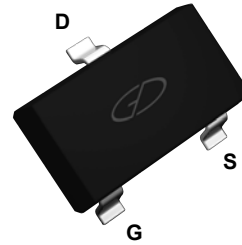
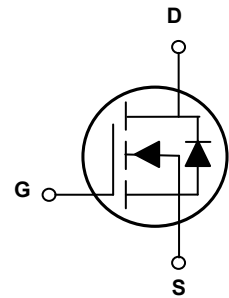


## Main Product Characteristics

$BV_{DSS}$	20V
$R_{DS(ON)}$	52m $\Omega$
$I_D$	2.5A



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 GSF2302H 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	Max.	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current-Continuous	$I_D$	2.5	A
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	12.8	A
Maximum Power Dissipation	$P_D$	1	W
Thermal Resistance, Junction-to-Ambient <sup>2</sup>	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 To +150	$^\circ\text{C}$

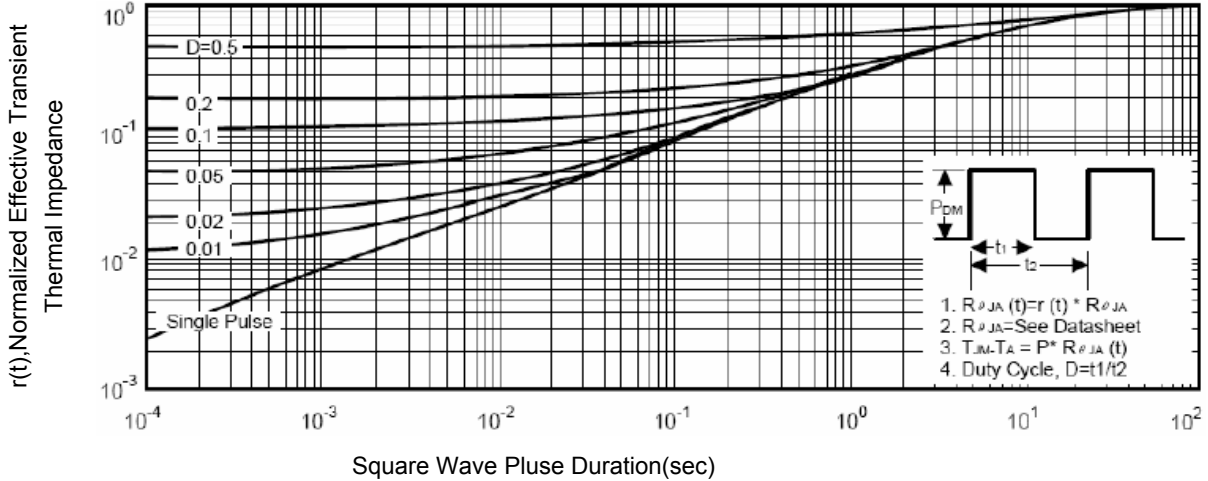
**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=10\mu A$	20	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.6	1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=2A$	-	43	52	m $\Omega$
		$V_{GS}=2.5V, I_D=1A$	-	53	65	
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, F=1MHz$	-	160	-	pF
Output Capacitance	$C_{oss}$		-	30	-	
Reverse Transfer Capacitance	$C_{rss}$		-	25	-	
<b>Switching Characteristics</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V, I_D=2A, R_{GEN}=3.3\Omega$	-	8	-	nS
Turn-On Rise Time	$t_r$		-	30	-	
Turn-Off Delay Time	$t_{d(off)}$		-	19	-	
Turn-Off Fall Time	$t_f$		-	28	-	
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=3A, V_{GS}=5V$	-	4.0	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.4	-	
Gate-Drain Charge	$Q_{gd}$		-	1.2	-	
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=0.94A$	-	-	1.2	V
Continuous Source Current <sup>1</sup>	$I_S$		-	-	0.94	A

