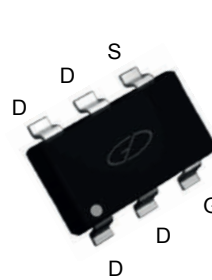


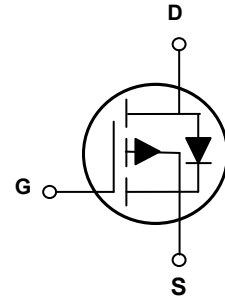


Main Product Characteristics

BV_{DSS}	-100V
$R_{DS(ON)}$	341m Ω (Max.)
I_D	-3A



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 GSFR1005 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	Max.	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous (T _A =25°C)	I_D	-3	A
Drain Current-Continuous (T _A =70°C)		-2.3	
Drain Current-Pulsed ¹	I_{DM}	-12	A
Single Pulse Avalanche Energy ²	E_{AS}	109	mJ
Single Pulse Avalanche Current ²	I_{AS}	20	A
Power Dissipation (T _A =25°C)	P_D	3.1	W
Power Dissipation-Derate above 25°C		0.025	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	45	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C


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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-100	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=-100V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{DS}=-80V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	-10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-3A$	-	279	341	m Ω
		$V_{GS}=-4.5V, I_D=-3A$	-	297	391	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.1	-1.6	-2.7	V
Forward Transconductance	gfs	$V_{DS}=-10V, I_D=-3A$	-	10	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=-50V, I_D=-3A, V_{GS}=-10V$	-	20	-	nC
Gate-to-Source Charge ^{3,4}	Q_{gs}		-	6	-	
Gate-to-Drain Charge ^{3,4}	Q_{gd}		-	4.3	-	
Turn-on Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=-50V, R_G=3\Omega, V_{GS}=-10V, I_D=-3.1A$	-	14	-	nS
Rise Time ^{3,4}	t_r		-	4	-	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	42	-	
Fall Time ^{3,4}	t_f		-	7	-	
Input Capacitance	C_{iss}	$V_{DS}=-50V, V_{GS}=0V, F=1\text{MHz}$	-	1200	-	pF
Output Capacitance	C_{oss}		-	34	-	
Reverse Transfer Capacitance	C_{rss}		-	29	-	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	6	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current	I_S	$V_G=V_D=0V,$	-	-	-3	A
Pulsed Source Current	I_{SM}	Force Current	-	-	-12	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-3A, T_J=25^\circ\text{C}$	-	-	-1.2	V
Reverse Recovery Time	T_{rr}	$V_R=-100V, I_S=-3A,$ $di/dt=100A/\mu s, T_J=25^\circ\text{C}$	-	42	-	nS
Reverse Recovery Charge	Q_{rr}		-	83	-	nC

Notes:

1. Repetitive rating: pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=0.5\text{mH}, I_{AS}=20A,$ starting $T_J=25^\circ\text{C}$.
3. Pulse test: pulse width $\leq 300\mu s,$ duty cycle $\leq 2\%$.
4. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

