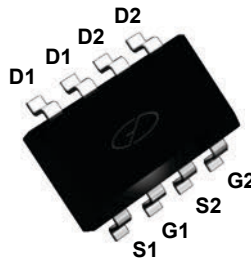
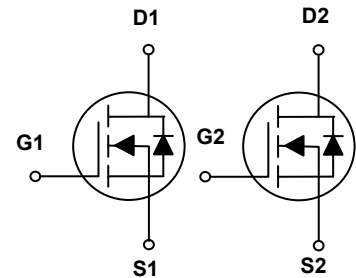


### Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	40m $\Omega$
$I_D$	4.5A



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 GSFQ0888 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	Max.	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	+20/-12	V
Drain Current-Continuous ( $T_A=25^\circ\text{C}$ )	$I_D$	4.5	A
Drain Current-Continuous ( $T_A=70^\circ\text{C}$ )		3.6	
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	18	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	36	mJ
Single Pulse Avalanche Current <sup>2</sup>	$I_{AS}$	27	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	2	W
Power Dissipation-Derate above $25^\circ\text{C}$		0.016	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Operating Junction Temperature Range	$T_J$	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^\circ\text{C}$

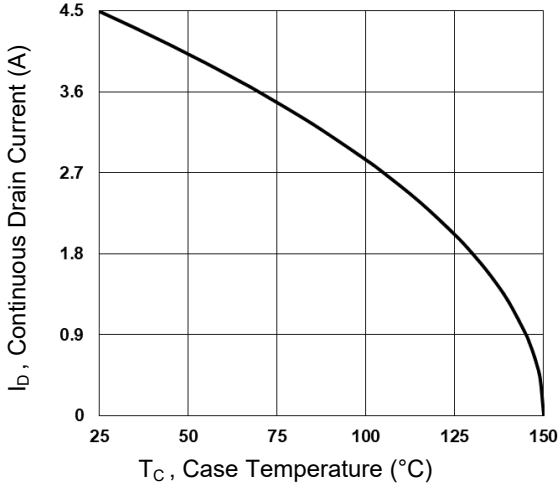
### Electrical Characteristics ( $T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On/Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	$\mu A$
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ\text{C}$	-	-	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3A$	-	33	40	m $\Omega$
		$V_{GS}=4.5V, I_D=2A$	-	46	60	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.5	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-5.1	-	mV/ $^\circ\text{C}$
Forward Transconductance	$g_{fs}$	$V_{DS}=10V, I_D=1A$	-	3.8	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	$Q_g$	$V_{DS}=50V, I_D=2A, V_{GS}=10V$	-	7.7	11	nC
Gate-Source Charge <sup>3,4</sup>	$Q_{gs}$		-	1.1	1.6	
Gate-Drain Charge <sup>3,4</sup>	$Q_{gd}$		-	3	4.5	
Turn-On Delay Time <sup>3,4</sup>	$t_{d(on)}$	$V_{DD}=50V, R_G=6\Omega, V_{GS}=10V, I_D=2A$	-	7.4	15	nS
Rise Time <sup>3,4</sup>	$t_r$		-	12	24	
Turn-Off Delay Time <sup>3,4</sup>	$t_{d(off)}$		-	23	46	
Fall Time <sup>3,4</sup>	$t_f$		-	16	32	
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, F=1\text{MHz}$	-	501	750	pF
Output Capacitance	$C_{oss}$		-	122	180	
Reverse Transfer Capacitance	$C_{rss}$		-	31	46	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V, \text{Force Current}$	-	-	4.5	A
Pulsed Source Current	$I_{SM}$		-	-	9	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	-	-	1	V
Reverse Recovery Time	$t_{rr}$	$V_R=100V, I_S=2A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	-	30	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	24	-	nC

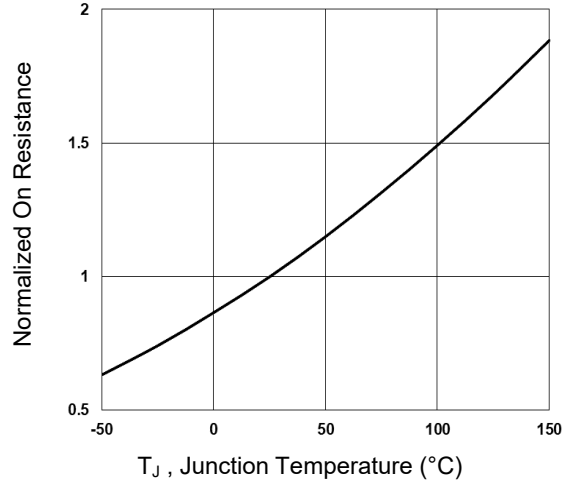
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2.  $V_{DD}=50V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=27A, R_G=25\Omega, \text{starting } T_J=25^\circ\text{C}$ .
3. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
4. Essentially independent of operating temperature.

