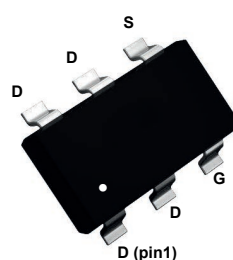
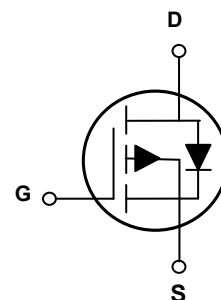


Main Product Characteristics

BV_{DSS}	-30V
$R_{DS(ON)}$	19m Ω (Max.)
I_D	-8A



SOT-23-6L



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 GSFR3019 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}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^\circ\text{C}$)	I_D	-8.0	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-5.6	
Drain Current-Pulsed ¹	I_{DM}	-64	A
Single Pulse Avalanche Energy ²	E_{AS}	95	mJ
Single Pulse Avalanche Current ²	I_{AS}	-19	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	4.3	W
Power Dissipation-Derate above 25 $^\circ\text{C}$		0.034	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	29.1	$^\circ\text{C}/\text{W}$
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}	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=-1\text{mA}$	-	-0.03	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{DS}=-24V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	-100	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-7.5A$	-	16	19	m Ω
		$V_{GS}=-4.5V, I_D=-4A$	-	24	31	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.1	-1.7	-2.8	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	4	-	$\text{mV}/^\circ\text{C}$
Forward Transconductance	g_{fs}	$V_{DS}=-5V, I_D=-5A$	-	20	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=-15V, I_D=-7.5A, V_{GS}=-10V$	-	22	-	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	1.5	-	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	4.3	-	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=-15V, R_G=3\Omega, V_{GS}=-10V, I_D=-7.5A$	-	13	-	nS
Rise Time ^{2,3}	t_r		-	14	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	120	-	
Fall Time ^{2,3}	t_f		-	95	-	
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, F=1\text{MHz}$	-	1136	-	pF
Output Capacitance	C_{oss}		-	185	-	
Reverse Transfer Capacitance	C_{rss}		-	117	-	
Drain-Source Ratings and Characteristics						
Continuous Source Current	I_S	$V_G=V_D=0V$, Force Current	-	-	-8	A
Pulsed Source Current	I_{SM}		-	-	-64	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-3A, T_J=25^\circ\text{C}$	-	-	-1	V
Reverse Recovery Time	t_{rr}	$I_F=-7A, di/dt=-100A/\mu s$	-	36	-	nS
Reverse Recovery Charge	Q_{rr}		-	34	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=-25V, V_{GS}=-10V, L=0.5\text{mH}, R_g=25\Omega$, starting $T_J=25^\circ\text{C}$.
3. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Electrical and Thermal Characteristic Curves

