



## SIO2622E v1.0

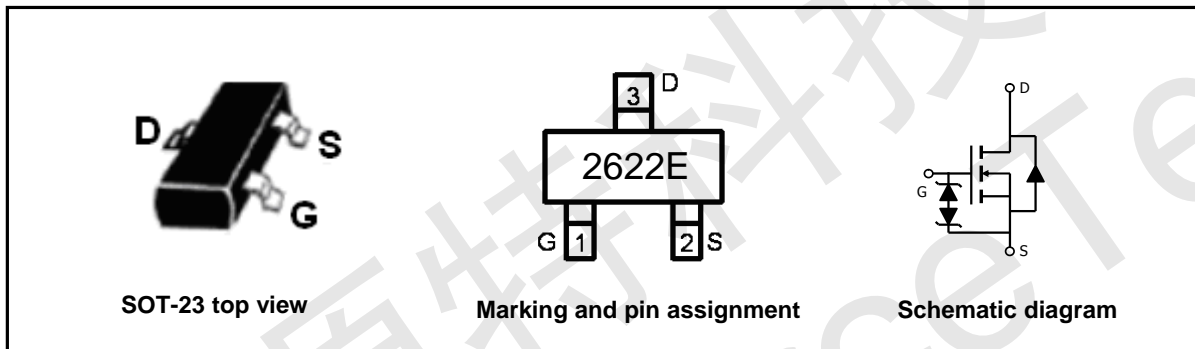
### General Features

V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Typ
20V	6A	17 @ V <sub>GS</sub> =4.5V
		21 @ V <sub>GS</sub> =2.5V

### Description

The SIO2622E uses advanced trench technology to provide excellent R<sub>DS(ON)</sub>, low gate charge and operation with gate voltages as low as 1.8V. This device is suitable for use as a load switch or in PWM applications .It is ESD protested.

ESD Rating:2000VBM



### ABSOLUTE MAXIMUM RATINGS(TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	±10	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I <sub>D</sub>	6	A
	I <sub>DM</sub>	30	A
Maximum Power Dissipation	P <sub>D</sub>	1.4	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> ,T <sub>STG</sub>	-55 To 150	°C

### THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 2)	R <sub>θJA</sub>	89.3	°C/W
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### Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V I <sub>D</sub> =250μA	20		-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V,V <sub>GS</sub> =0V	-	-	1	μA



Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
<b>On Characteristics (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45	0.7	1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=6A$	-	17	22	$m\Omega$
		$V_{GS}=2.5V, I_D=5A$	-	21	26	$m\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=4.5A$	11	-	-	S
<b>Dynamic Characteristics (Note4)</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=10V, V_{GS}=0V,$ $F=1.0MHz$	-	660	-	PF
Output Capacitance	$C_{OSS}$		-	160	-	PF
Reverse Transfer Capacitance	$C_{RSS}$		-	87	-	PF
<b>Switching Characteristics (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, R_L=1.5\Omega$ $V_{GS}=5V, R_{GEN}=3\Omega$	-	0.5		nS
Turn-on Rise Time	$t_r$		-	1		nS
Turn-Off Delay Time	$t_{d(off)}$		-	12		nS
Turn-Off Fall Time	$t_f$		-	4		nS
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=6A,$ $V_{GS}=4.5V$	-	8		nC
Gate-Source Charge	$Q_{gs}$		-	2.5	-	nC
Gate-Drain Charge	$Q_{gd}$		-	3	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=1A$	-	-	1.2	V
Diode Forward Current (Note 2)	$I_S$		-	-	6	A

### Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production



### TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

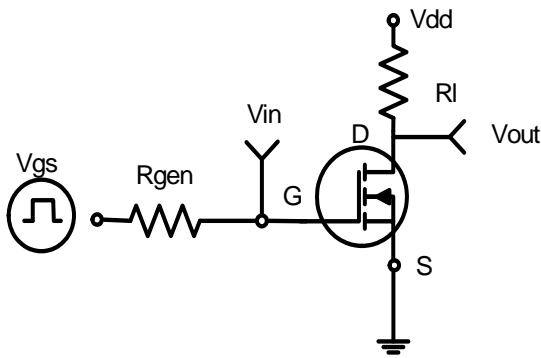


Figure 1: Switching Test Circuit

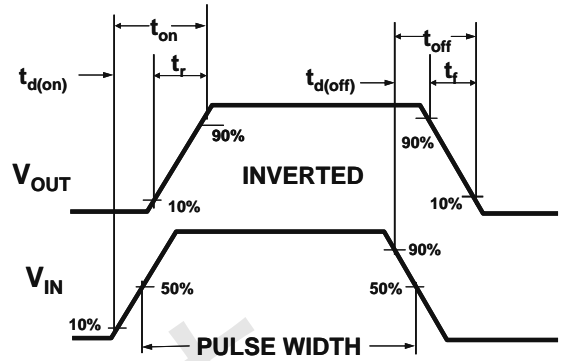


Figure 2: Switching Waveforms

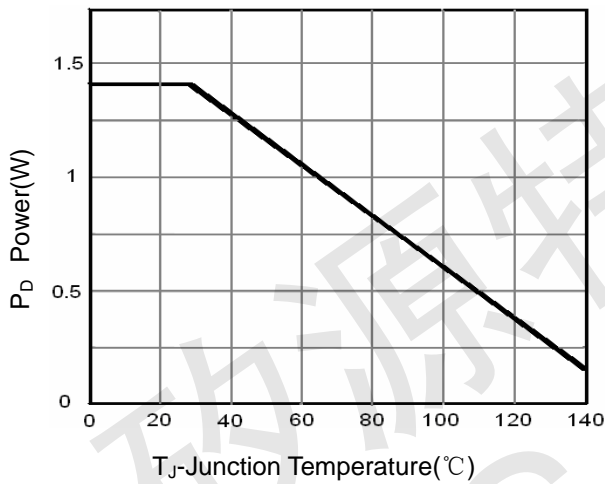


