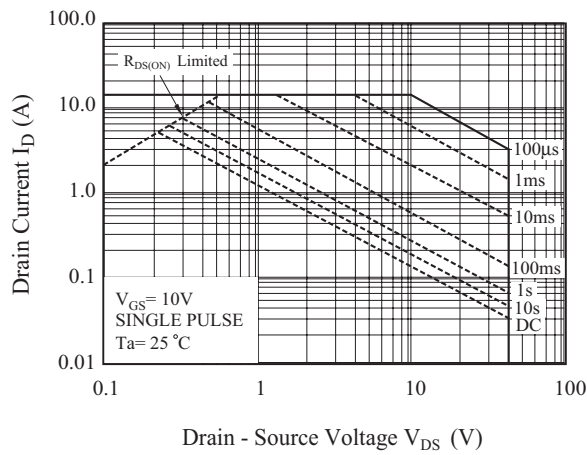
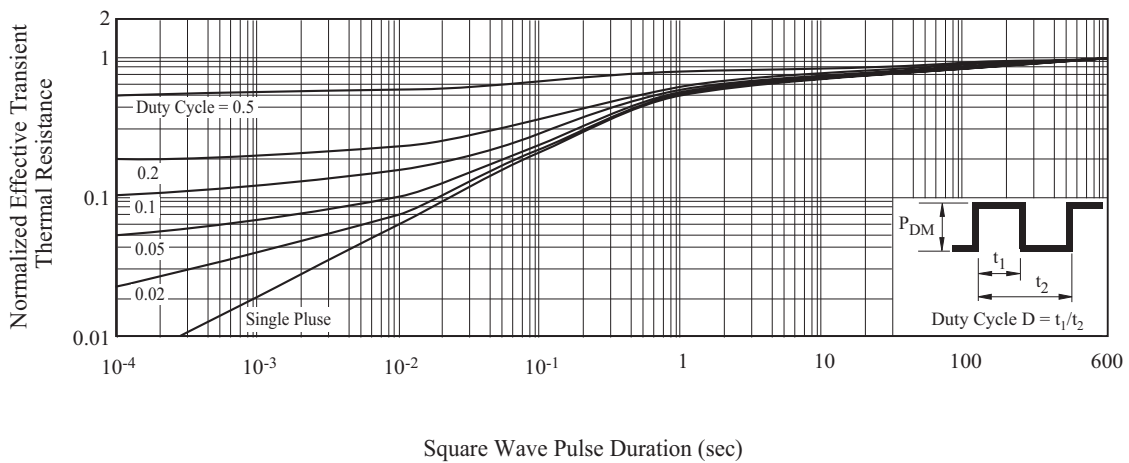


Fig10. Transient Thermal Response Curve



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Fig11. Gate Charge Circuit and Wave Form

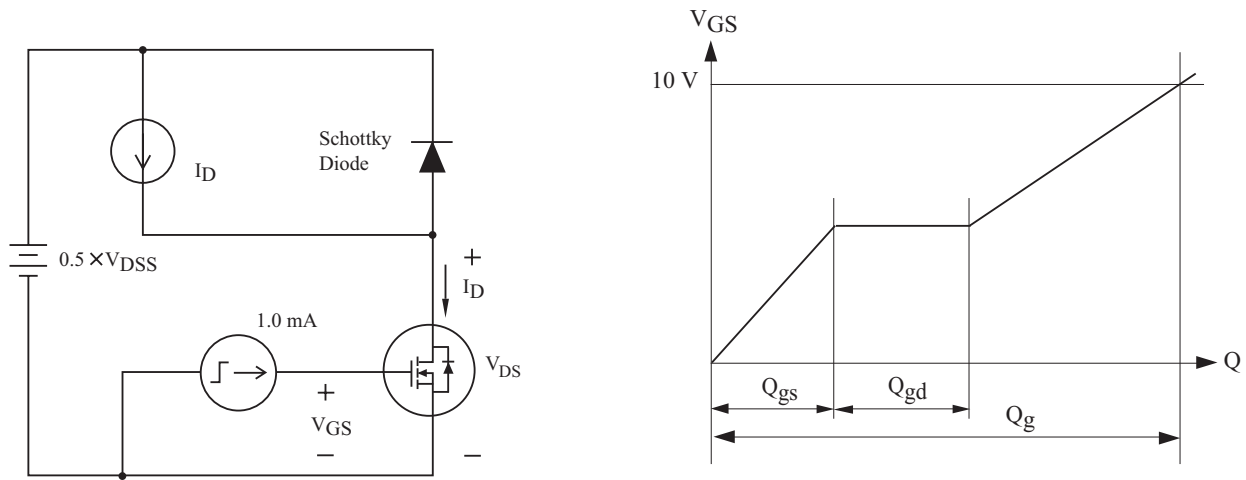


Fig12. Resistive Load Switching

