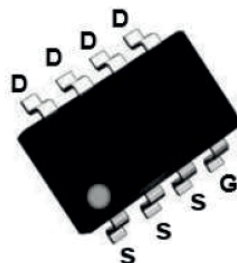
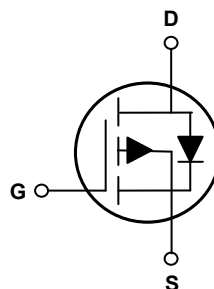


Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	23m Ω (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 ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$)	I_D	-9.6	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$)		-6.6	A
Drain Current-Pulsed ¹	I_{DM}	-36.8	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	2.6	W
Power Dissipation-Derate above 25°C		0.021	W/ $^{\circ}\text{C}$
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	50	$^{\circ}\text{C/W}$
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
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-20	-	-	V
BV _{DSS} Temperature Coefficient	△BV _{DSS} /△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	△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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

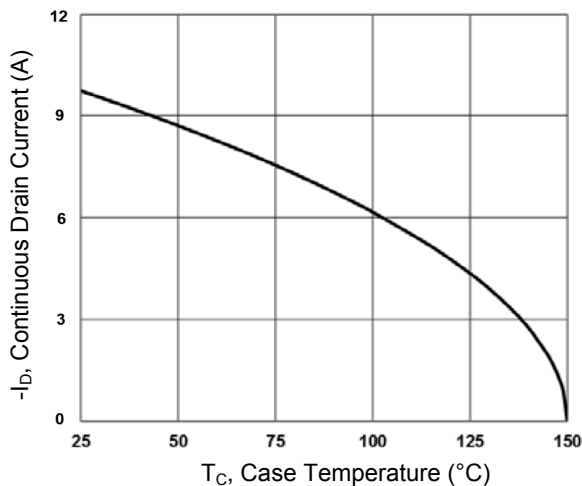


Figure 1. Continuous Drain Current vs. T_c

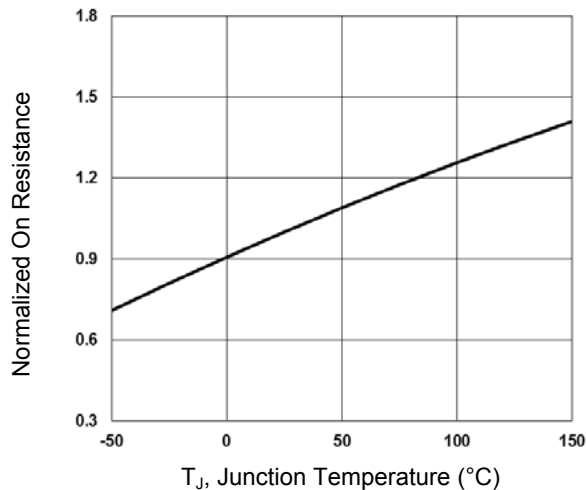


Figure 2. Normalized $R_{DS(ON)}$ vs. T_j

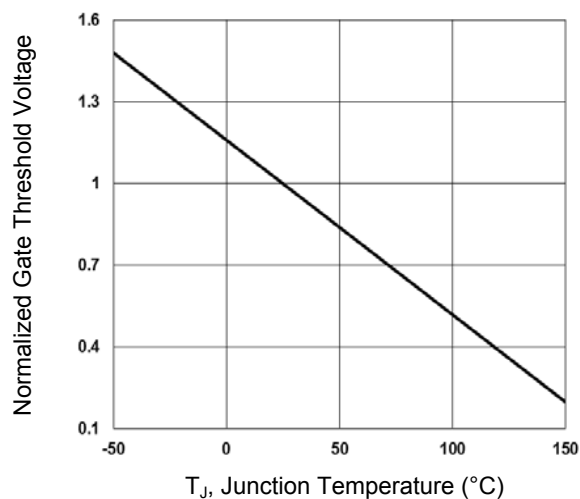


Figure 3. Normalized V_{th} vs. T_j

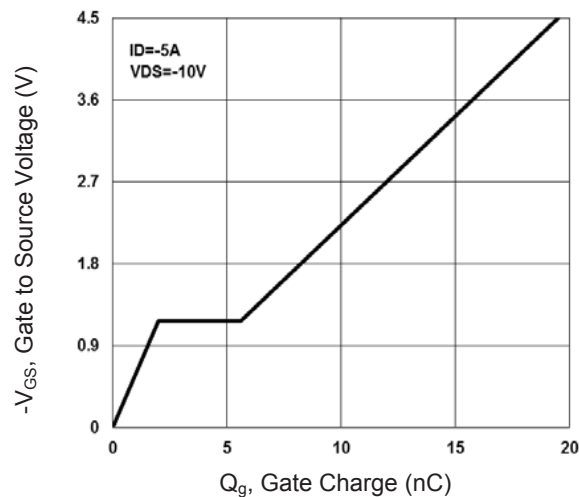


Figure 4. Gate Charge Waveform

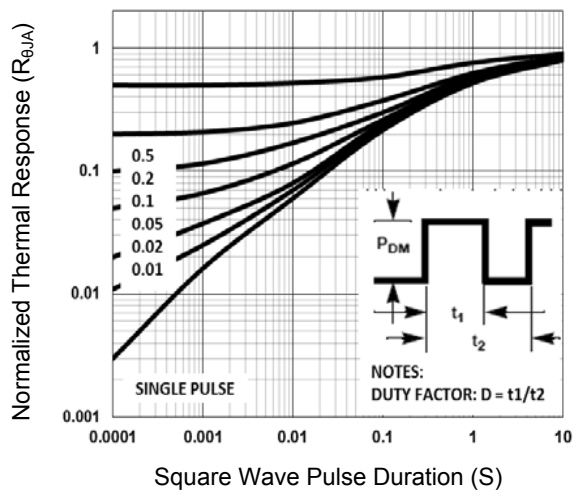


Figure 5. Normalized Transient Impedance

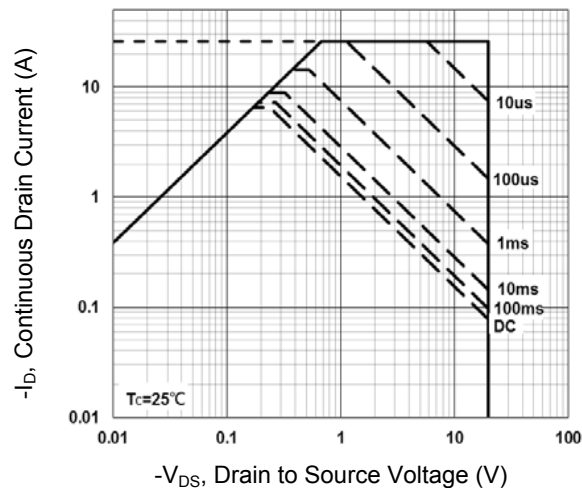
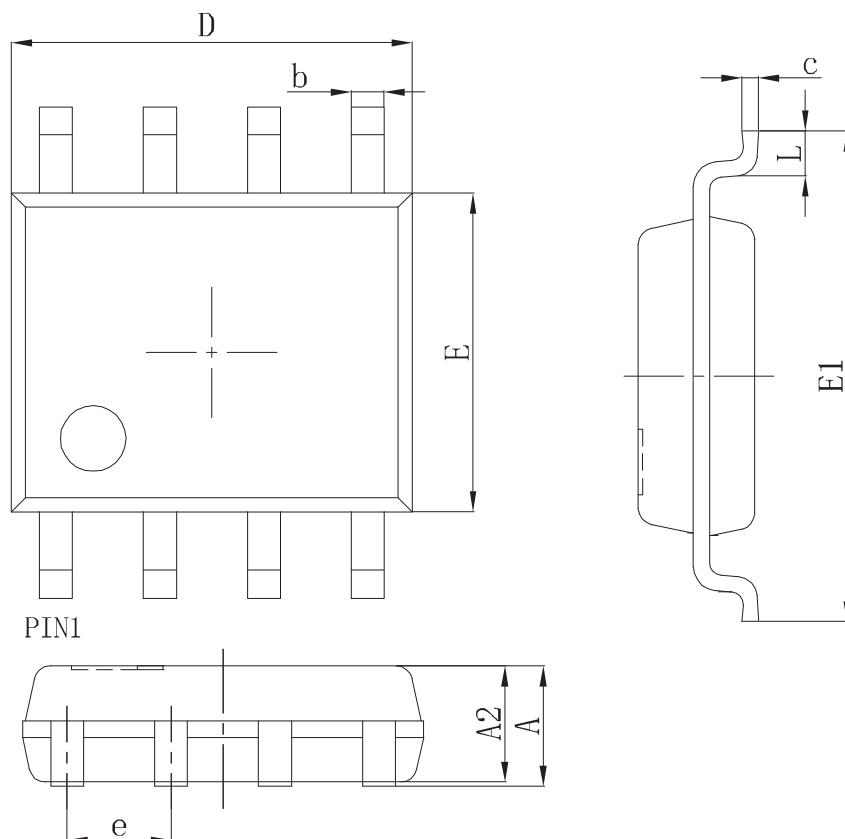


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.30	1.70	0.051	0.067
A2	1.25	1.55	0.049	0.061
c	0.17	0.25	0.007	0.010
E	3.80	4.00	0.150	0.157
E1	5.80	6.20	0.228	0.244
L	0.45	0.75	0.018	0.030
b	0.33	0.51	0.013	0.020
D	4.80	5.00	0.189	0.197
e	1.27 BSC		0.050 BSC	

Order Information

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

For more information, please contact us at: inquiry@goodarksemi.com