Figure 3 Power Dissipation

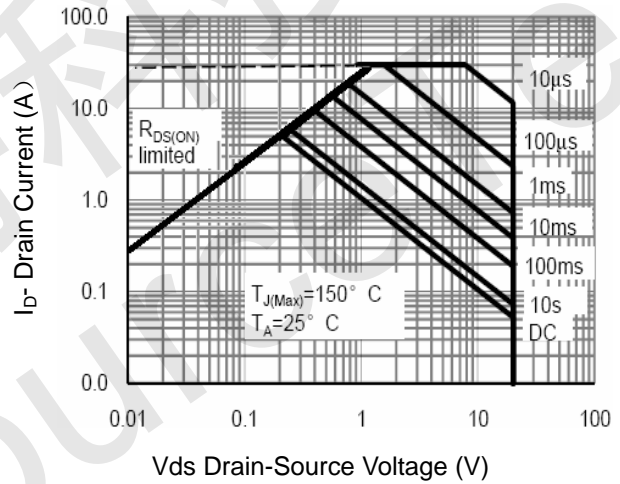


Figure 4 Safe Operation Area

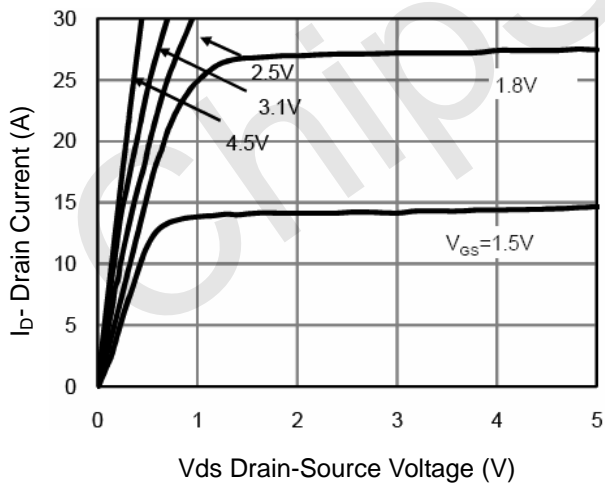


Figure 5 Output CHARACTERISTICS

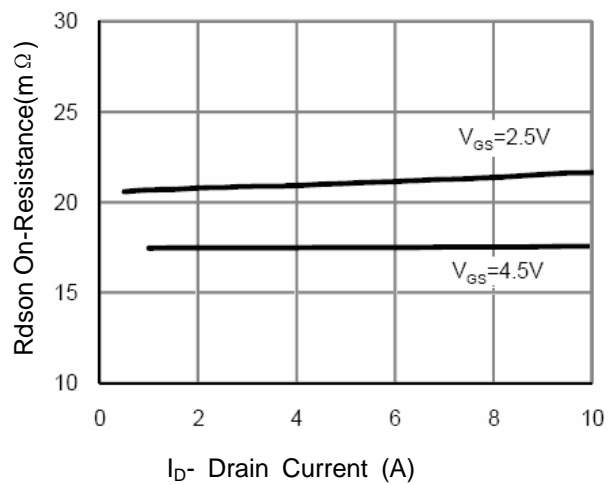


Figure 6 Drain-Source On-Resistance

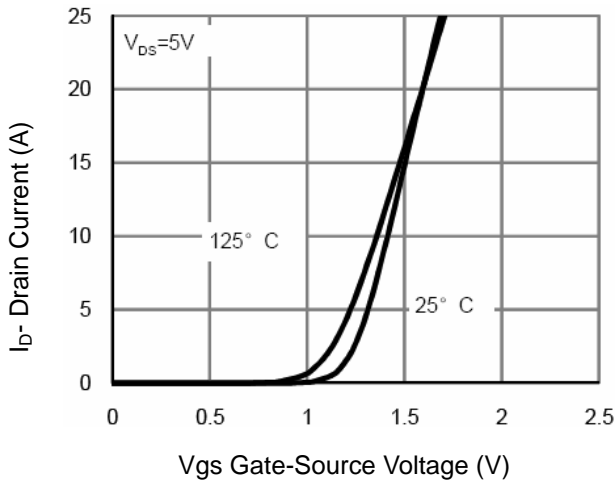


