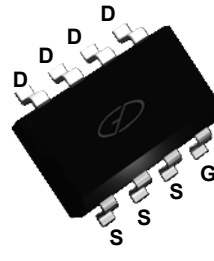
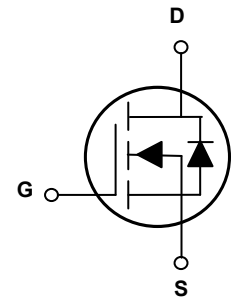


### Main Product Characteristics

$BV_{DSS}$	100V
$R_{DS(ON)}$	15m $\Omega$
$I_D$	8A



SOP-8



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 GSFQ1008 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 ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous ( $T_A=25^\circ\text{C}$ )	$I_D$	8	A
Drain Current-Continuous ( $T_A=70^\circ\text{C}$ )		6.4	A
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	32	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	72	mJ
Single Pulse Avalanche Current <sup>2</sup>	$I_{AS}$	38	A
Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$	2	W
Power Dissipation-Derate Above $25^\circ\text{C}$		0.016	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$
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** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	$\mu A$
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ\text{C}$	-	-	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance <sup>3</sup>	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5A$	-	12.5	15	m $\Omega$
		$V_{GS}=4.5V, I_D=3A$	-	16	21	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.6	2.5	V
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=3A$	-	10	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	$Q_g$	$V_{DS}=50V, I_D=4A, V_{GS}=10V$	-	14.5	22	nC
Gate-Source Charge <sup>3,4</sup>	$Q_{gs}$		-	1.5	3	
Gate-Drain Charge <sup>3,4</sup>	$Q_{gd}$		-	4.8	7.5	
Turn-On Delay Time <sup>3,4</sup>	$t_{d(on)}$	$V_{DD}=50V, R_G=6\Omega, V_{GS}=10V, I_D=4A$	-	4.8	7.2	nS
Rise Time <sup>3,4</sup>	$t_r$		-	12.5	19	
Turn-Off Delay Time <sup>3,4</sup>	$t_{d(off)}$		-	27.6	42	
Fall Time <sup>3,4</sup>	$t_f$		-	8.2	13	
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, F=1\text{MHz}$	-	850	1300	pF
Output Capacitance	$C_{oss}$		-	190	285	
Reverse Transfer Capacitance	$C_{rss}$		-	6.5	10	
Gate Resistance	$R_g$	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	0.9	-	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V, \text{Force Current}$	-	-	8	A
Pulsed Source Current	$I_{SM}$		-	-	16	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	-	-	1	V
Reverse Recovery Time	$T_{rr}$	$V_R=100V, I_S=8A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	-	140	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	180	-	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2.  $V_{DD}=50V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=38A, R_G=25\Omega, \text{Starting } T_J=25$
3. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
4. Essentially independent of operating temperature.

