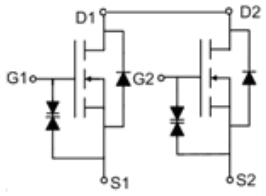
GDSSF2316E

GENERAL FEATURES

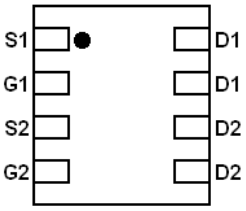
- V_{DS} = 20V,I_D = 7A
  $R_{DS(ON)}$ < 35mΩ @ V_{GS}=2.5V
  $R_{DS(ON)}$ < 30mΩ @ V_{GS}=3.1V
  $R_{DS(ON)}$ < 24mΩ @ V_{GS}=4V
  $R_{DS(ON)}$ < 23mΩ @ V_{GS}=4.5V

  ESD Rating：2000V HBM

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



Schematic diagram



Pin Assignment

Application

- Battery protection
- Load switch
- Power management

PACKAGE MARKING AND ORDERING INFORMATION

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

ABSOLUTE MAXIMUM RATINGS(TA=25℃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}	-55To150	℃

DFN3×3-8L BOTTOM VIEW

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	83	℃/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}=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_{lss}	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 ≤ 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

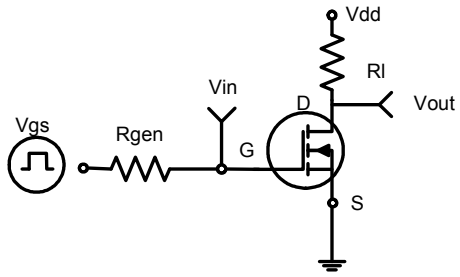


Figure 1:Switching Test Circuit

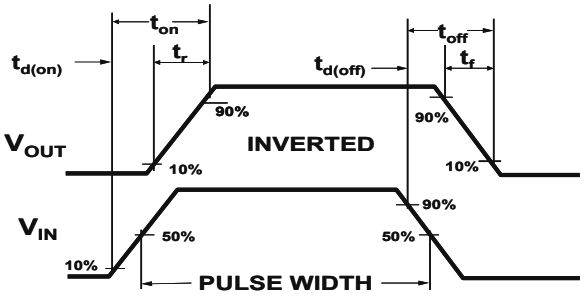


Figure 2:Switching Waveforms

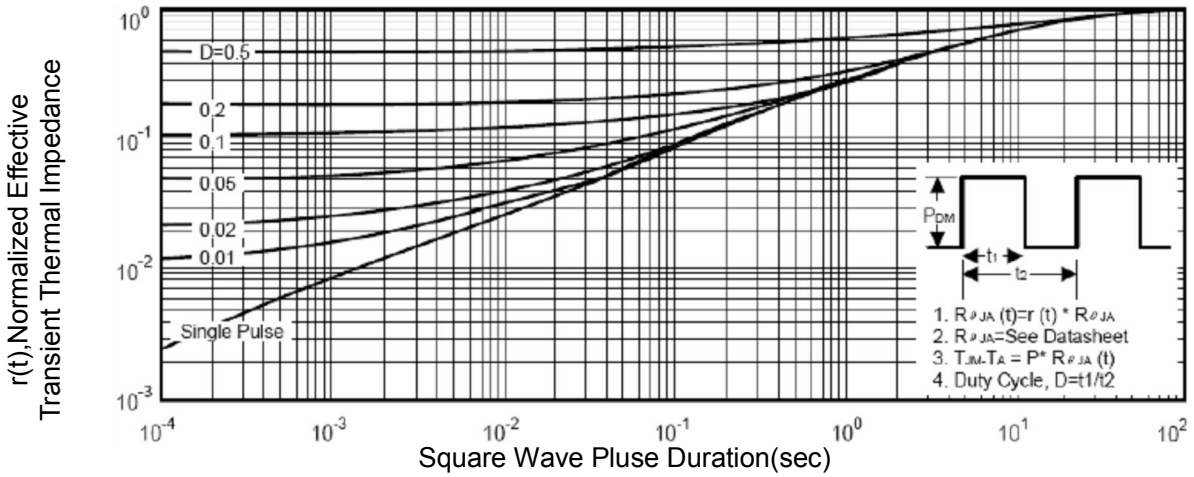
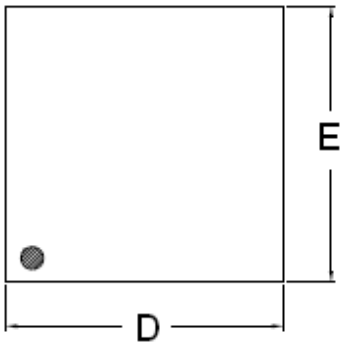
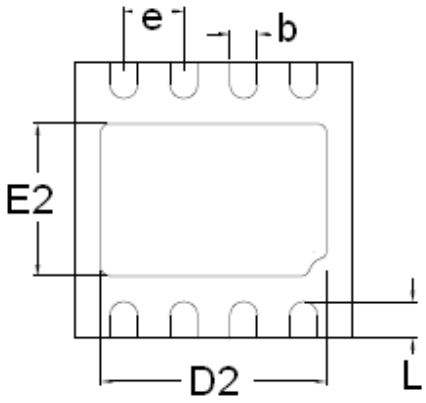


Figure 3 Normalized Maximum Transient Thermal Impedance

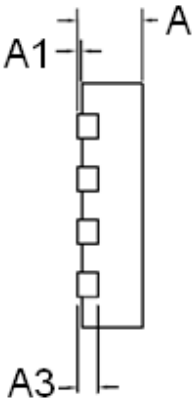
DFN3×3-8L PACKAGE INFORMATION



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