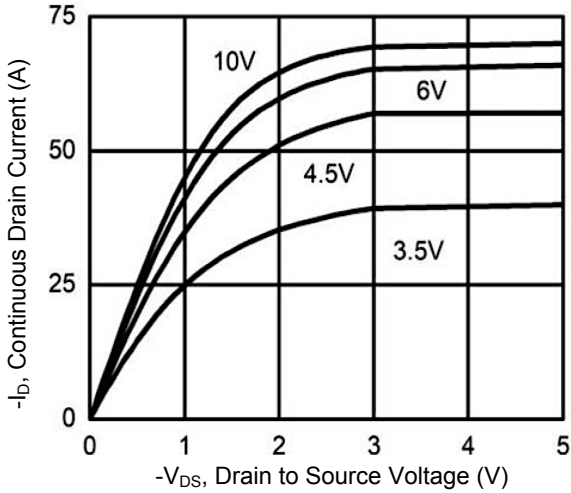


Figure 1. Output Characteristics

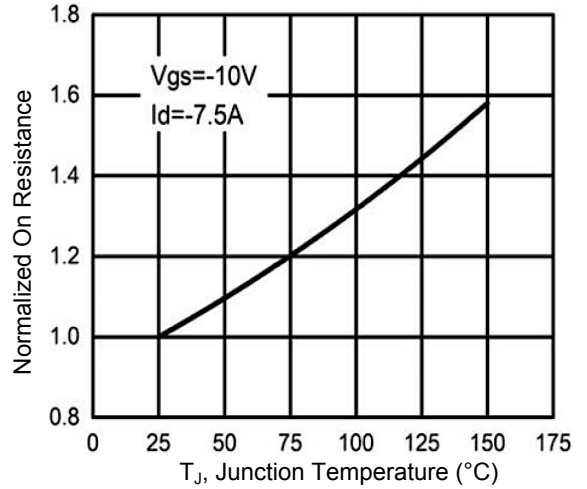


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

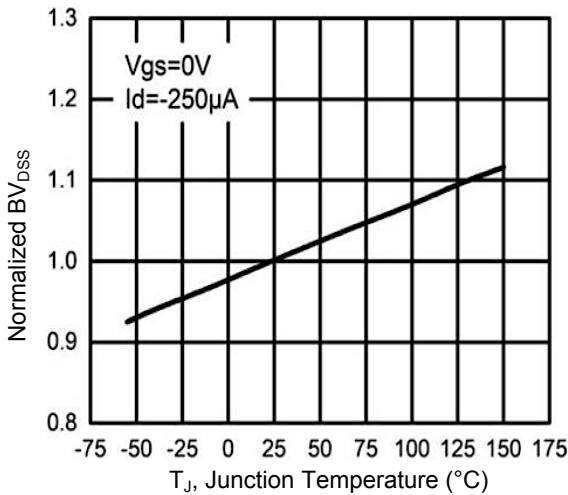


Figure 3. Normalized BV_{DSS} vs. T_J

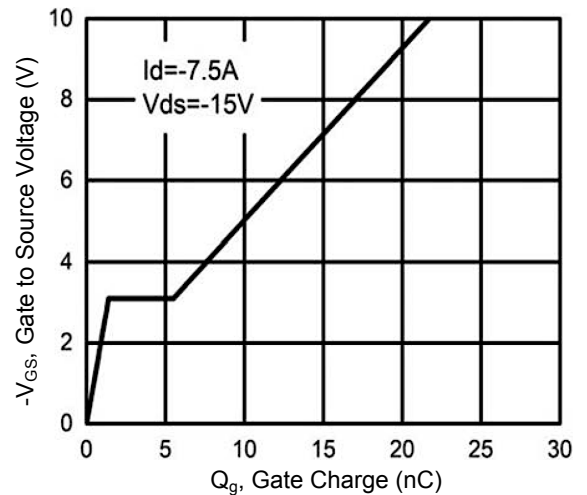


Figure 4. Gate Charge Waveform

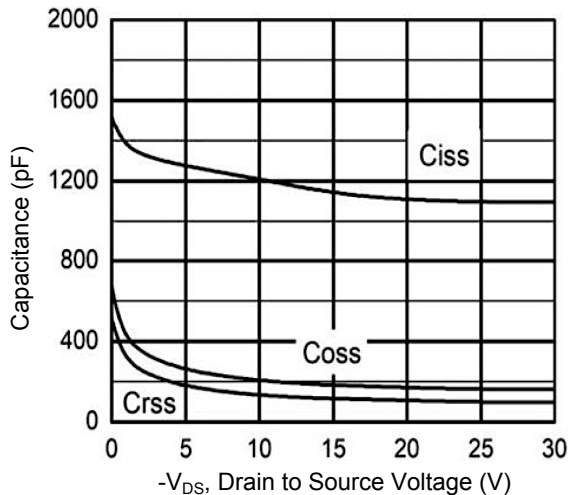


Figure 5. Capacitance Characteristics

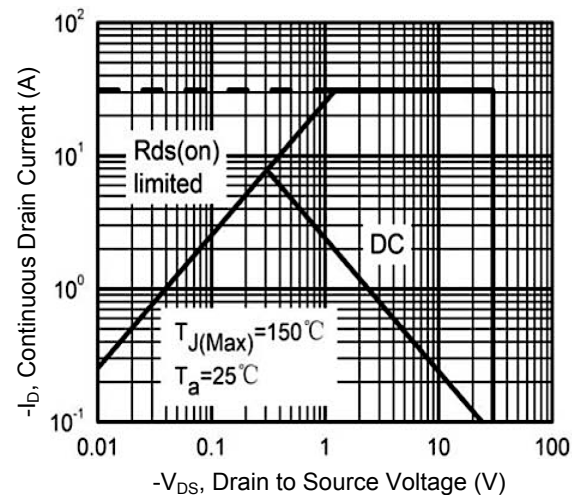