## Typical Electrical and Thermal Characteristic Curves

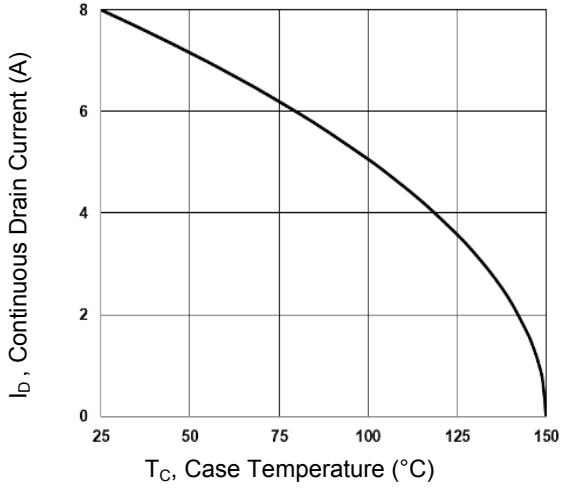


Figure 1. Continuous Drain Current vs.  $T_C$

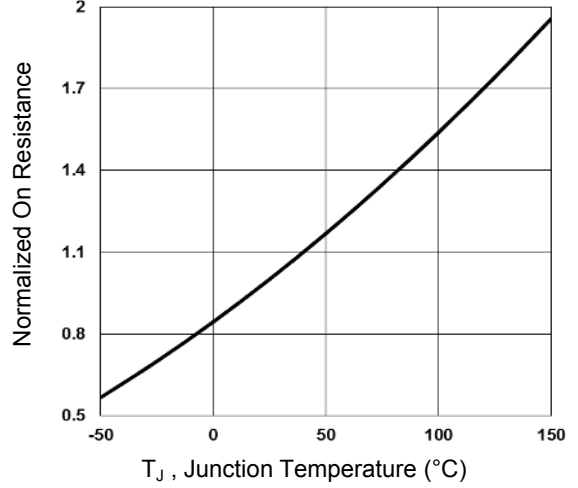


Figure 2. Normalized  $R_{DS(on)}$  vs.  $T_J$

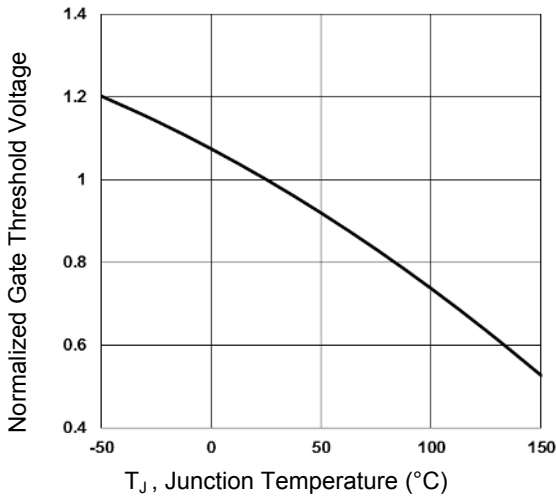


Figure 3. Normalized  $V_{th}$  vs.  $T_J$

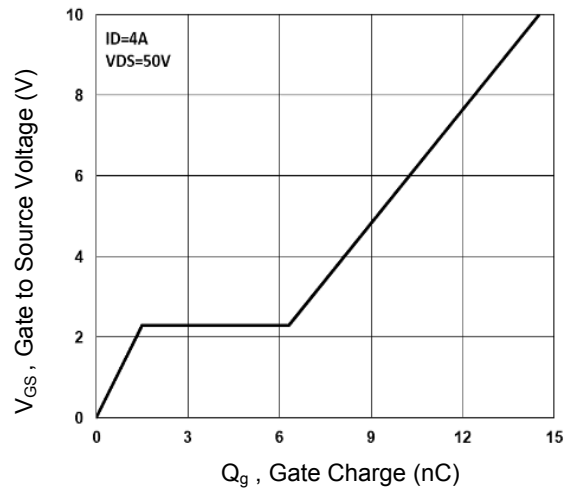


