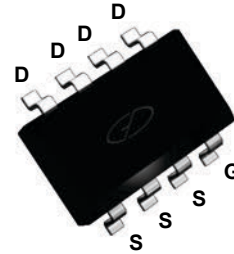
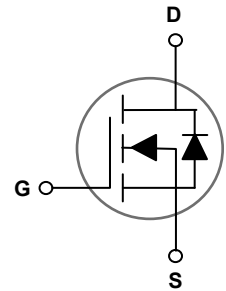


**Main Product Characteristics**

$V_{(BR)DSS}$	80V
$R_{DS(ON)}$	13mΩ
$I_D$	19A



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 GSFQ8966 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** ( $T_C=25^{\circ}C$  unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	80	V
Gate-Source Voltage	$V_{GS}$	±25	V
Drain Current – Continuous ( $T_C=25^{\circ}C$ )	$I_D$	19	A
Drain Current – Continuous ( $T_C=100^{\circ}C$ )		12	A
Drain Current – Pulsed <sup>1</sup>	$I_{DM}$	48	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	180	mJ
Single Pulse Avalanche Current <sup>2</sup>	$I_{AS}$	60	A
Power Dissipation ( $T_C=25^{\circ}C$ )	$P_D$	10.2	W
Power Dissipation – Derate above 25°C		0.82	W/°C
Storage Temperature Range	$T_{STG}$	-50 to +150	°C
Operating Junction Temperature Range	$T_J$	-50 to +150	°C

**Thermal Characteristics**

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	62	°C/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	12.2	°C/W

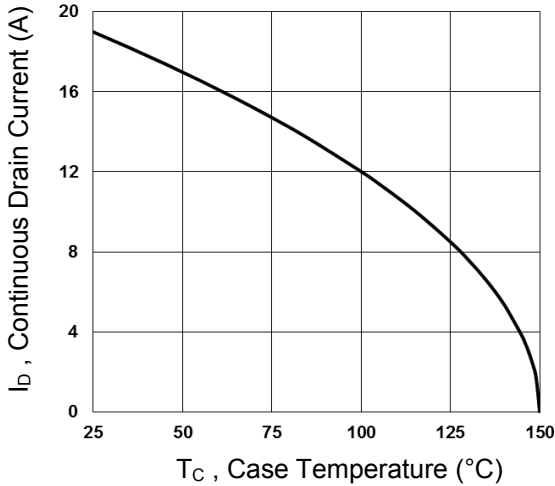
**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	80	---	---	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D=1mA$	---	0.05	---	$V/^\circ\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	$\mu A$
		$V_{DS}=64V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 25V, V_{DS}=0V$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=12A$	---	10.5	13	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{DS}, I_D=250\mu A$	2	3	4	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		---	-5	---	$mV/^\circ\text{C}$
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>	$Q_g$	$V_{DS}=40V, V_{GS}=10V, I_D=10A$	---	31.2	48	nC
Gate-Source Charge <sup>3, 4</sup>	$Q_{gs}$		---	9	18	
Gate-Drain Charge <sup>3, 4</sup>	$Q_{gd}$		---	9.2	18	
Turn-On Delay Time <sup>3, 4</sup>	$T_{d(on)}$	$V_{DD}=40V, V_{GS}=10V, R_G=6\Omega, I_D=1A$	---	22	44	nS
Rise Time <sup>3, 4</sup>	$T_r$		---	16	32	
Turn-Off Delay Time <sup>3, 4</sup>	$T_{d(off)}$		---	40	80	
Fall Time <sup>3, 4</sup>	$T_f$		---	31	62	
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V, F=1MHz$	---	1810	2700	pF
Output Capacitance	$C_{oss}$		---	252	380	
Reverse Transfer Capacitance	$C_{riss}$		---	100	150	
Gate Resistance	$R_g$	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	---	1.45	2.9	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V, \text{Force Current}$	---	---	19	A
Pulsed Source Current	$I_{SM}$		---	---	38	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1	V