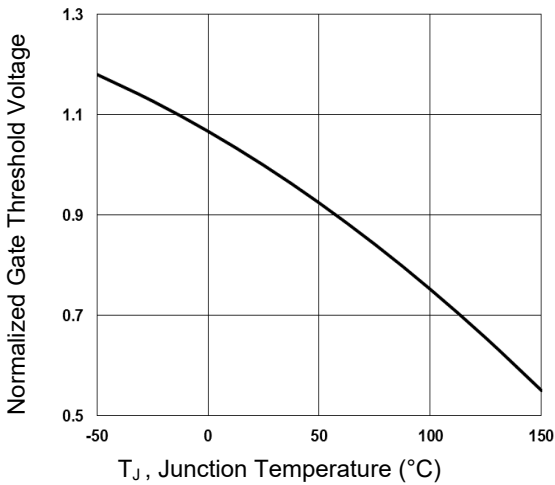
**Typical Electrical and Thermal Characteristic Curves**



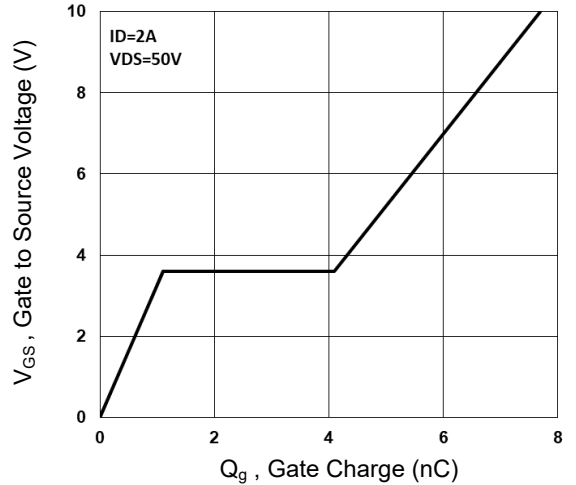
**Figure 1. Continuous Drain Current vs.  $T_c$**



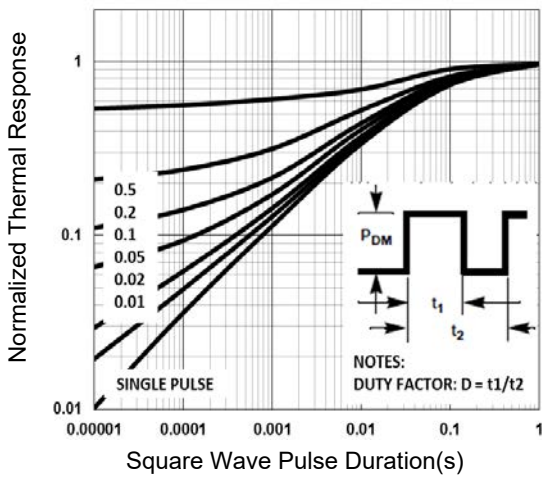
**Figure 2. Normalized  $R_{DSON}$  vs.  $T_j$**



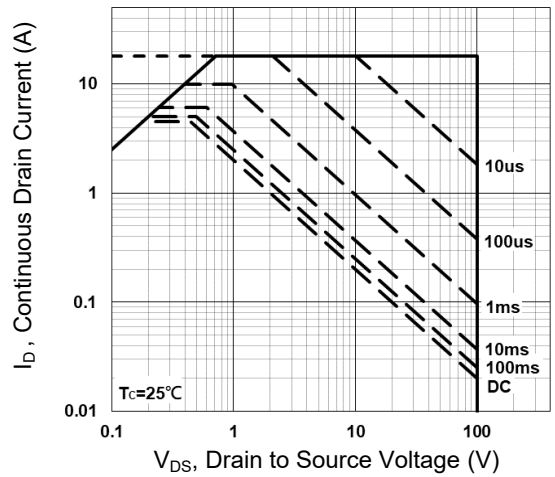
**Figure 3. Normalized  $V_{th}$  vs.  $T_j$**