Figure 7 Transfer Characteristics

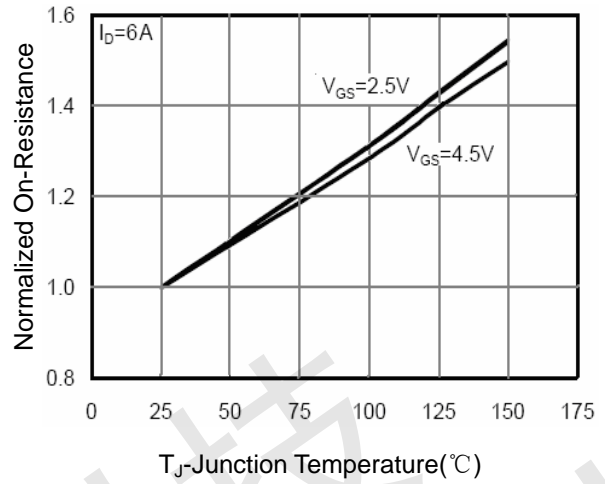


Figure 8 Drain-Source On-Resistance

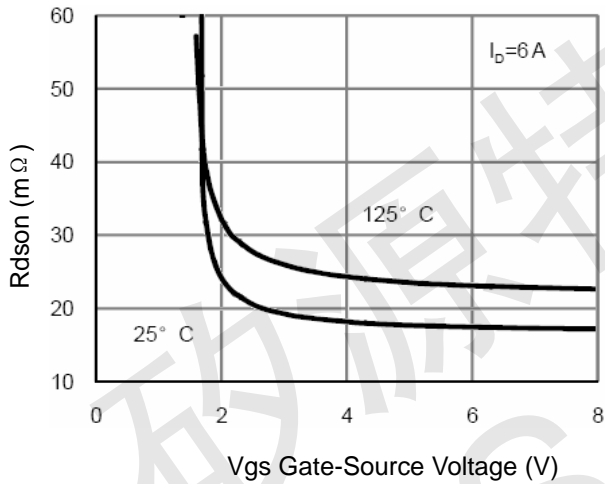


Figure 9 Rds(on) vs Vgs

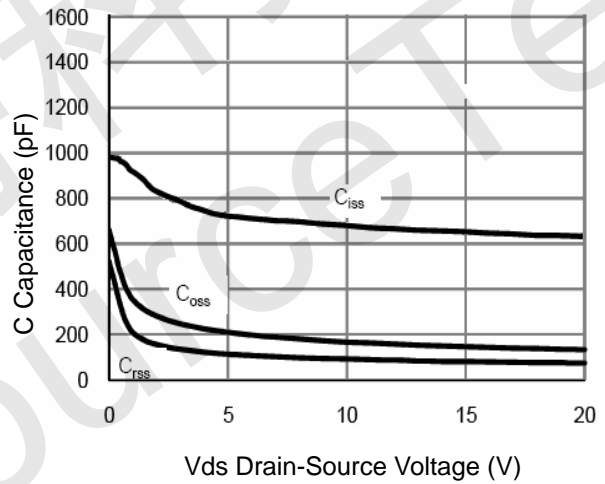


Figure 10 Capacitance vs Vds

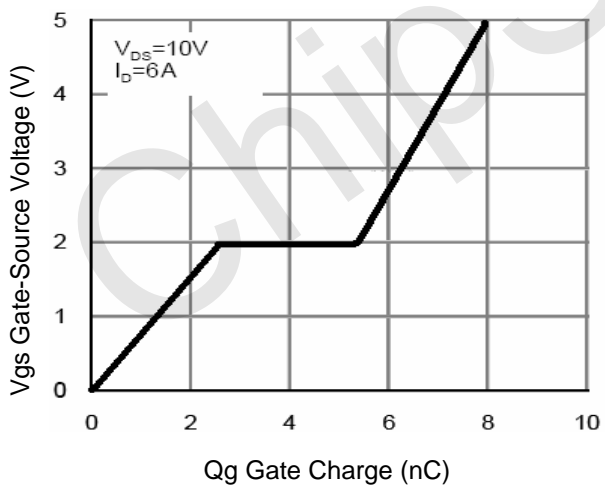


Figure 11 Gate Charge

