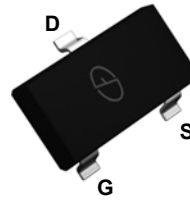
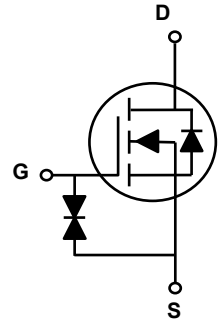


## Main Product Characteristics

$V_{DS}$	20V
$R_{DS(ON)}$	3.0Ω
$I_D$	6.5A



SOT-23



Schematic Diagram

## Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



## Description

The SSF2318E utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

## Absolute Maximum Ratings ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	±8	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	$I_D$	6.5	A
	$I_{DM}$	30	A
Maximum Power Dissipation	$P_D$	1.4	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	°C

## THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	90	°C/W
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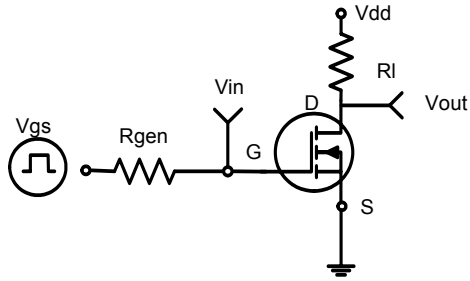
**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 4.5V, V_{DS}=0V$			$\pm 1$	$\mu A$
		$V_{GS}=\pm 8V, V_{DS}=0V$			$\pm 10$	$\mu A$
<b>ON CHARACTERISTICS (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.6	1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=6.5A$		18	22	m $\Omega$
		$V_{GS}=2.5V, I_D=5.5A$		24	30	m $\Omega$
		$V_{GS}=1.8V, I_D=5A$		40	55	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=6.5A$		7		S
<b>DYNAMIC CHARACTERISTICS (Note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V,$ $F=1.0MHz$		1160		PF
Output Capacitance	$C_{oss}$			200		PF
Reverse Transfer Capacitance	$C_{rss}$			140		PF
<b>SWITCHING CHARACTERISTICS (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=1A$ $V_{GS}=5V, R_{GEN}=3\Omega$		6.5		nS
Turn-on Rise Time	$t_r$			13		nS
Turn-Off Delay Time	$t_{d(off)}$			50		nS
Turn-Off Fall Time	$t_f$			30		nS
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=6.5A,$ $V_{GS}=4.5V$		10		nC
Gate-Source Charge	$Q_{gs}$			2.3		nC
Gate-Drain Charge	$Q_{gd}$			3		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=1A$		0.76	1	V

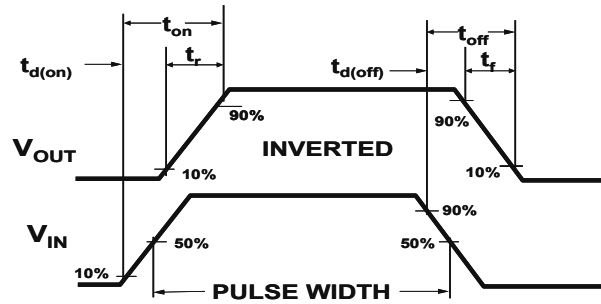
**NOTES:**

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.

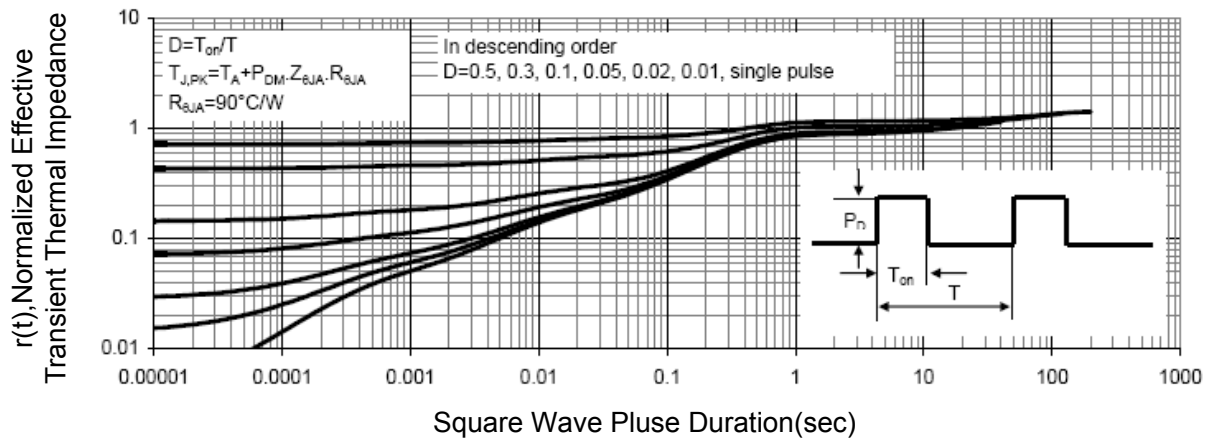
**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



