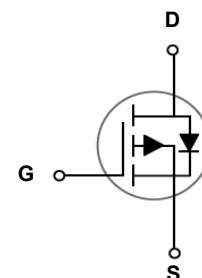


## Main Product Characteristics

$V_{(BR)DSS}$	-30V
$R_{DS(ON)}$	56mΩ (Max)
$I_D$	-4.1A



SOT-23



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 GSF3407 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	Max.	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current, @ Steady-State ( $T_A=25^\circ\text{C}$ ) <sup>1</sup>	$I_D$	-4.1	A
Continuous Drain Current, @ Steady-State ( $T_A=100^\circ\text{C}$ )		-3.2	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-15	A
Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$	1.2	W
Linear Derating Factor ( $T_A=25^\circ\text{C}$ )		0.0096	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) <sup>3</sup>	$R_{\theta JA}$	105	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_D=-250\mu\text{A}$	-30	-	-	V
Drain-to-Source Leakage Current	$I_{\text{DSS}}$	$V_{\text{DS}}=-30\text{V}, V_{\text{GS}}=0\text{V}$	-	-	-1	$\mu\text{A}$
		$T_J=125^\circ\text{C}$	-	-	-50	
Gate-to-Source Forward Leakage	$I_{\text{GSS}}$	$V_{\text{GS}}=20\text{V}$	-	-	100	$\text{nA}$
		$V_{\text{GS}}=-20\text{V}$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}}=-10\text{V}, I_D=-4.1\text{A}$	-	46.5	56	$\text{m}\Omega$
		$V_{\text{GS}}=-4.5\text{V}, I_D=-3.5\text{A}$	-	53	66	
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_D=-250\mu\text{A}$	-1.0	-1.6	-2.4	V
Forward Transconductance	$g_{\text{fs}}$	$V_{\text{DS}}=5\text{V}, I_D=-3.0\text{A}$	-	11	-	S
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{\text{iss}}$	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=-15\text{V}, f=1\text{MHz}$	-	580	-	$\text{pF}$
Output Capacitance	$C_{\text{oss}}$		-	98	-	
Reverse Transfer Capacitance	$C_{\text{rss}}$		-	74	-	
Total Gate Charge	$Q_g$	$I_D=-4.1\text{A}, V_{\text{DS}}=-15\text{V}, V_{\text{GS}}=-10\text{V}$	-	6.8	-	$\text{nC}$
Gate-to-Source Charge	$Q_{\text{gs}}$		-	1.0	-	
Gate-to-Drain ("Miller") Charge	$Q_{\text{gd}}$		-	1.4	-	
Turn-on Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{GS}}=-10\text{V}, V_{\text{DS}}=-15\text{V}, I_D=-1\text{A}, R_{\text{GEN}}=2.5\Omega$	-	14	-	$\text{nS}$
Rise Time	$t_r$		-	61	-	
Turn-Off Delay Time	$t_{\text{d}(\text{off})}$		-	19	-	
Fall Time	$t_f$		-	10	-	
Gate Resistance	$R_g$	$f=1\text{MHz}$	-	4.2	-	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	$I_s$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	-4.1	A
Pulsed Source Current (Body Diode)	$I_{\text{SM}}$		-	-	-15	A
Diode Forward Voltage	$V_{\text{SD}}$	$I_s=-4.1\text{A}, V_{\text{GS}}=0\text{V}$	-	-0.8	-1.2	V

Notes:

1. Pulse test: pulse width  $\leq 300\text{us}$ , duty cycle  $\leq 2\%$ .
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