**Figure 4. Gate Charge Waveform**



**Figure 5. Normalized Transient Response**



**Figure 6. Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**

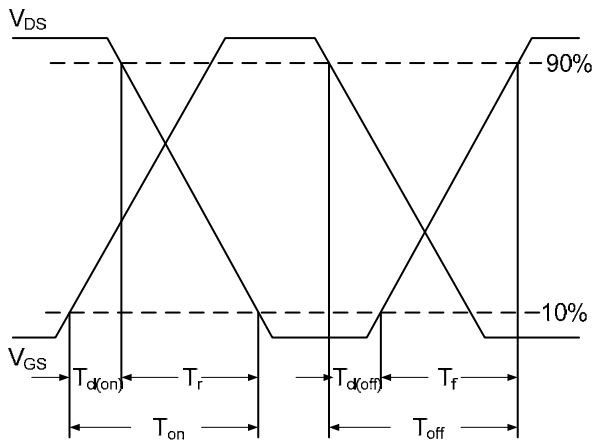


Figure 7. Switching Time Waveform

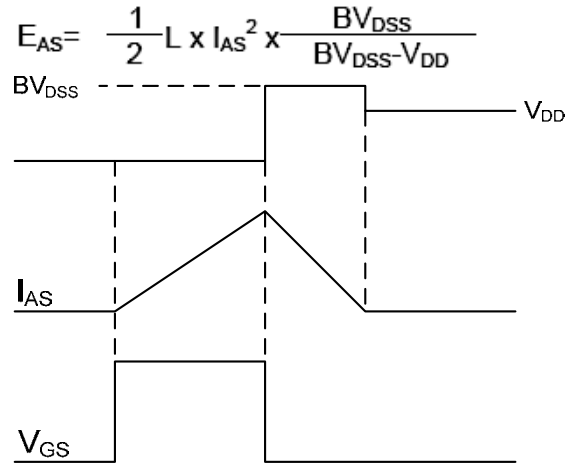
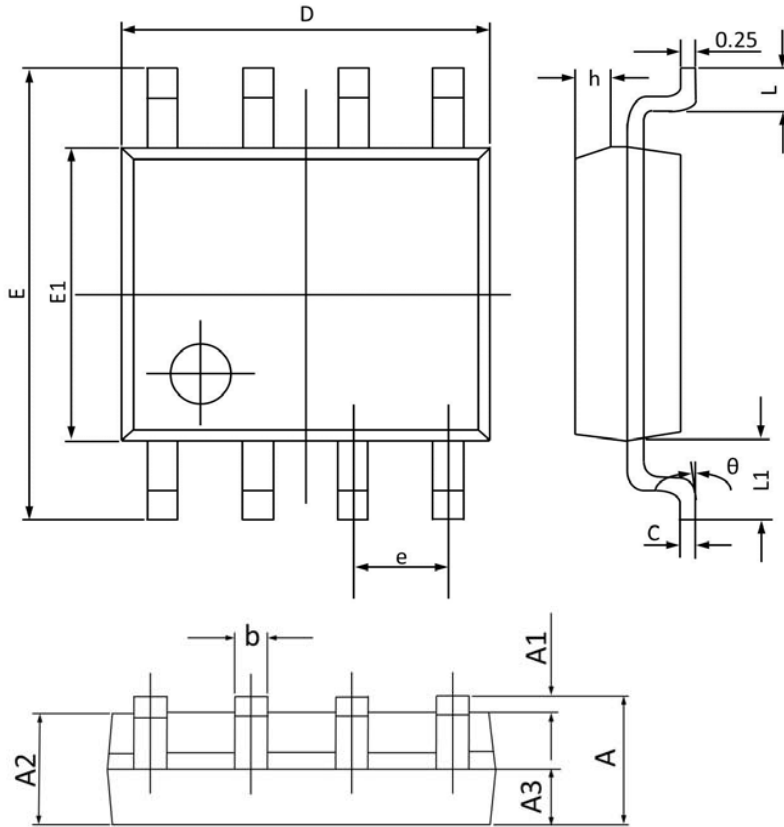


Figure 8. EAS Waveform

**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)	
$\theta$	0°	8°	0°	8°