

DESCRIPTION

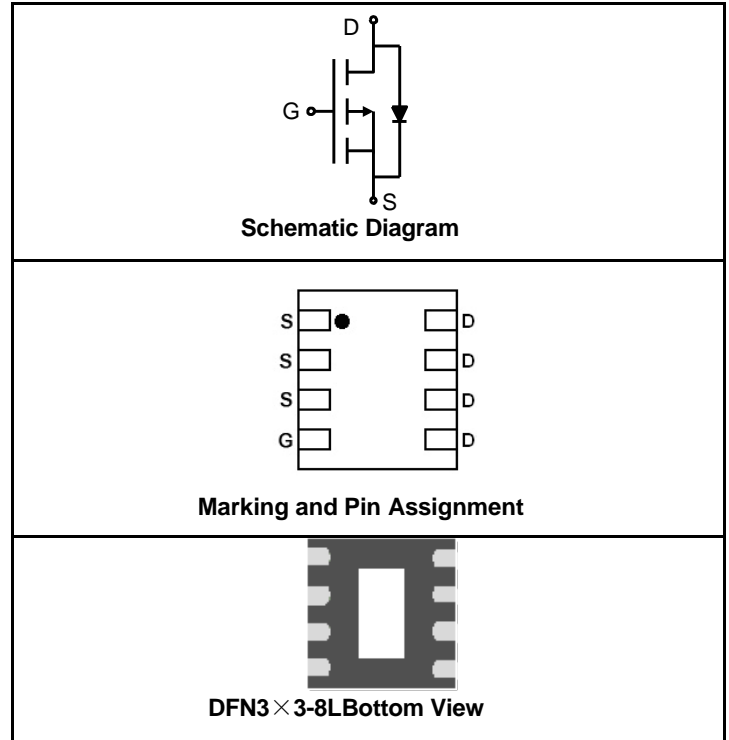
The SSFN3317 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

- $V_{DS} = -30V, I_D = -7A$
 $R_{DS(ON)} < 36m\Omega @ V_{GS} = -4.5V$
 $R_{DS(ON)} < 18m\Omega @ V_{GS} = -10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

APPLICATION

- PWM applications
- Load switch
- Power management



PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tapewidth	Quantity
SSFN3317	SSFN3317	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}	± 25	V
Drain Current-Continuous@Current-Pulsed (Note 1)	$I_D(25^\circ C)$	-7	A
	$I_D(70^\circ C)$	-5.5	A
	I_{DM}	-40	A
Maximum Power Dissipation	P_D	3.1	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)

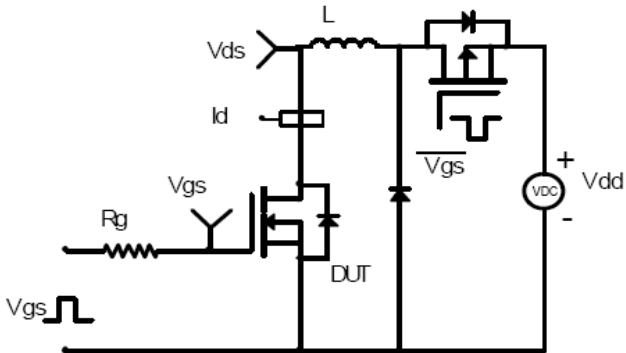
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$			± 100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.7	-2.2	-3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-6A$		26	36	m Ω
		$V_{GS}=-10V, I_D=-8A$		14	18	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-10A$		18		S
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1.0MHz$		1200		PF
Output Capacitance	C_{oss}			260		PF
Reverse Transfer Capacitance	C_{rss}			145		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-15V, V_{GS}=-10V, R_{GEN}=3\Omega, I_D=1A$		10		nS
Turn-on Rise Time	t_r			9		nS
Turn-Off Delay Time	$t_{d(off)}$			22		nS
Turn-Off Fall Time	t_f			8		nS
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-10A, V_{GS}=-10V$		18		nC
Gate-Source Charge	Q_{gs}			5		nC
Gate-Drain Charge	Q_{gd}			3.5		nC
Body Diode Reverse Recovery Time	T_{rr}	$I_F=-10A, di/dt=100A/\mu s$		24		nS
Body Diode Reverse Recovery Charge	Q_{rr}			12		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=-1A$		-0.74	-1	V

NOTES:

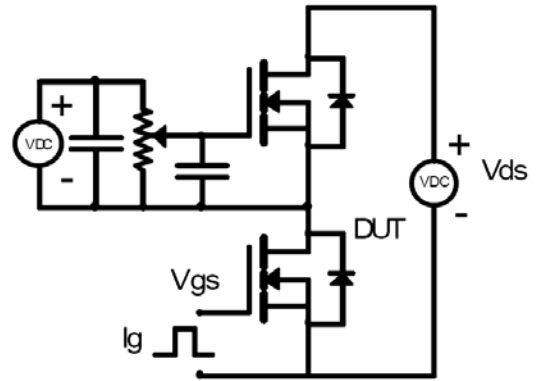
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on 1in²FR4 Board, $t_s \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing

