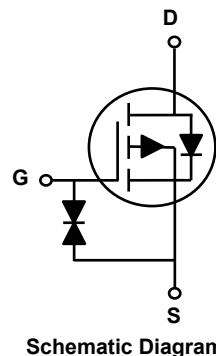
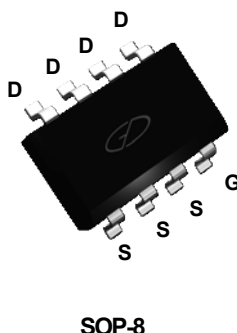


## Main Product Characteristics

$V_{DSS}$	-30 V
$R_{DS(ON)}$	10.6 m $\Omega$ (typ.)
$I_D$	-12A



## Features and Benefits

- Advanced trench MOSFET process technology
- Ideal for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature



## Description

The SSF3611E utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

## Absolute Maximum Rating

Symbol	Parameter	Max.	Unit
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ ①	-12	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ ①	-7.4	
$I_{DM}$	Pulsed Drain Current②	-48	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation③	2	W
$V_{DS}$	Drain-Source Voltage	-30	V
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

## Thermal Resistance

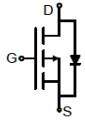
Symbol	Characteristics	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient ( $t \leq 10\text{S}$ ) ④	—	62.5	$^\circ\text{C}/\text{W}$



### Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

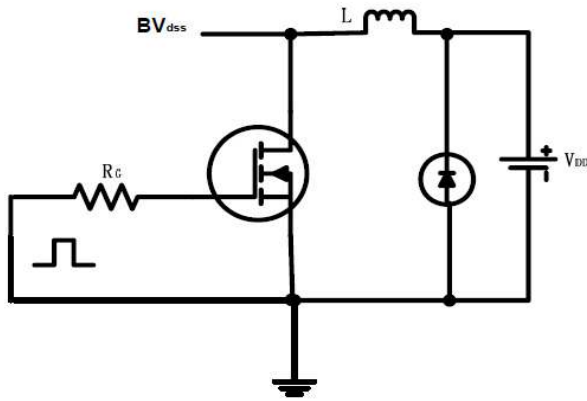
Symbol	Parameter	Min.	Typ.	Max.	Unit	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(ON)}$	Static Drain-to-Source On-resistance	—	10.6	13	m $\Omega$	$V_{GS} = -10.0V, I_D = -10.0A$
		—	14.1	16		$V_{GS} = -4.50V, I_D = -7.50A$
$V_{GS(th)}$	Gate threshold Voltage	-1	—	-2	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$I_{DSS}$	Drain-to-Source Leakage Current	—	—	-1	$\mu A$	$V_{DS} = -30V, V_{GS} = 0V$
$I_{GSS}$	Gate-to-Source Forward Leakage	—	—	10	$\mu A$	$V_{GS} = 20V$
		—	—	-10		$V_{GS} = -20V$
$Q_g$	Total Gate Charge	—	55	—	nC	$I_D = -10A,$ $V_{DS} = -25V,$ $V_{GS} = -10V$
$Q_{gs}$	Gate-to-Source Charge	—	3.5	—		
$Q_{gd}$	Gate-to-Drain("Miller") Charge	—	18	—		
$t_{d(on)}$	Turn-on Delay Time	—	8.0	—	nS	$V_{GS} = -10V, V_{DS} = -15V,$ $R_L = 15\Omega,$ $R_{GEN} = 3\Omega$
$t_r$	Rise Time	—	5.8	—		
$t_{d(off)}$	Turn-Off Delay Time	—	56	—		
$t_f$	Fall Time	—	38	—		
$C_{iss}$	Input Capacitance	—	3224	—	pF	$V_{GS} = 0V$ $V_{DS} = -15V$ $f = 1MHz$
$C_{oss}$	Output Capacitance	—	459	—		
$C_{rss}$	Reverse Transfer Capacitance	—	425	—		

### Source-Drain Ratings and Characteristics

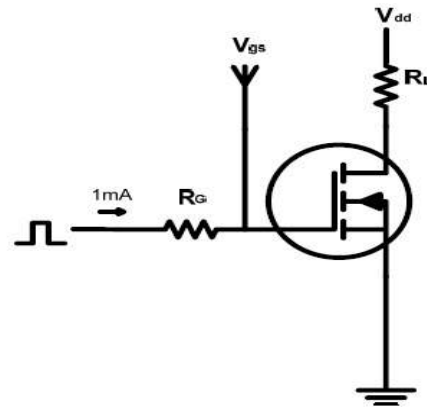
Symbol	Parameter	Min.	Typ.	Max.	Unit	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	-12	A	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	-48	A	
$V_{SD}$	Diode Forward Voltage	—	-0.73	-1.2	V	$I_S = -2.1A, V_{GS} = 0V$
$t_{rr}$	Reverse Recovery Time	—	16	—	nS	$T_J = 25^\circ\text{C}, I_F = -10A, di/dt =$
$Q_{rr}$	Reverse Recovery Charge	—	5.9	—	$\mu C$	100A/ $\mu s$