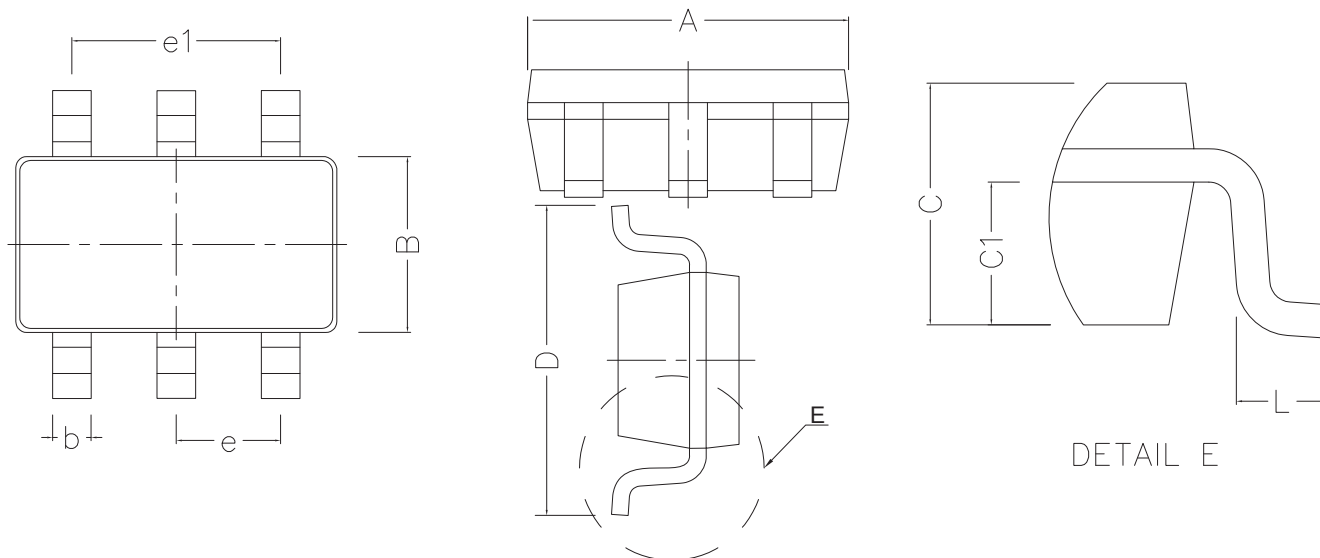


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOT-23-6L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.82	3.02	0.111	0.119
B	1.50	1.70	0.059	0.067
C	1.05	1.15	0.041	0.045
C1	0.60	0.70	0.024	0.028
D	2.65	2.95	0.104	0.116
L	0.30	0.60	0.012	0.024
b	0.28	0.42	0.011	0.017
e	0.95 TYP		0.037 TYP	
e1	1.90 TYP		0.075 TYP	

Order Information

Device	Package	Marking	Packaging	SPQ
GSFR3019	SOT-23-6L	R3019	Tape & Reel	3,000 Pcs / Reel