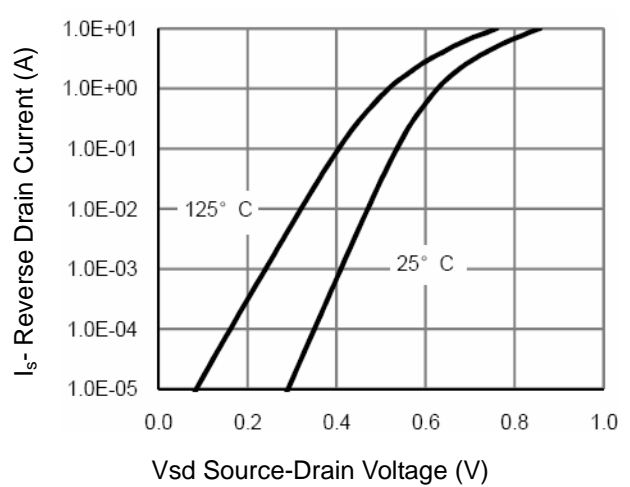


Figure 12 Source-Drain Diode Forward

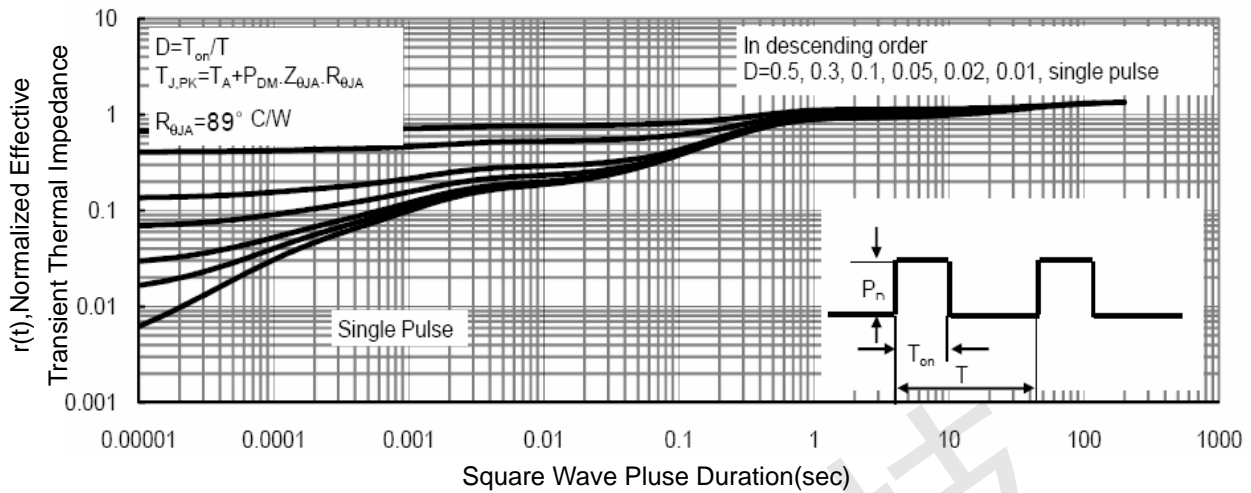
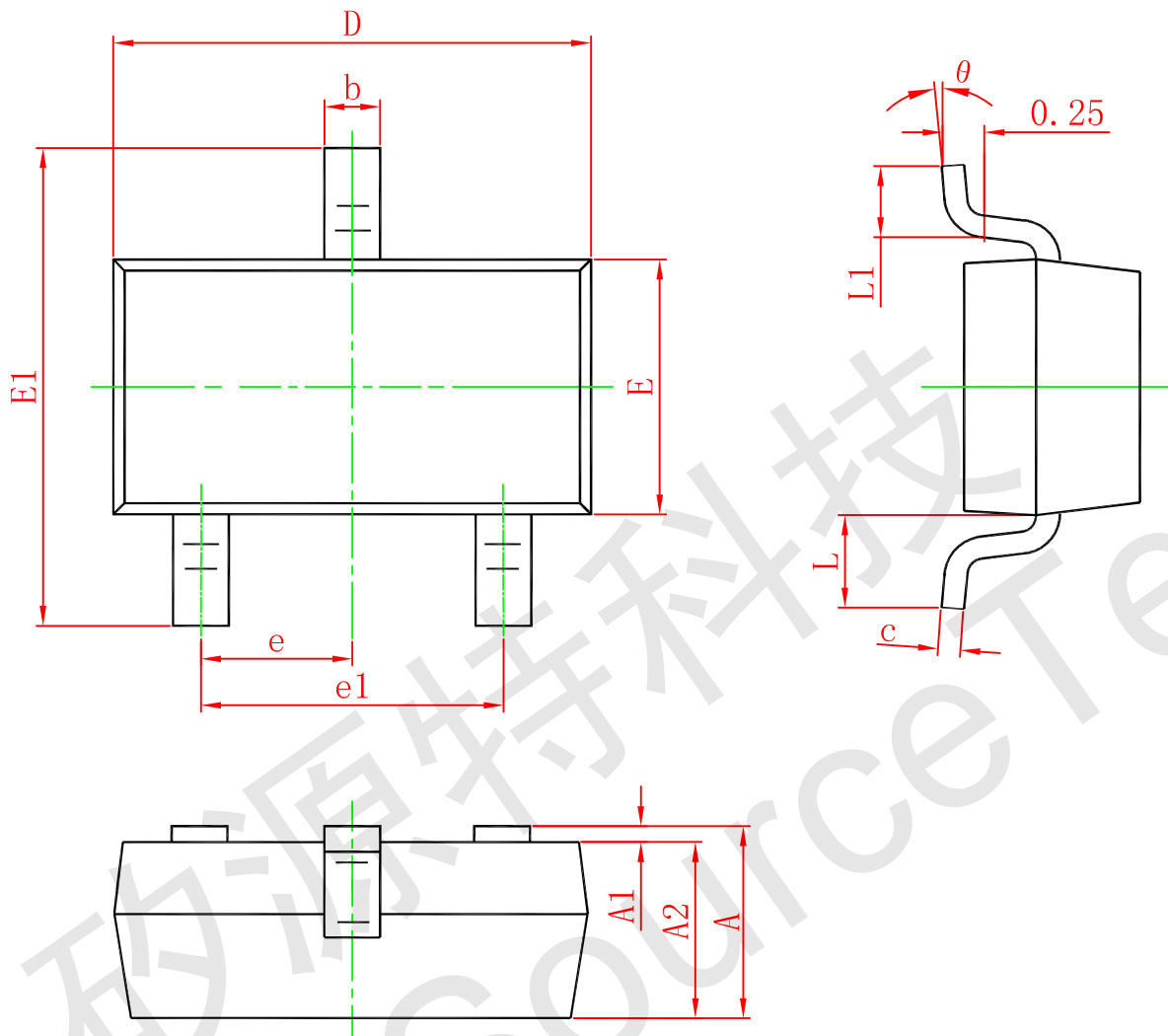


Figure 13 Normalized Maximum Transient Thermal Impedance

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SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°