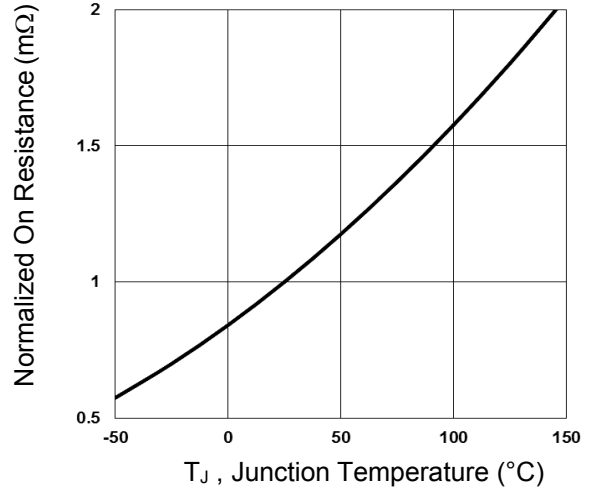
Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2.  $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=60A, \text{Starting } T_J=25^\circ\text{C}$
3. The data tested by pulsed, pulse width  $\leq 300\mu S$ , duty cycle  $\leq 2\%$ .
4. Essentially independent of operating temperature.

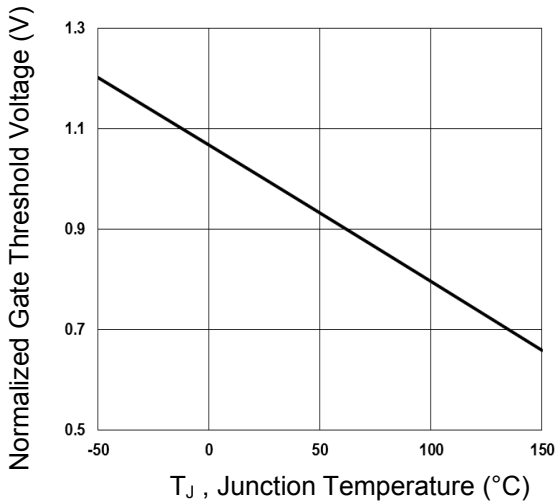
**Typical Electrical and Thermal Characteristic Curves**



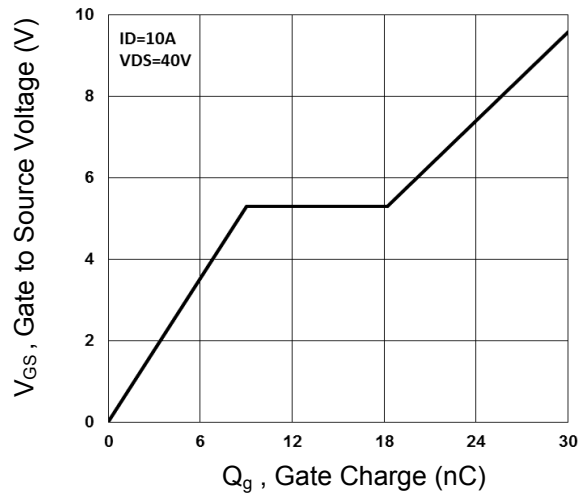
**Fig.1 Continuous Drain Current vs. T<sub>c</sub>**



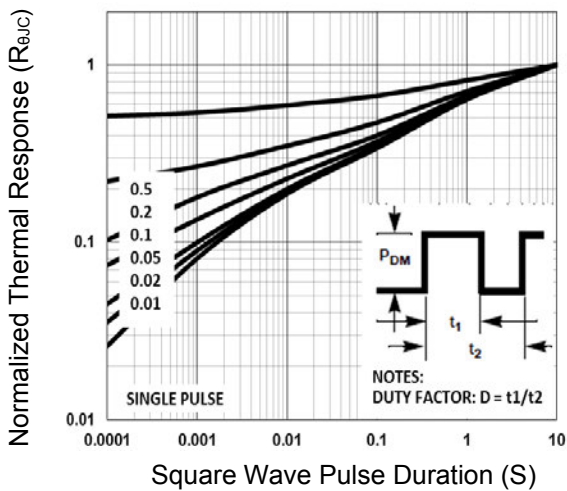
**Fig.2 Normalized R<sub>DS(on)</sub> vs. T<sub>j</sub>**



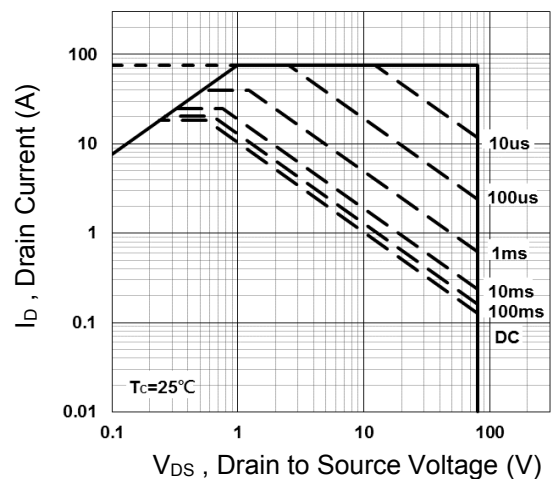
**Fig.3 Normalized V<sub>th</sub> vs. T<sub>j</sub>**