Figure 4. Gate Charge Characteristics

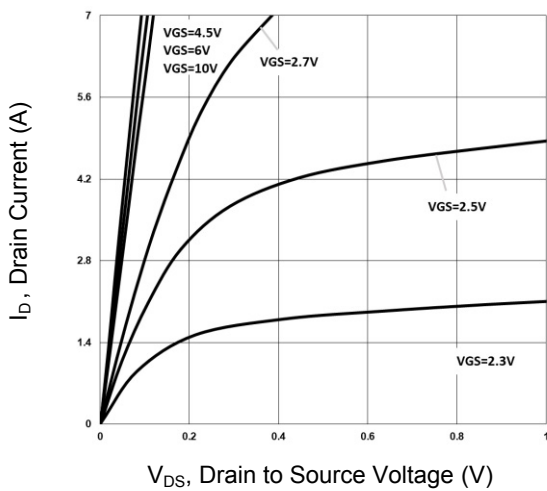


Figure 5. Typical Output Characteristics

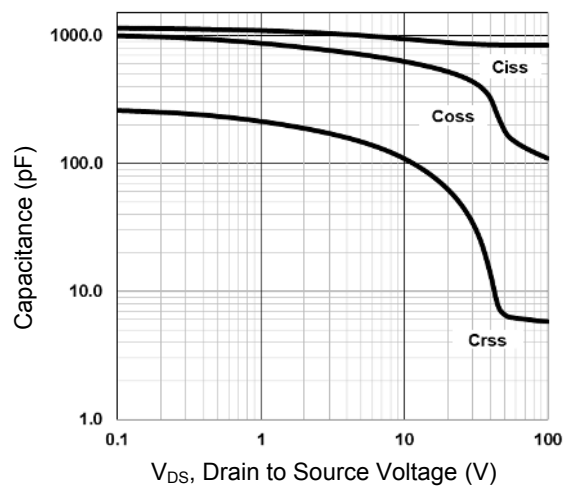
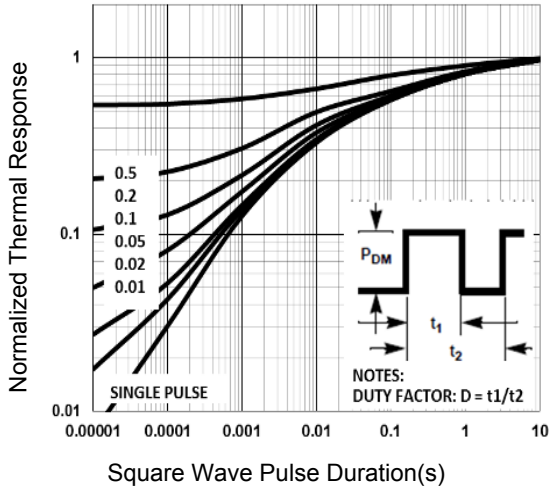
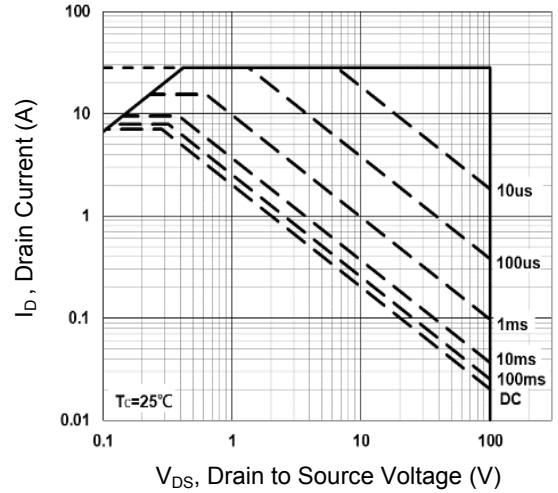


Figure 6. Capacitance Characteristics

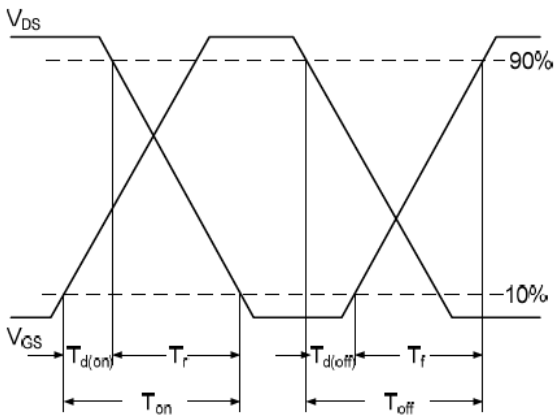
**Typical Electrical and Thermal Characteristic Curves**



