

## DESCRIPTION

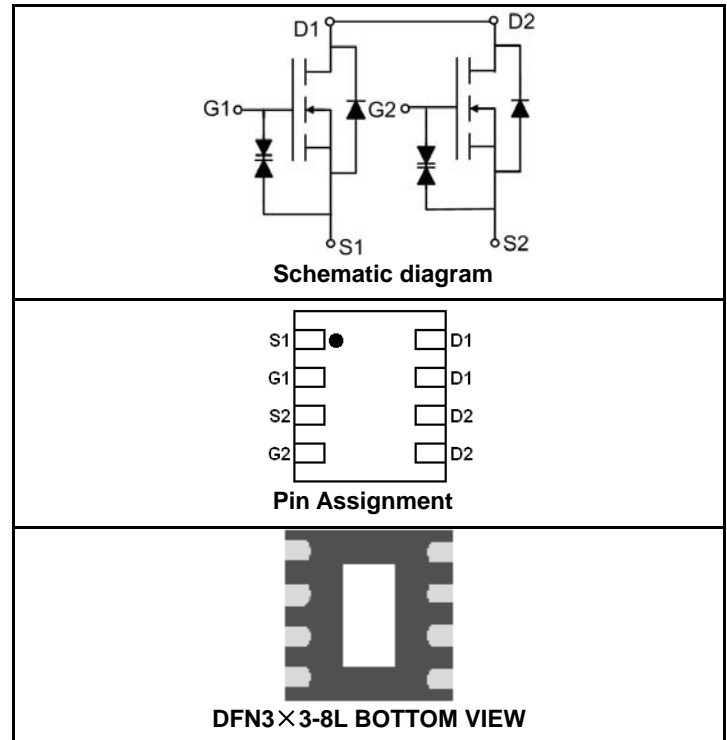
The SSF3314E uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V while retaining a 12V  $V_{GS(MAX)}$  rating. It is ESD protected. This device is suitable for use as a uni-directional or bi-directional load switch, facilitated by its common-drain configuration.

## GENERAL FEATURES

- $V_{DS} = 30V, I_D = 8A$
- $R_{DS(ON)} < 39m\Omega @ V_{GS}=2.5V$
- $R_{DS(ON)} < 28m\Omega @ V_{GS}=3.1V$
- $R_{DS(ON)} < 24m\Omega @ V_{GS}=4.0V$
- $R_{DS(ON)} < 23m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} < 18m\Omega @ V_{GS}=10V$

ESD Rating: 2000V HBM

- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package



## PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
SSF3314E	SSF3314E	DFN3x3-8L	-	-	-

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	$I_D$	8	A
	$I_{DM}$	45	A
Maximum Power Dissipation	$P_D$	1.7	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	°C

## THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	40	°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	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$

Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$			10	$\mu A$
Gate-Source Breakdown Voltage	$BV_{GSO}$	$V_{DS}=0V, I_G=\pm 250\mu A$	$\pm 12$			V
<b>ON CHARACTERISTICS (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6	1	1.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=8A$		14	18	m $\Omega$
		$V_{GS}=4.5V, I_D=6A$		17	23	
		$V_{GS}=4.0V, I_D=4A$		18	24	
		$V_{GS}=3.1V, I_D=4A$		20	28	
		$V_{GS}=2.5V, I_D=3A$		23	39	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=8A$		17		S
<b>DYNAMIC CHARACTERISTICS (Note4)</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=15V, V_{GS}=0V, F=1.0MHz$		870		PF
Output Capacitance	$C_{OSS}$			130		PF
Reverse Transfer Capacitance	$C_{RSS}$			100		PF
Gate resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, F=1.0MHz$		1.5		$\Omega$
<b>SWITCHING CHARACTERISTICS (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=15V, V_{GS}=10V, R_{GEN}=3\Omega, R_L=1.25\Omega$		4		nS
Turn-on Rise Time	$t_r$			10		nS
Turn-Off Delay Time	$t_{d(off)}$			28		nS
Turn-Off Fall Time	$t_f$			7		nS
Total Gate Charge	$Q_g$	$V_{DS}=15V, I_D=8A, V_{GS}=4.5V$		10.5		nC
Gate-Source Charge	$Q_{gs}$			1.9		nC
Gate-Drain Charge	$Q_{gd}$			4.1		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=1A$		0.76	0.9	V
Diode Forward Current (Note 2)	$I_S$				4.5	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 testing.