**Fig.4 Gate Charge Characteristics**

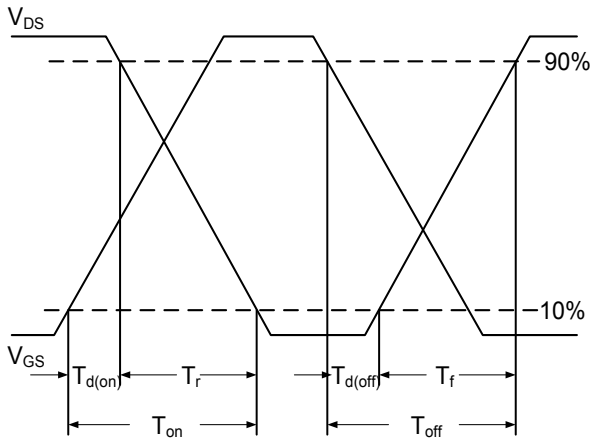


**Fig.5 Normalized Transient Impedance**

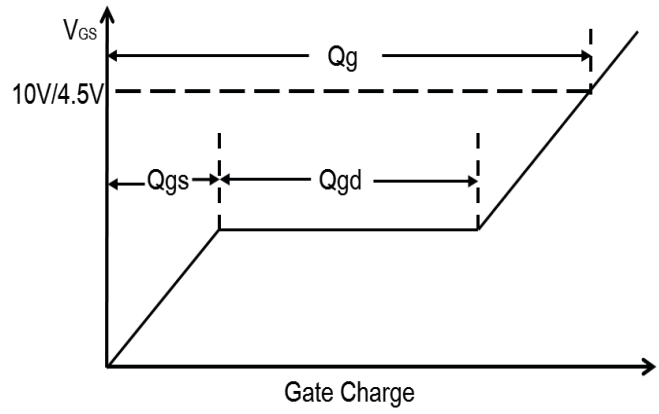


**Fig.6 Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**



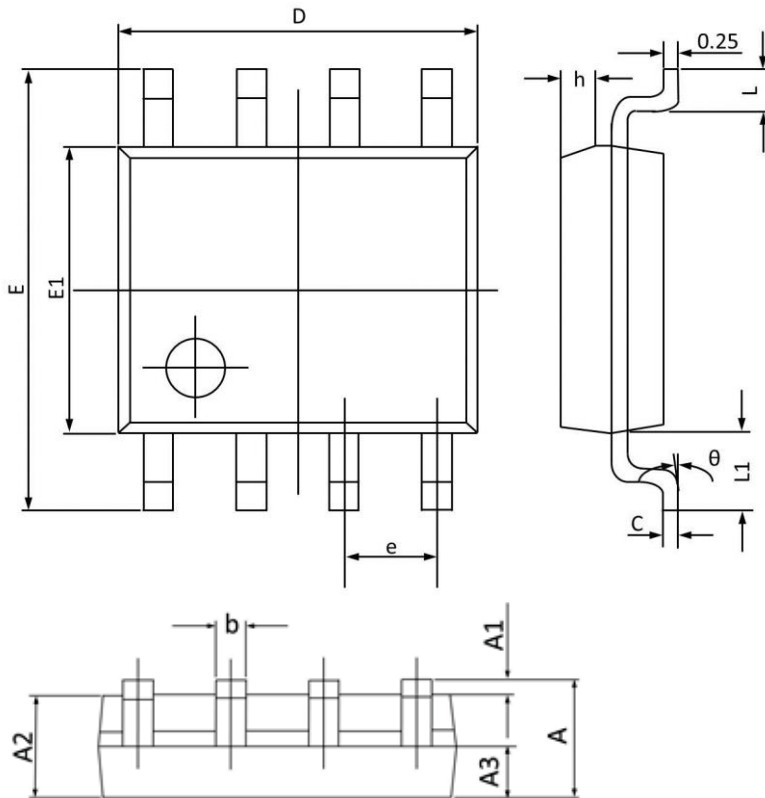
**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

**Package Outline Dimensions**

**SOP-8**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	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	0.019
L	0.500	0.800	0.019	0.031
L1	1.050(BSC)		0.041(BSC)	
theta	0°	8°	0°	8°