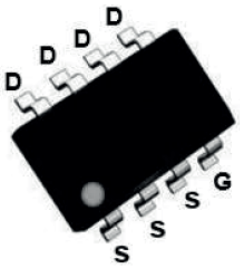
GOOD-ARK SEMICONDUCTOR

GSFQ2307

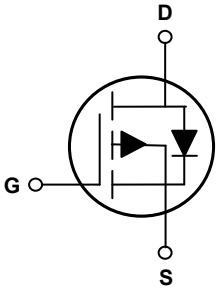
20V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	23mΩ (Max.)
I_D	-9.6A



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 GSFQ2307 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 supplies and a wide variety of other applications.

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous (T_C=25°C)	I_D	-9.6	A
Drain Current-Continuous (T_C=100°C)		-6.6	A
Drain Current-Pulsed[1]	I_{DM}	-36.8	A
Power Dissipation (T_C=25°C)	P_D	2.6	W
Power Dissipation-Derate above 25°C		0.021	W/°C
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	50	°C/W
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250uA	-20	-	-	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25°C, I_D=-1mA	-	-0.01	-	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V, T_J=25°C	-	-	-1	uA
		V_{DS}=-16V, V_{GS}=0V, T_J=125°C	-	-	-10	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-5A	-	15	23	mΩ
		V_{GS}=-2.5V, I_D=-4A	-	21	30	
		V_{GS}=-1.8V, I_D=-3A	-	30	39	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250uA	-0.3	-0.6	-1.0	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$		-	3	-	mV/°C
Forward Transconductance	gfs	V_{DS}=-10V, I_S=-5A	-	15	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[2,3]	Q_g	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-5A	-	19.5	29	nC
Gate-Source Charge[2,3]	Q_{gs}		-	2	4	
Gate-Drain Charge[2,3]	Q_{gd}		-	3.6	7	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=-10V, V_{GS}=-4.5V, R_G=25Ω, I_D=-1A	-	10.4	20	nS
Rise Time[2,3]	t_r		-	37.5	71	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	89.1	129	
Fall Time[2,3]	t_f		-	24.6	47	
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, F=1MHz	-	1670	2430	pF
Output Capacitance	C_{oss}		-	220	320	
Reverse Transfer Capacitance	C_{rss}		-	120	180	
Source-Drain Ratings and Characteristics						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	-6.5	A
Pulsed Source Current	I_{SM}		-	-	-26	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-1A, T_J=25°C	-	-	-1	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≦ 300uS, duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