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

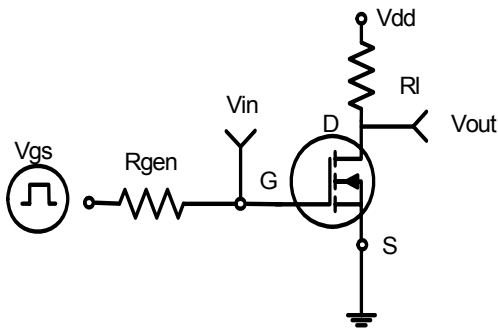


Figure 1: Switching Test Circuit

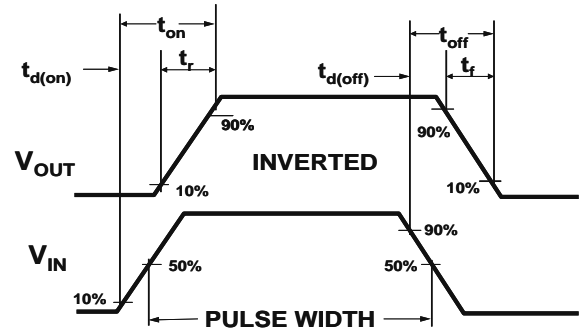


Figure 2: Switching Waveforms

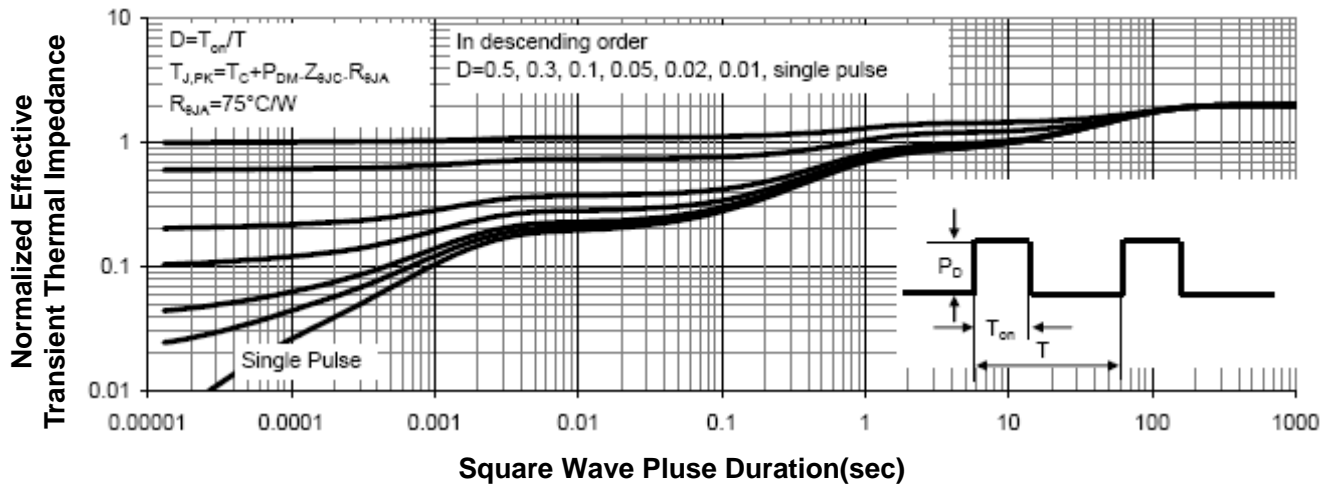
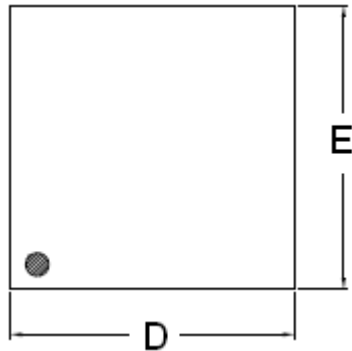
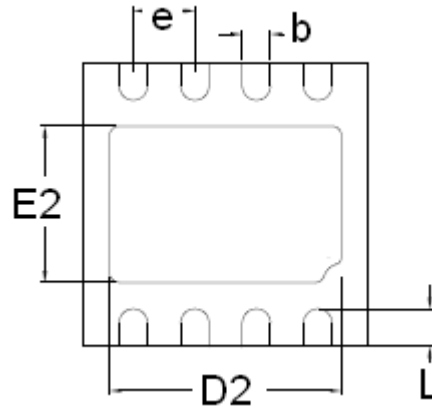


Figure 3: Normalized Maximum Transient Thermal Impedance

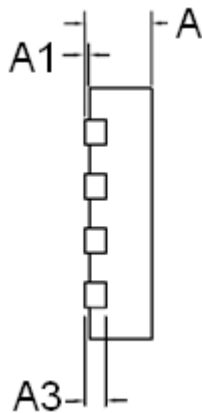
## DFN3x3-8L PACKAGE INFORMATION



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS(MM)			
PKG.	W: VERY VERY THIN		
REF.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
A1	0.00	—	0.05
A3	0.2REF.		
D	2.95	3.00	3.05
E	2.95	3.00	3.05
b	0.25	0.30	0.35
L	0.30	0.40	0.50
D2	2.30	2.45	2.55
E2	2.50	1.65	1.75
e	0.65BSC		

### NOTES:

1. Dimensions are inclusive of plating
2. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
3. Dimension L is measured in gauge plane.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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