

DESCRIPTION

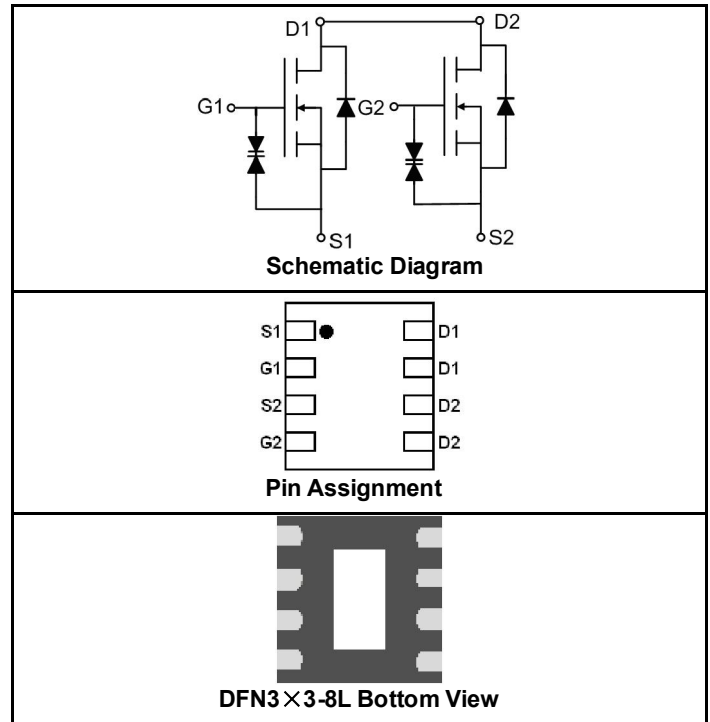
The SSF3314E uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V while retaining a 12V $V_{GS(MAX)}$ rating. It is ESD protected. This device is suitable for use as a uni-directional or bi-directional load switch, facilitated 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 handing capability
- Lead free product
- 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 ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 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	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	40	$^\circ\text{C/W}$
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ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
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	μA

Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V,V _{DS} =0V			10	uA
Gate-Source Breakdown Voltage	BV _{GSO}	V _{DS} =0V, I _G =±250uA	±12			V
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	0.6	1	1.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =8A		14	18	mΩ
		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
DYNAMIC CHARACTERISTICS (Note4)						
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		Ω
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V,V _{GS} =10V, R _{GEN} =3Ω, R _L =1.25Ω		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
DRAIN-SOURCE DIODE CHARACTERISTICS						
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

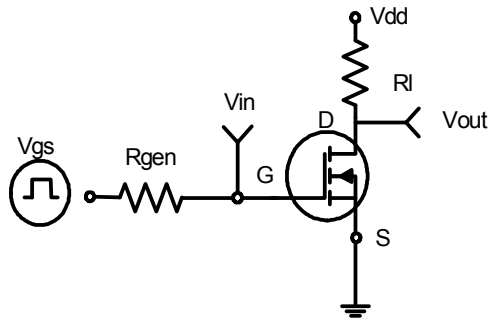


Figure 1: Switching Test Circuit

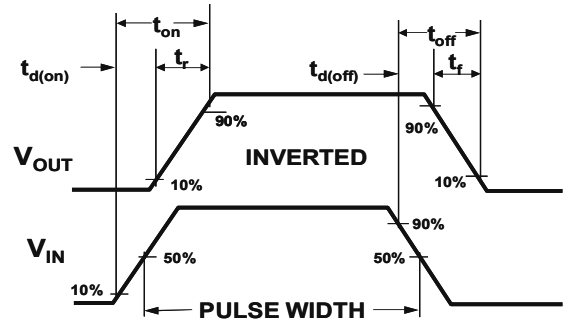


Figure 2: Switching Waveforms

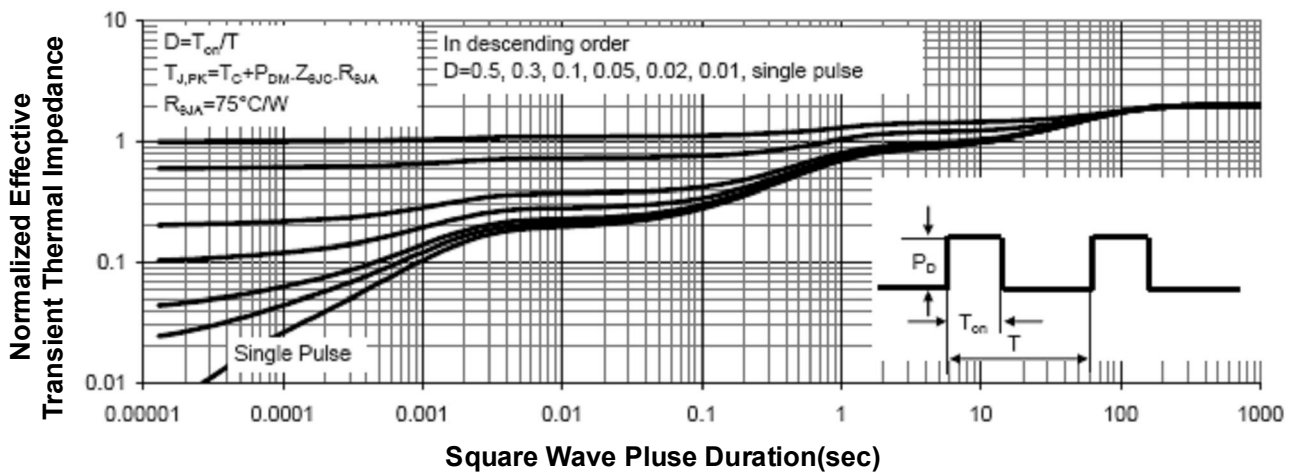
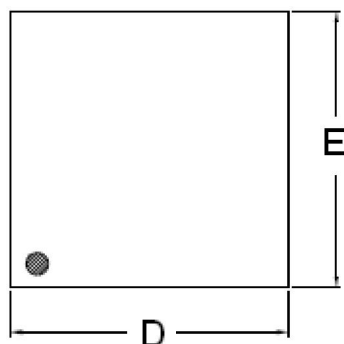
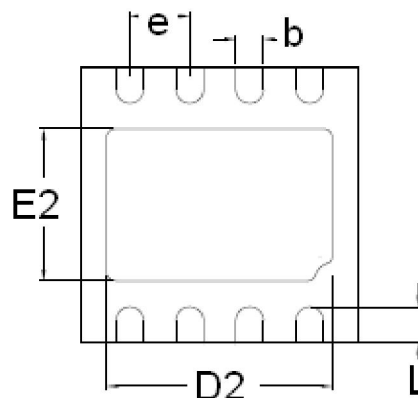


Figure 3: Normalized Maximum Transient Thermal Impedance

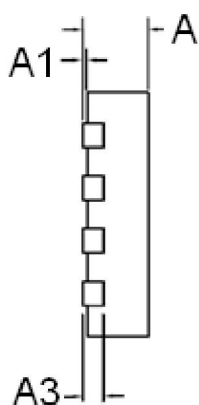
DFN3×3-8L PACKAGE INFORMATION



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.