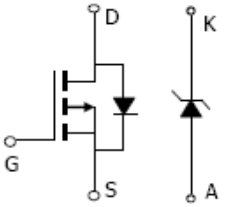
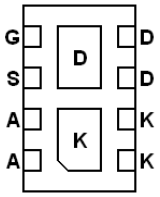
DESCRIPTION

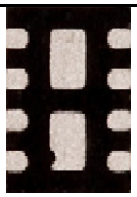
The SSF8521 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge . A Schottky diode is provided to facilitate the implementation of a bidirectional blocking switch, or for DC-DC conversion applications.



Schematic diagram



Marking and pin Assignment



DFN3X2-8L Bottom View

GENERAL FEATURES

- **MOSFET**
  V_{DS} = -20V,I_D = -4.4A
  $R_{DS(ON)}$ < 170mΩ @ V_{GS}=-1.8V
  $R_{DS(ON)}$ < 110mΩ @ V_{GS}=-2.5V
  $R_{DS(ON)}$ < 80mΩ @ V_{GS}=-4.5V
  SCHOTTKY
  V_R = 20V, I_F = 4.1A, V_F<0.575V @ 1.0A
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

- DC-DC conversion applications
- Load switch
- Power management

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
8521	SSF8521	DFN3X2-8L	—	—	—

ABSOLUTE MAXIMUM RATINGS(TA=25℃unless otherwise noted)

Parameter	Symbol	MOSFET	Schottky	Unit
Drain-Source Voltage	V_{DS}	-20		V
Gate-Source Voltage	V_{GS}	±8		V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	-4.4		A
	I_{DM}	-13		A
Schottky reverse voltage	V_R		20	V
Continuous Forward Current	I_F		4.1	A
Maximum Power Dissipation	P_D	2.1		W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	-55 To 150	℃

THERMAL CHARACTERISTICS

MOSFET			
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	100	℃/W

ELECTRICAL CHARACTERISTICS (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-16V,V_{GS}=0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±8V,V_{DS}=0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.45		-1.2	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-3.2A		64	80	mΩ
		V_{GS}=-2.5V, I_D=-2.2A		85	110	
		V_{GS}=-1.8V, I_D=-1.0A		120	170	
Forward Transconductance	g_{FS}	V_{DS}=-10V,I_D=-2.9A		8		S
DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-10V,V_{GS}=0V, F=1.0MHz		680		PF
Output Capacitance	C_{oss}			100		PF
Reverse Transfer Capacitance	C_{rss}			70		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-10V,I_D=-3.2A V_{GS}=-4.5V,R_{GEN}=2.4Ω		5.8		nS
Turn-on Rise Time	t_r			11.7		nS
Turn-Off Delay Time	$t_{d(off)}$			16		nS
Turn-Off Fall Time	t_f			12.4		nS
Total Gate Charge	Q_g	V_{DS}=-10V,I_D=-3.2A,V_{GS}=-4.5V		7.4		nC
Gate-Source Charge	Q_{gs}			1.4		nC
Gate-Drain Charge	Q_{gd}			2.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-2.5A		-0.8	-1.2	V
Reverse Recovery Time	Trr	V_{GS} = 0 V, I_S = −1.0 A , d_{IS}/dt = 100 A/us		13.5		nS
Reverse Recovery Charge	Qrr			6.5		nC

SCHOTTKY DIODE PARAMETERS						
Forward Voltage Drop	V_F	I_F=1.0A		0.51	0.575	V
Maximum reverse leakage current	Irm	V_R=20V			5	uA

NOTES:

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

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

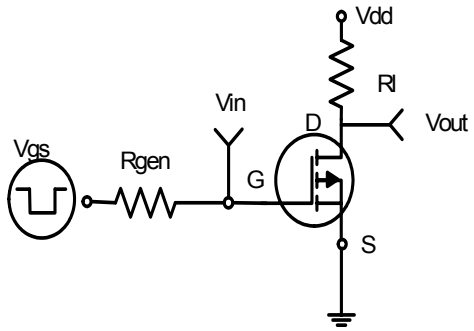


Figure1:Switching Test Circuit

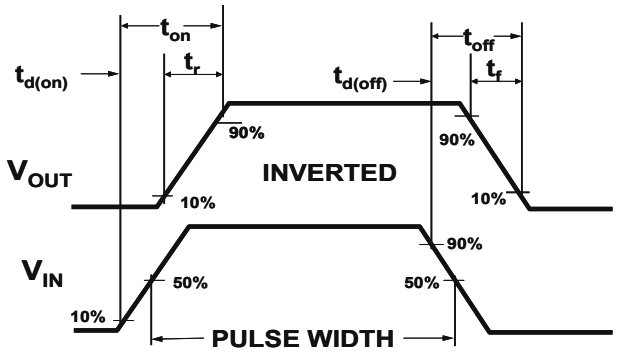


Figure 2:Switching Waveforms

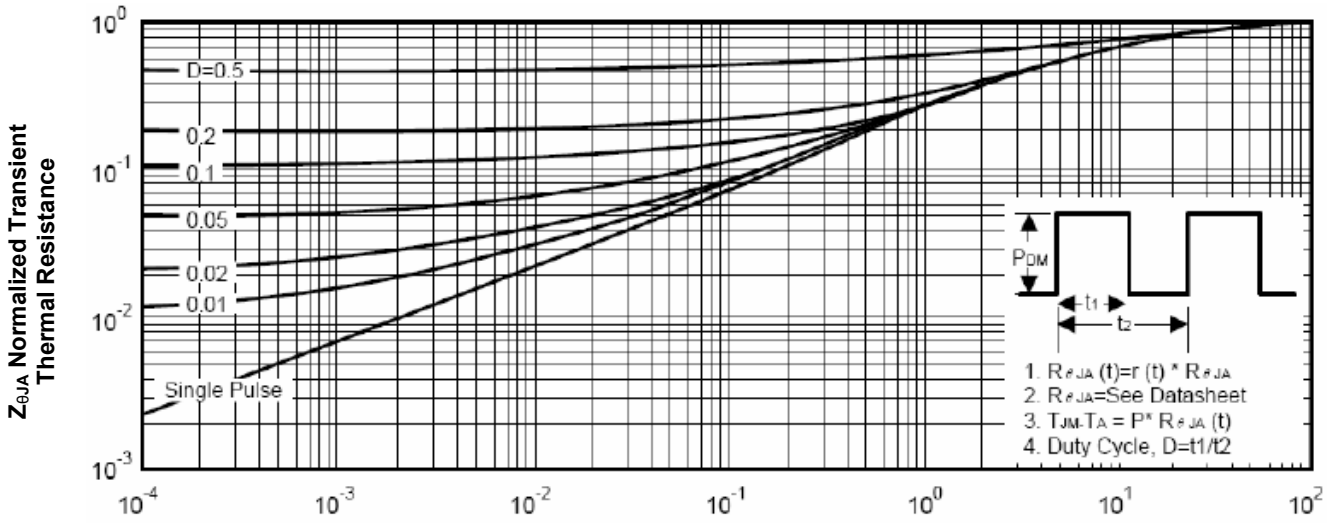
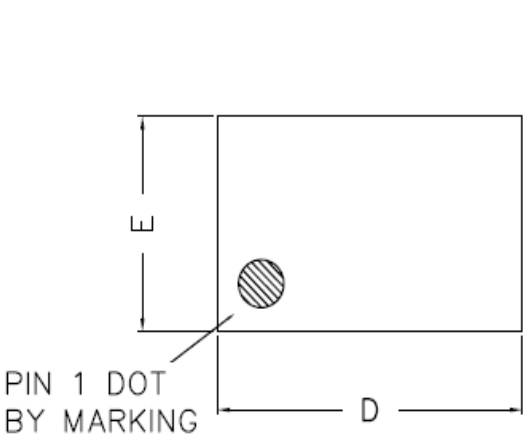


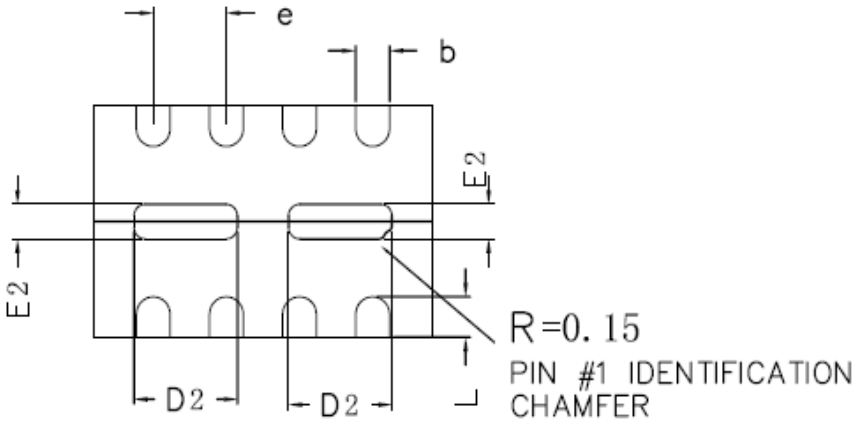
Figure 3: Normalized Maximum Transient Thermal Impedanc

DFN3X2-8L PACKAGE INFORMATION

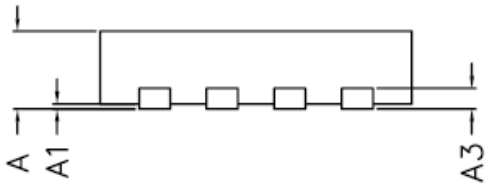
Dimensions in Millimeters (UNIT:mm)



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	0.2 REF.		
D	2.95	3.00	3.05
E	1.95	2.00	2.05
b	0.25	0.30	0.35
L	0.28	0.35	0.43
D2	0.77	0.92	1.02
E2	0.20	0.30	0.40
e	0.65 BCS.		

NOTES:

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exac

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