## Typical Electrical and Thermal Characteristic Curves

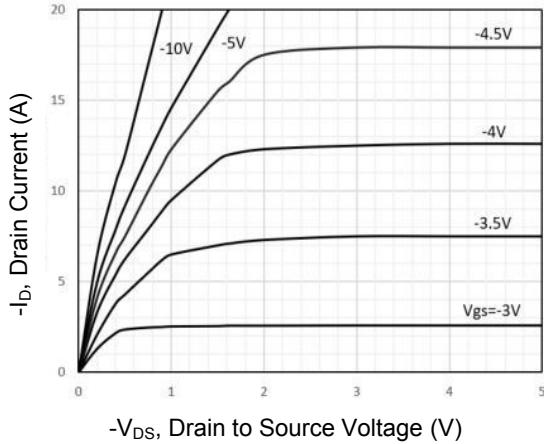


Figure 1. Typical Output Characteristics

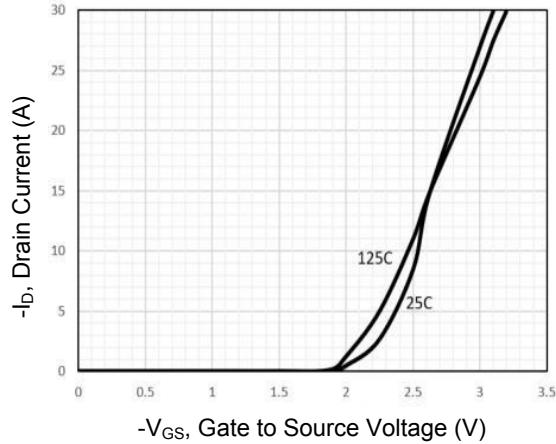


Figure 2. Typical Transfer Characteristics

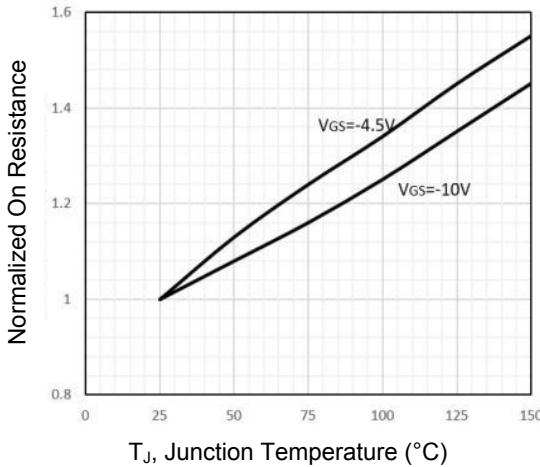


Figure 3. Normalized  $R_{DS(on)}$  vs.  $T_J$

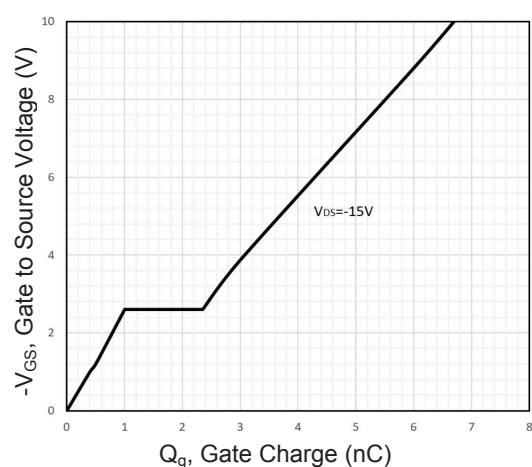


Figure 4. Gate Charge

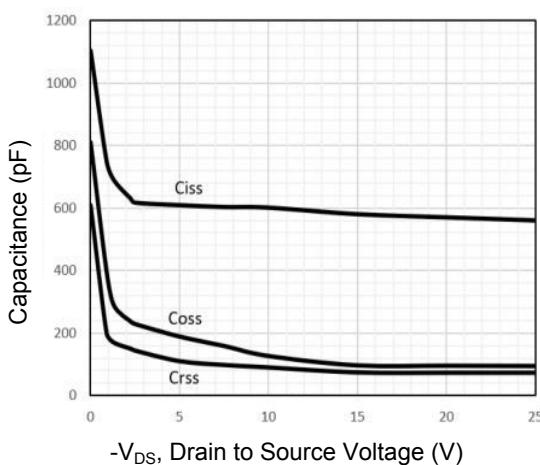


Figure 5. Typical Capacitance Characteristics

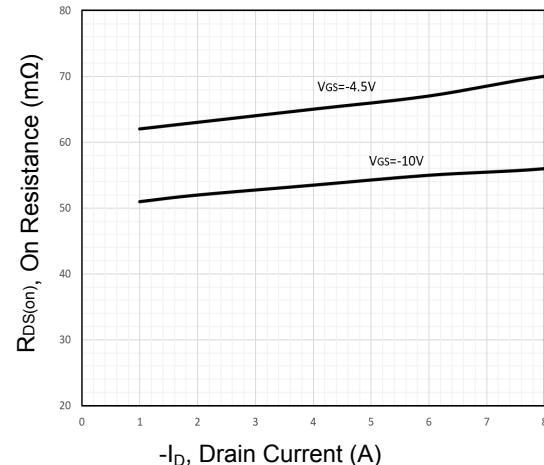
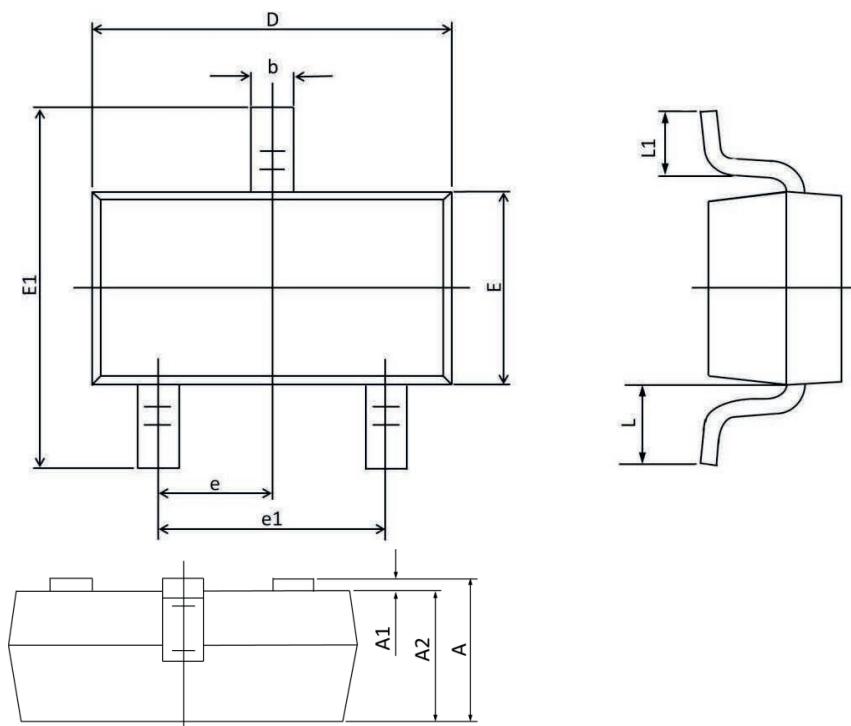


Figure 6. Typical Drain-Source on-Resistance

## Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.047
A1	0.000	0.100	0.000	0.004
A2	0.900	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
D	2.800	3.040	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.55 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020

## Order Information

Device	Package	Marking	Carrier	Quantity
GSF3407	SOT-23	3407	Tape & Reel	3,000 pcs / Reel

For more information, please contact us at: [inquiry@goodarksemi.com](mailto:inquiry@goodarksemi.com)