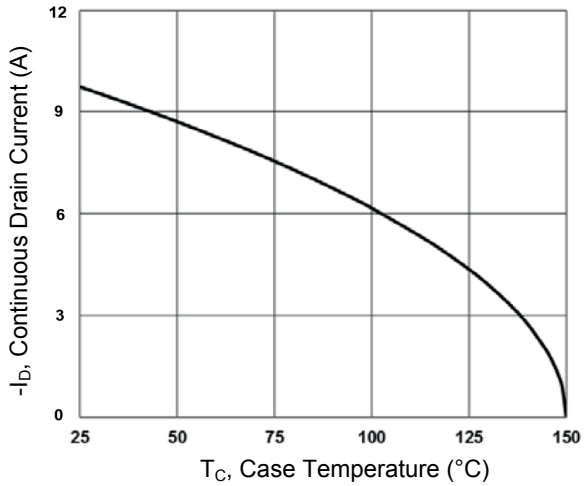


Figure 1. Continuous Drain Current vs. T_C

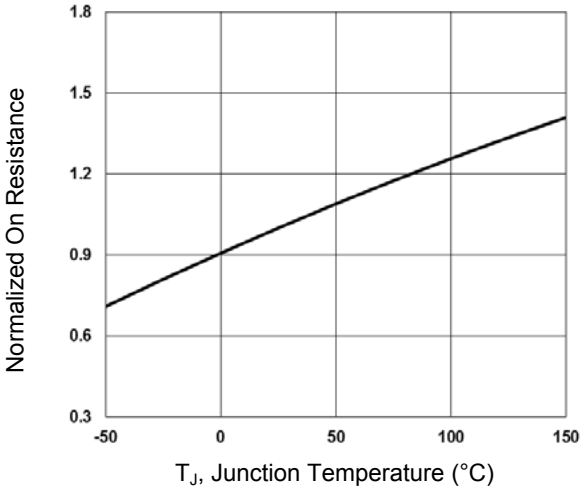


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

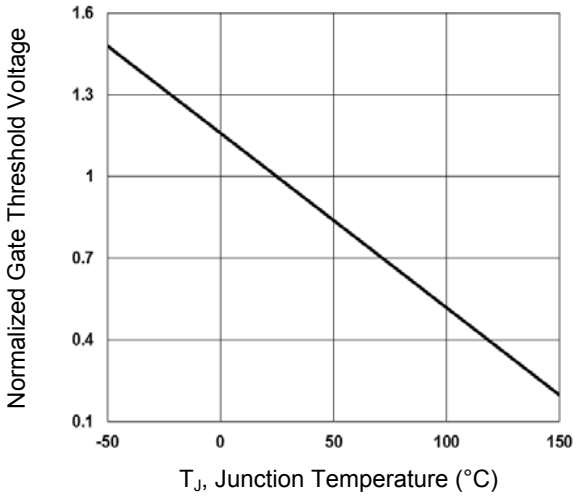


Figure 3. Normalized V_{th} vs. T_J

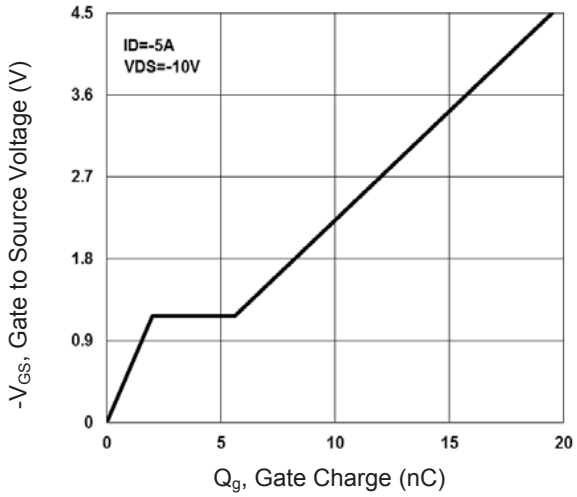


Figure 4. Gate Charge Waveform

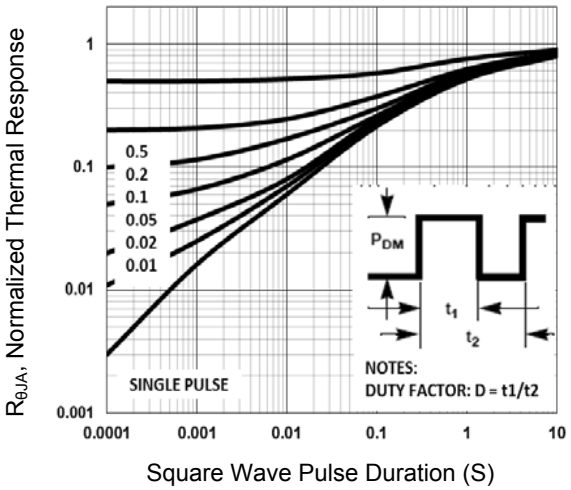


Figure 5. Normalized Transient Impedance

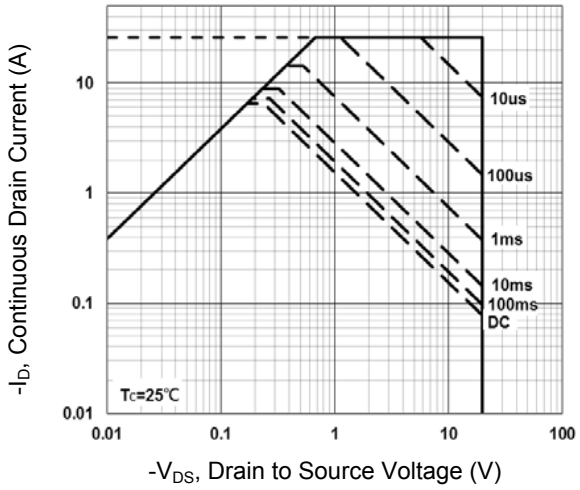
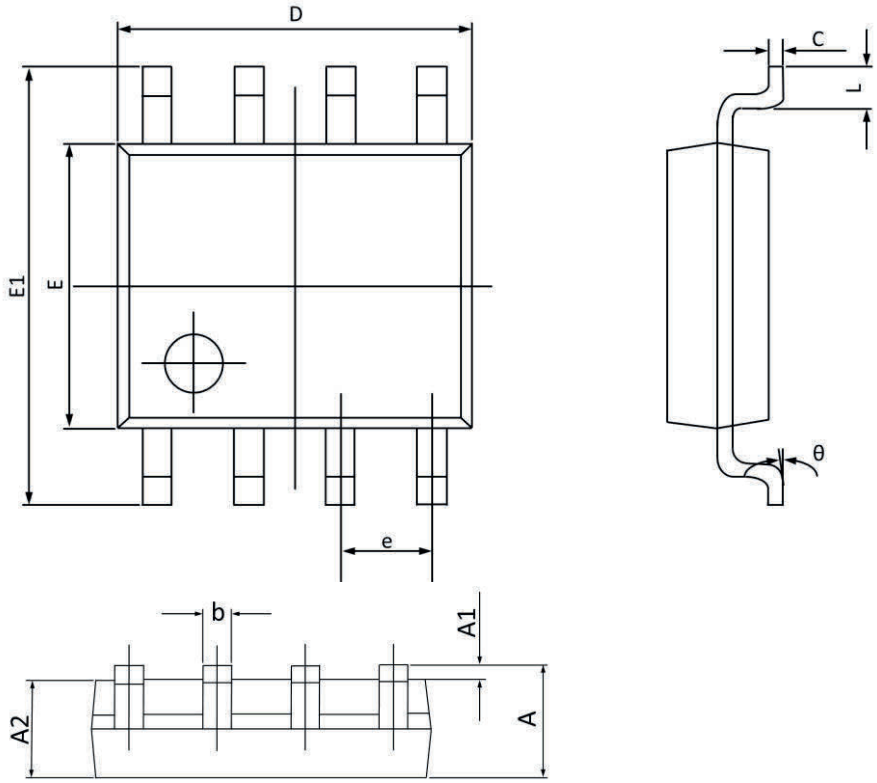


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.300	1.500	0.051	0.059
b	0.350	0.490	0.014	0.019
C	0.190	0.260	0.007	0.010
D	4.700	5.100	0.185	0.201
E	3.700	4.100	0.146	0.161
E1	5.800	6.200	0.228	0.244
e	1.27 BSC		0.05 BSC	
L	0.400	0.900	0.016	0.035
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Carrier	Quantity
GSFQ2307	SOP-8	Q2307	Tape & Reel	3,000 Pcs / Reel