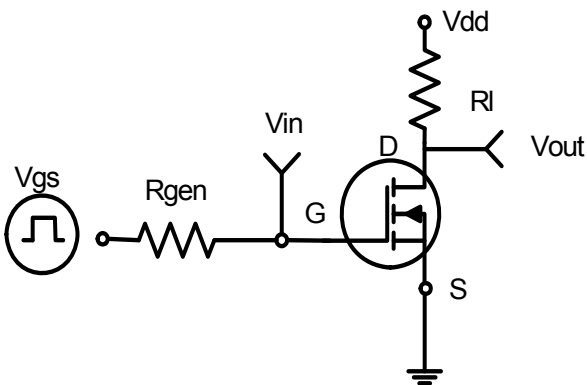
Notes:

- Surface Mounted on FR4 Board,  $t \leq 10$  sec.
- Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

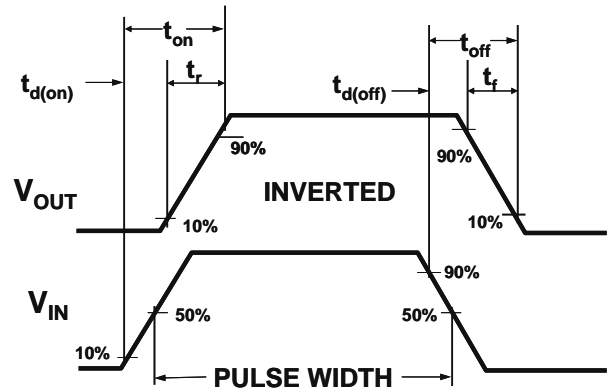
**Typical Electrical and Thermal Characteristic Curves**



**Figure 1. Normalized Maximum Transient Thermal Impedance**

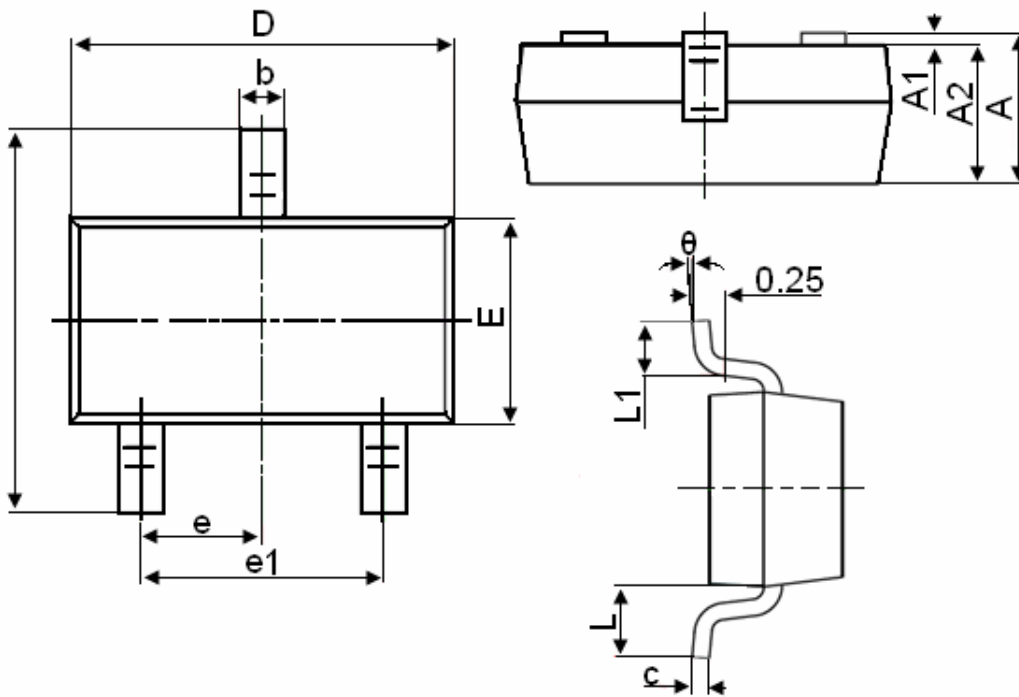


**Figure 2. Switching Test Circuit**



**Figure 3. Switching Waveforms**

**Package Outline Dimensions (SOT-23)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
theta	0°	8°	0°	8°