**Figure 1. Switching Test Circuit**



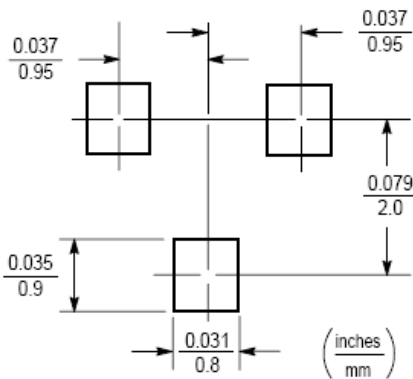
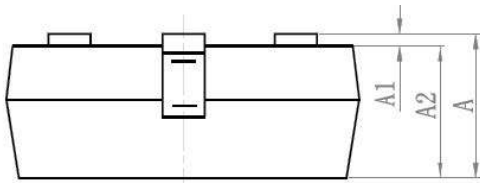
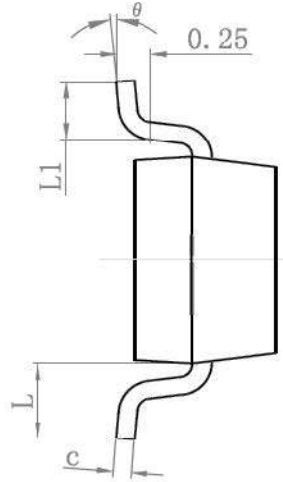
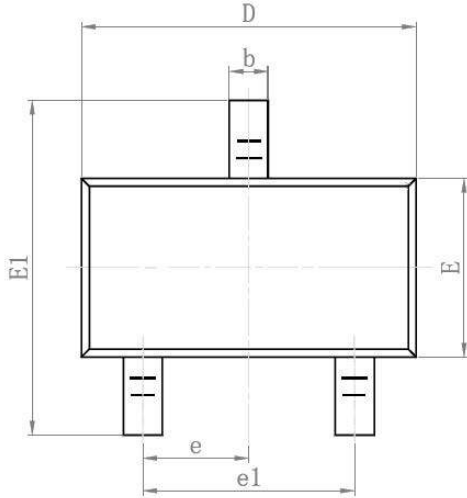
**Figure 2. Switching Waveforms**



**Figure 3. Normalized Maximum Transient Thermal Impedance**

**SOT-23 PACKAGE INFORMATION**

Dimensions in Millimeters (UNIT:mm)



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
<b>A</b>	<b>0.900</b>	<b>1.150</b>
<b>A1</b>	<b>0.000</b>	<b>0.100</b>
<b>A2</b>	<b>0.900</b>	<b>1.050</b>
<b>b</b>	<b>0.300</b>	<b>0.500</b>
<b>c</b>	<b>0.080</b>	<b>0.150</b>
<b>D</b>	<b>2.800</b>	<b>3.000</b>
<b>E</b>	<b>1.200</b>	<b>1.400</b>
<b>E1</b>	<b>2.250</b>	<b>2.550</b>
<b>e</b>	<b>0.950TYP</b>	
<b>e1</b>	<b>1.800</b>	<b>2.000</b>
<b>L</b>	<b>0.550REF</b>	
<b>L1</b>	<b>0.300</b>	<b>0.500</b>
<b><math>\theta</math></b>	<b>0°</b>	<b>8°</b>

**NOTES**

1. All dimensions are in millimeters.
2. Tolerance  $\pm 0.10\text{mm}$  (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 exact.