Test circuits and Wave forms

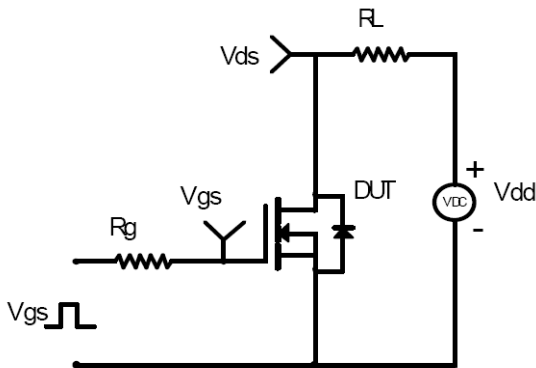
EAS Test Circuit:



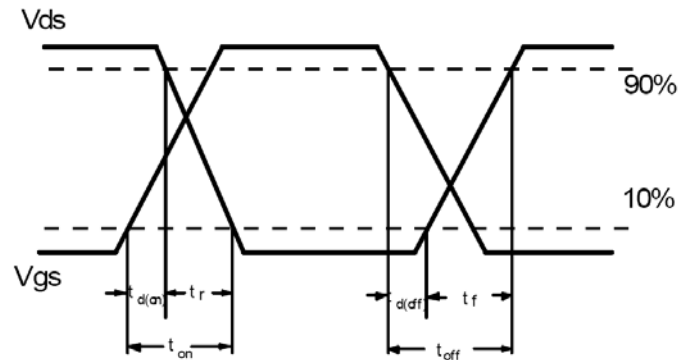
Gate charge test circuit:



Switching Time Test Circuit:



Switching Waveforms:



Typical electrical and thermal characteristics

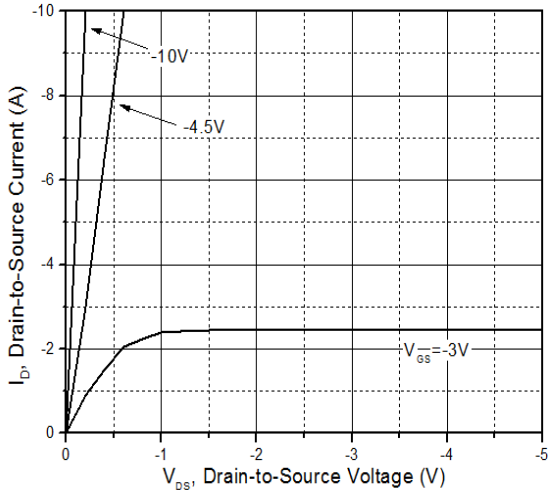


Figure 1: Typical Output Characteristics

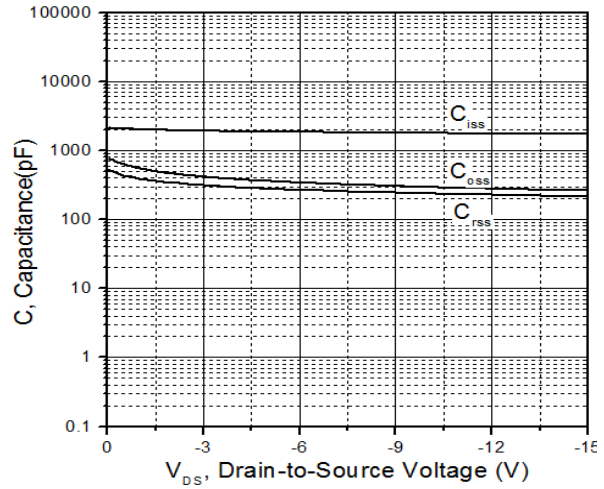


Figure 2: Typical Capacitance Vs. Drain-to-Source Voltage

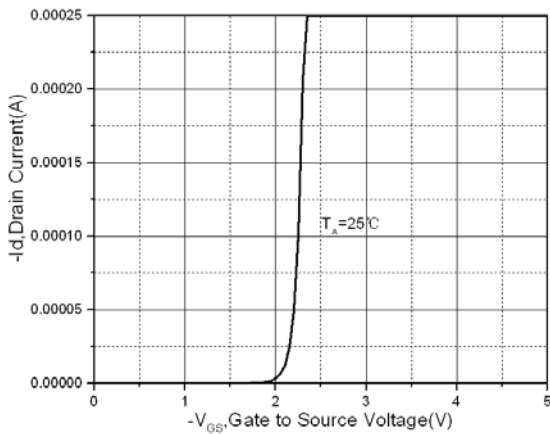


Figure 3: Typical Transfer Characteristics

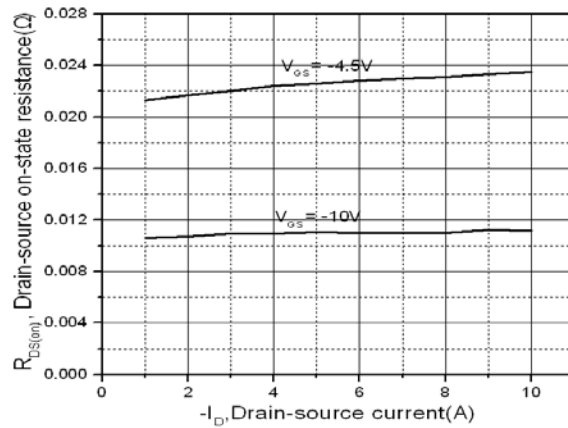


Figure 4: On-Resistance Vs. Drain Current & Gate Voltage

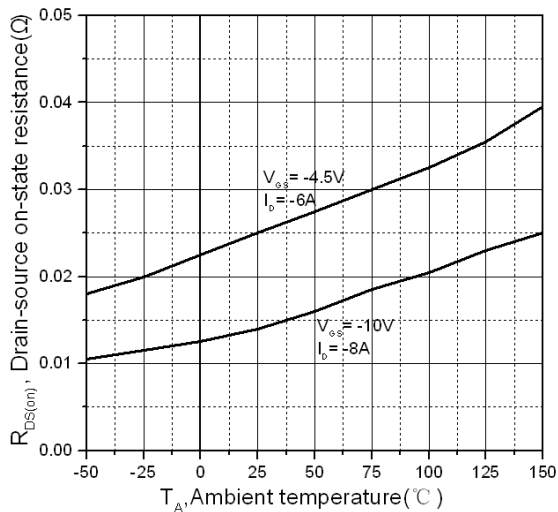


Figure 5: Static Drain-source On-Resistance Vs. Ambient Temperature

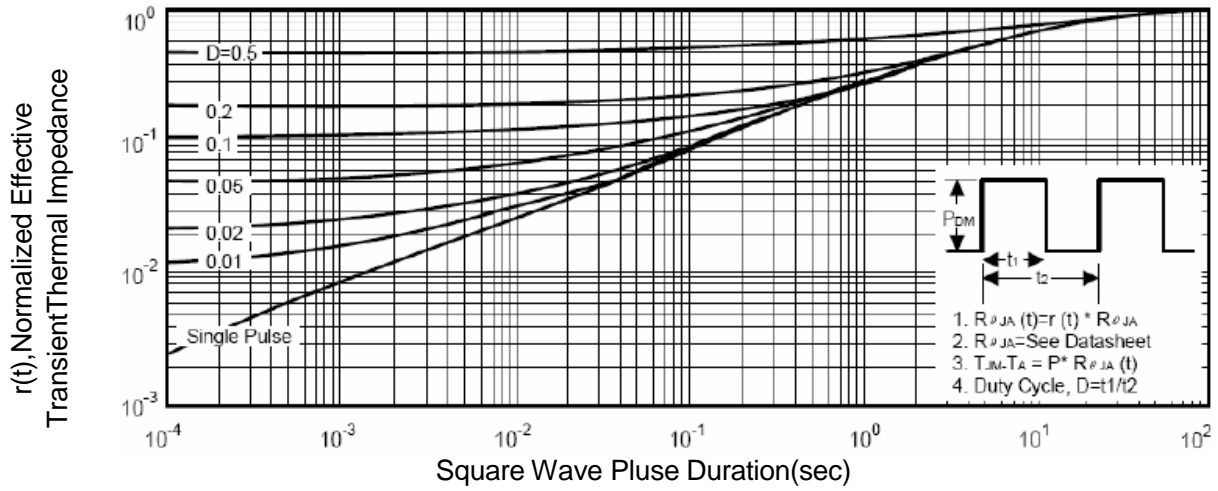
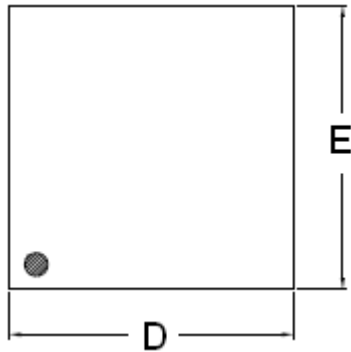
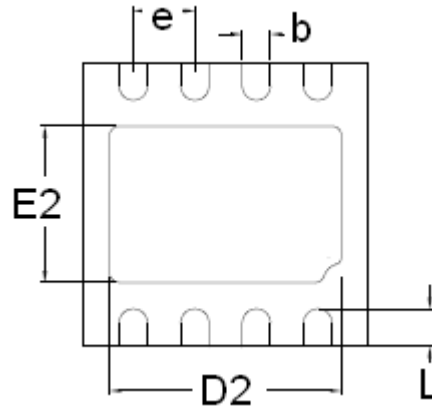


Figure 5 Normalized Maximum Transient Thermal Impedance

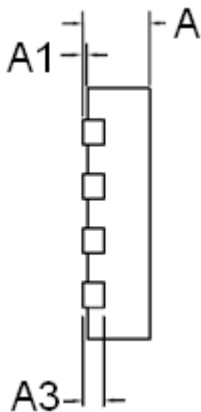
DFN3x3-8LPACKAGEINFORMATION



TOPVIEW



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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