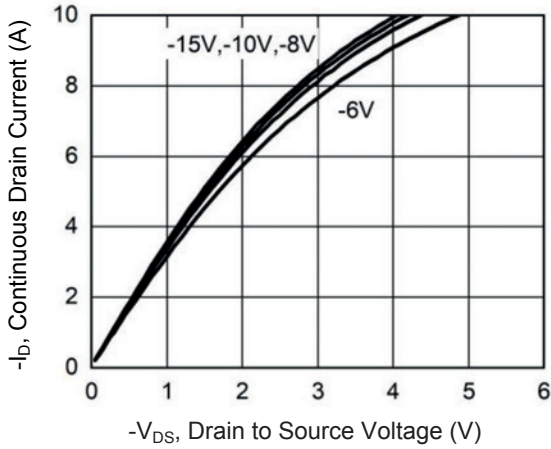


Figure 1. Typical Output Characteristics

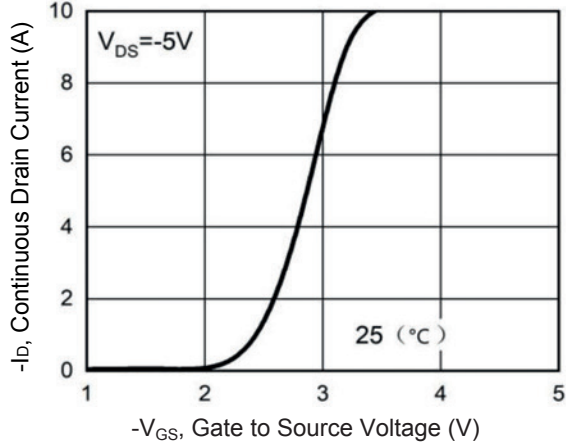


Figure 2. Transfer Characteristics

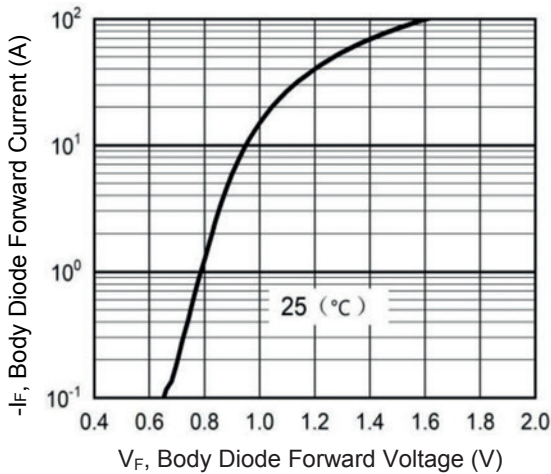


Figure 3. Body Diode Characteristics

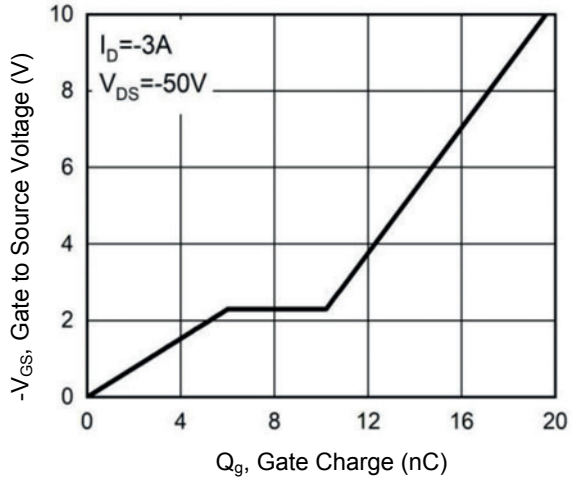


Figure 4. Gate Charge Characteristics

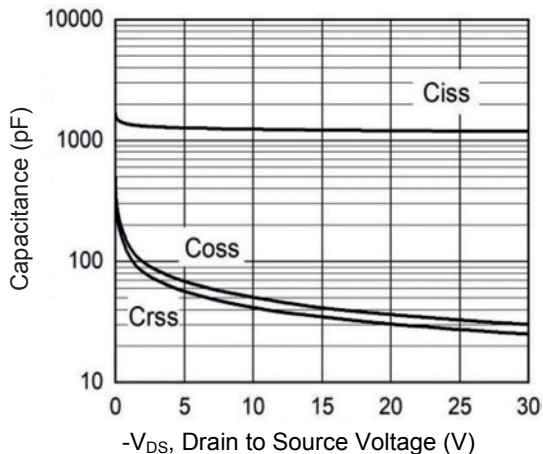


Figure 5. Capacitance Characteristics

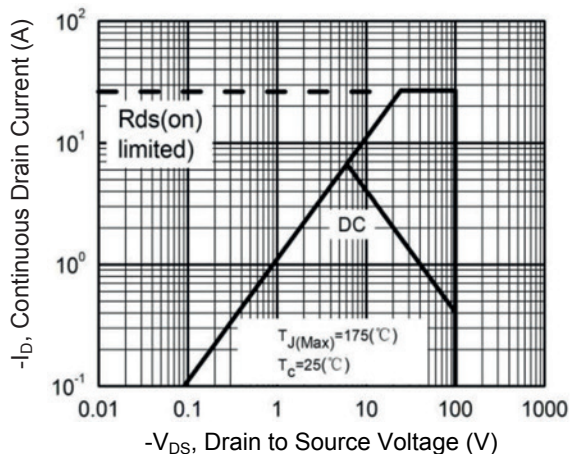
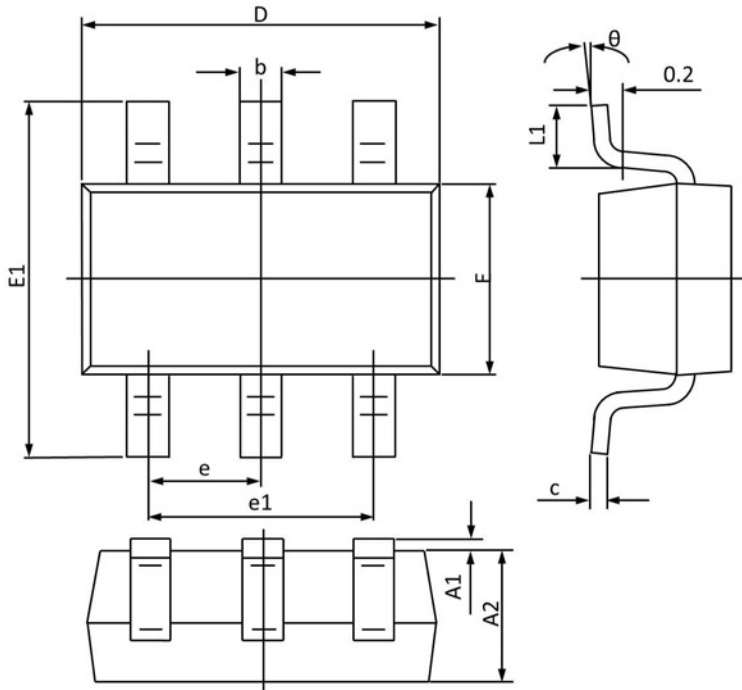


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOT-23-6L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A1	-	0.15	-	0.006
A2	0.90	1.30	0.035	0.051
b	0.30	0.50	0.012	0.019
c	0.10	0.20	0.004	0.008
D	2.80	3.05	0.110	0.120
E1	2.60	3.00	0.103	0.118
F	1.50	1.80	0.059	0.071
e	0.95 TYP		0.037 TYP	
e1	1.90 TYP		0.075 TYP	
L1	0.25	0.60	0.010	0.024
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Carrier	Quantity
GSFR1005	SOT-23-6L	R1005	Tape & Reel	3,000 pcs / Reel

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