## Test Circuits and Waveforms

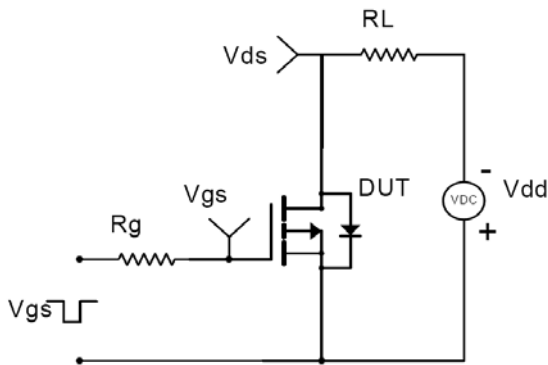
EAS test circuits:



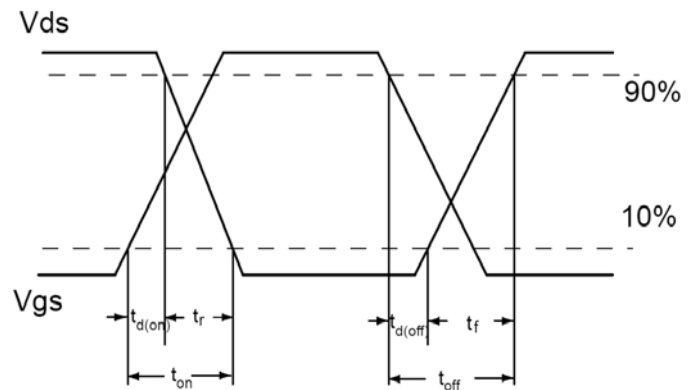
Gate charge test circuit:



Switch time test circuit:



Switching Waveforms

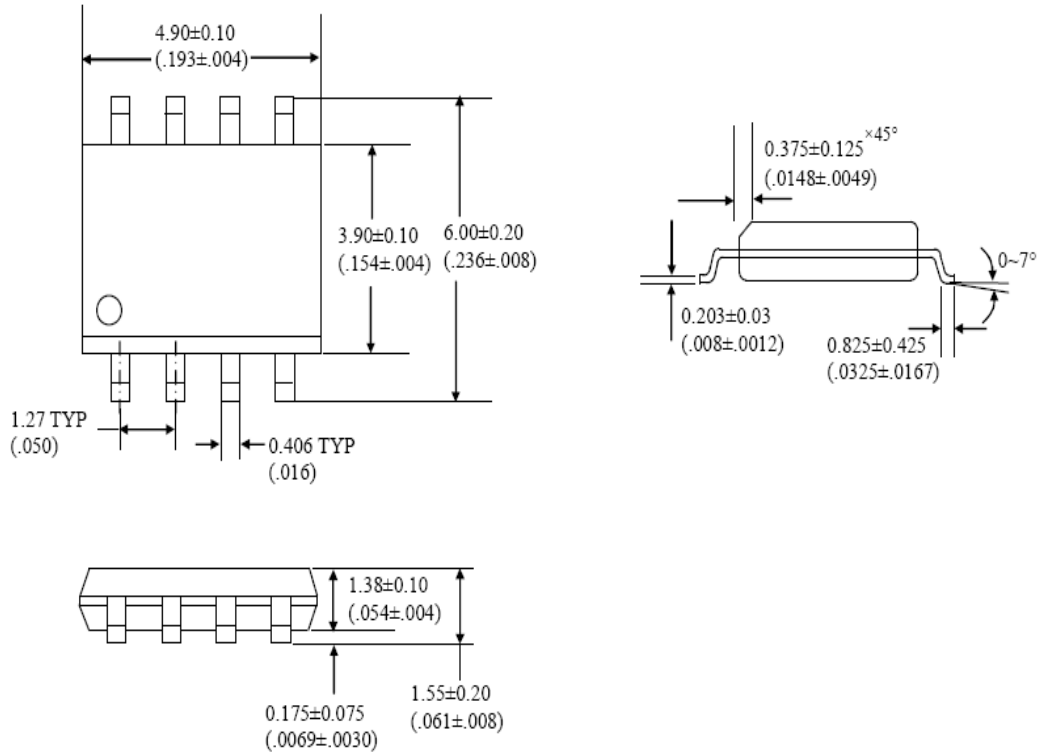


### Notes:

- ① The maximum current rating is limited by bond-wires.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation  $P_D$  is based on max. junction temperature, using junction-to-ambient thermal resistance.
- ④ The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$

**Mechanical Data**

**SOP-8 PACKAGE OUTLINE DIMENSION**



Symbol	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.280	1.480	0.050	0.058
b	0.406		0.016	
c	0.173	0.233	0.007	0.009
D	4.800	5.000	0.189	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.27TYP		0.050TYP	
L	0.400	1.250	0.016	0.050

## Ordering and Marking Information

**Device Marking: SSF3611E**

**Package (Available)**  
**SOP-8**  
**Operating Temperature Range**  
**C : -55°C to +150 °C**

## Devices per Unit

Package Type	Units/Tape	Tapes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
SOP-8	2500	2	5000	8	40000

## Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	$T_J=125^{\circ}\text{C}$ or $150^{\circ}\text{C}$ @ 80% of Max $V_{DSS}/V_{CES}/V_R$	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	$T_J=125^{\circ}\text{C}$ or $150^{\circ}\text{C}$ @ 100% of Max $V_{GSS}$	168 hours 500 hours 1000 hours	3 lots x 77 devices