

GENERAL FEATURES

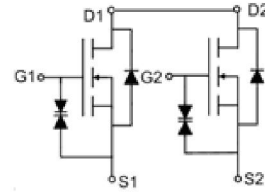
- $V_{DS} = 20V, I_D = 7A$
 $R_{DS(ON)} < 35m\Omega @ V_{GS}=2.5V$
 $R_{DS(ON)} < 30m\Omega @ V_{GS}=3.1V$
 $R_{DS(ON)} < 24m\Omega @ V_{GS}=4V$
 $R_{DS(ON)} < 23m\Omega @ V_{GS}=4.5V$

ESD Rating: 2000V HBM

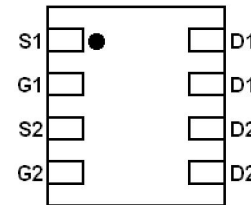
- High Power and current handing capability
- Lead free product
- Surface Mount Package

APPLICATIONS

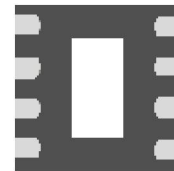
- Battery protection
- Load switch
- Power management



Schematic Diagram



DFN3×3-8L Bottom View



Pin Assignment

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape Width	Quantity
2316E	SSF2316E	DFN3×3-8L	-	-	-

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	7	A
	I_{DM}	40	A
Maximum Power Dissipation	P_D	1.4	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	83	$^{\circ}C/W$
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SSF2316E

20V Dual N-Channel MOSFET

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 =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V,V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±8V,V _{DS} =0V			±10	μA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	0.5		1.3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =4A		17	23	mΩ
		V _{GS} =4V, I _D =4A		18	24	mΩ
		V _{GS} =3.1V, I _D =4A		20	30	mΩ
		V _{GS} =2.5V, I _D =2A		24	35	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V,I _D =3.5A		11		S
DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C _{ISS}	V _{DS} =8V,V _{GS} =0V, F=1.0MHz		900		PF
Output Capacitance	C _{OSS}			350		PF
Reverse Transfer Capacitance	C _{rss}			150		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V,I _D =1A V _{GS} =4.5V,R _{GEN} =6Ω		15		nS
Turn-on Rise Time	t _r			100		nS
Turn-Off Delay Time	t _{d(off)}			60		nS
Turn-Off Fall Time	t _f			90		nS
Total Gate Charge	Q _g	V _{DS} =10V,I _D =7A, V _{GS} =4.5V		20		nC
Gate-Source Charge	Q _{gs}			2.5		nC
Gate-Drain Charge	Q _{gd}			3		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V,I _S =7A		0.83	1.2	V

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

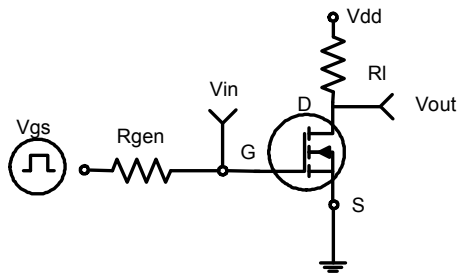


Figure 1: Switching Test Circuit

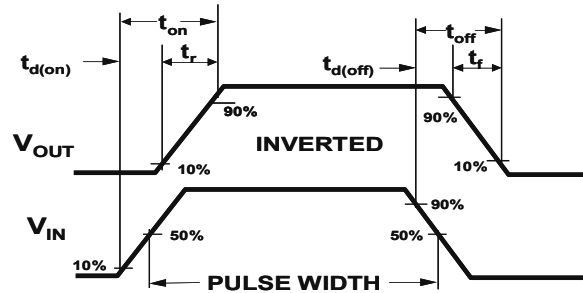


Figure 2: Switching Waveforms

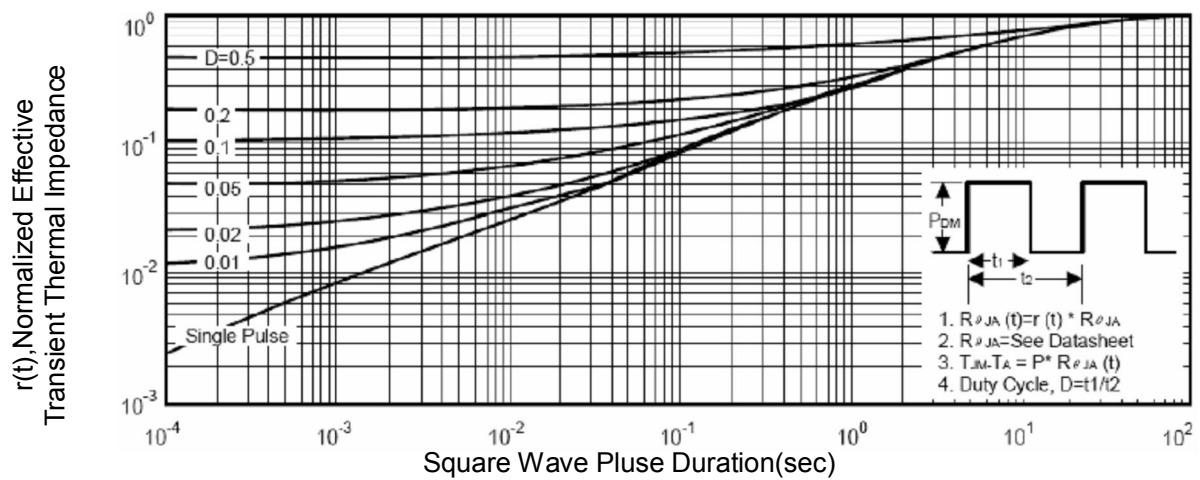
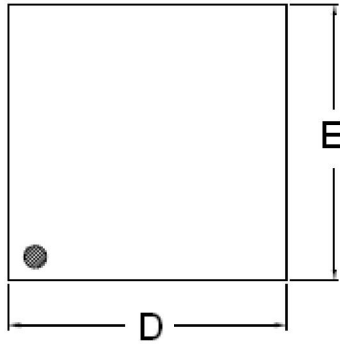
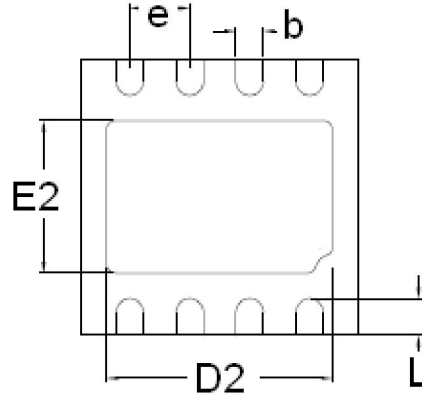


Figure 3 Normalized Maximum Transient Thermal Impedance

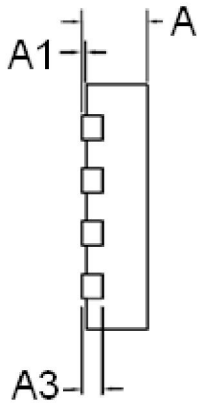
DFN3×3-8L PACKAGE INFORMATION



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