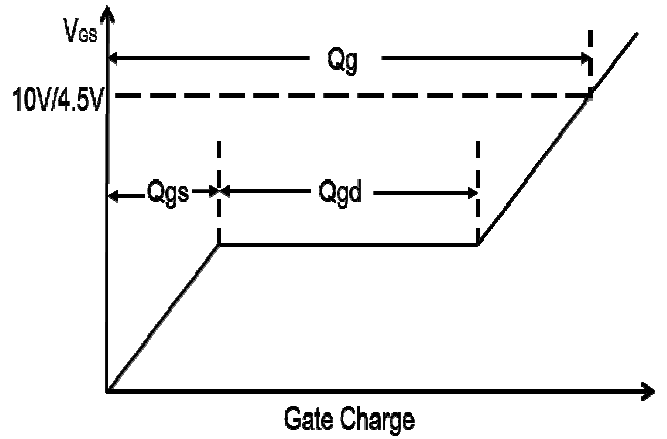
**Figure 7. Normalized Transient Impedance**



**Figure 8. Maximum Safe Operation Area**

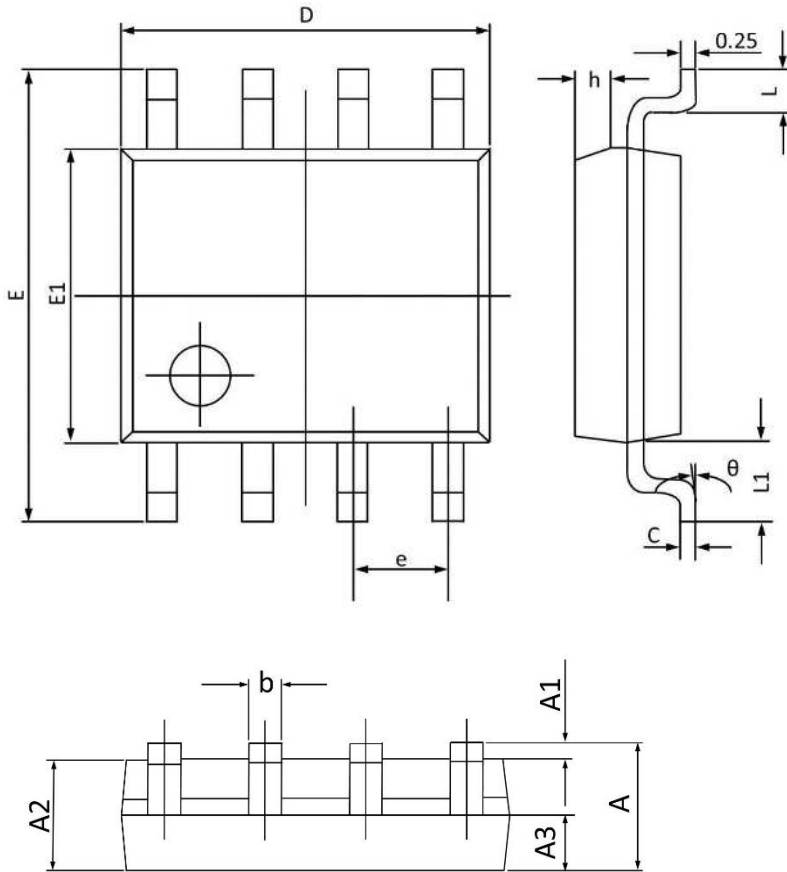


**Figure 9. Switching Time Waveform**



**Figure 10. Gate Charge Waveform**

**Package Outline Dimensions (SOP-8)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.800	0.053	0.069
A1	0.050	0.250	0.002	0.010
A2	1.250	1.650	0.049	0.065
A3	0.500	0.700	0.020	0.028
b	0.300	0.510	0.012	0.020
c	0.150	0.260	0.006	0.010
D	4.700	5.100	0.185	0.201
E	5.800	6.200	0.228	0.244
E1	3.700	4.100	0.146	0.161
e	1.270(BSC)		0.050(BSC)	
h	0.250	0.500	0.010	0.020
L	0.400	1.000	0.016	0.039
L1	1.050(BSC)		0.041(BSC)	
θ	0°	8°	0°	8°