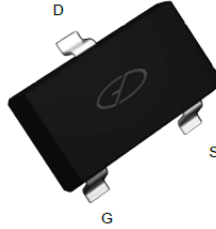
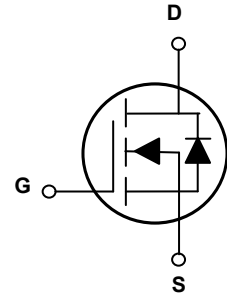


Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	27m Ω
I_D	5.6A



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 GSF3400 utilizes the latest techniques to achieve ultrahigh cell density and low on-resistance. These features make this device extremely efficient and reliable for use in battery protection, load switch, power management 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}	± 12	V
Continuous Drain Current, @ Steady-State	$I_D @ T_A = 25^\circ\text{C}$	5.6	A
Continuous Drain Current, @ Steady-State	$I_D @ T_A = 70^\circ\text{C}$	4.5	A
Pulsed Drain Current ¹	I_{DM}	23	A
Power Dissipation	$P_D @ T_A = 25^\circ\text{C}$	1.2	W
Junction-to-Ambient (PCB Mounted, Steady-State) ²	$R_{\theta JA}$	104	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	$T_J \quad T_{STG}$	-55 to + 150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30	-	—	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1	μA
		$T_J = 125^\circ\text{C}$	-	-	50	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS} = 12V$	-	-	100	nA
		$V_{GS} = -12V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D = 5.6A$	-	21	27	m Ω
		$V_{GS}=4.5V, I_D = 5.0A$	-	25	33	
		$V_{GS}=2.5V, I_D = 3.0A$	-	33	51	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.65	0.9	1.5	V
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1\text{MHz}$	-	535	-	μF
Output Capacitance	C_{oss}		-	130	-	
Reverse transfer capacitance	C_{rss}		-	36	-	
Total Gate Charge	Q_g	$I_D = 5.6A, V_{DS}=15V, V_{GS}=4.5V$	-	4.8	-	nC
Gate-to-Source Charge	Q_{gs}		-	1.2	-	
Gate-to-Drain("Miller") Charge	Q_{gd}		-	1.7	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DS}=15V, R_L=15\Omega, R_{GEN}=2.8\Omega, I_D=1A$	-	12	-	nS
Rise Time	t_r		-	52	-	
Turn-Off Delay Time	$t_{d(off)}$		-	17	-	
Fall Time	t_f		-	10	-	
Source-Drain Ratings and Characteristics						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	5.6	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	23	A
Diode Forward Voltage	V_{SD}	$I_S=5.6A, V_{GS}=0V$	-	0.8	1.2	V

Notes

1. Pulse test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
2. Device mounted on FR-4 PCB, 1inch x 0.85inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

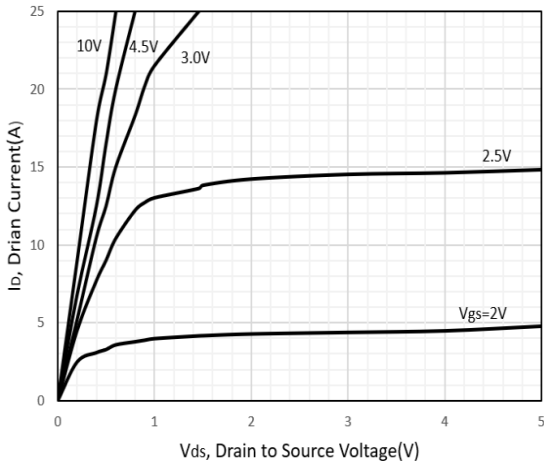


Figure 1. Typical Output Characteristics

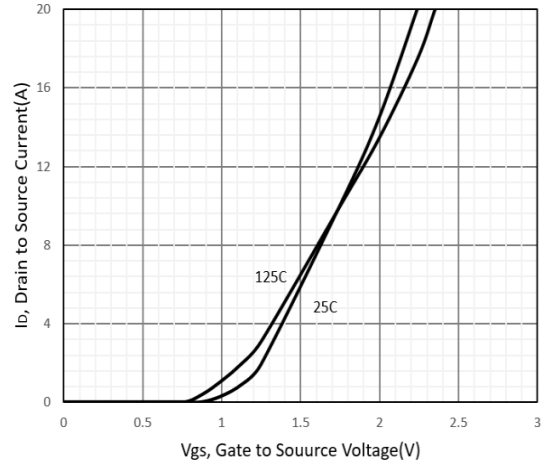


Figure 2. Transfer Characteristics

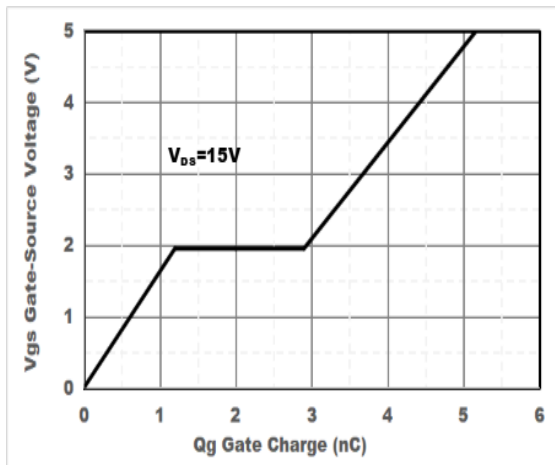


Figure 3. Gate Charge.

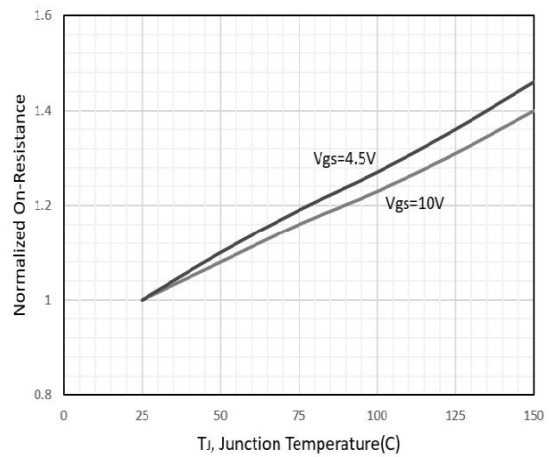


Figure 4. Normalized On-Resistance Vs. Junction Temperature

Typical Electrical and Thermal Characteristic Curves

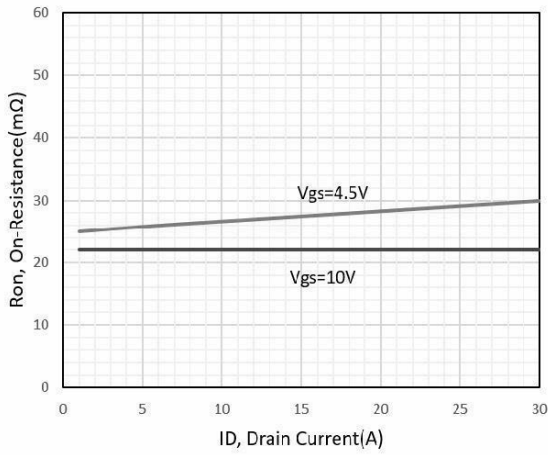


Figure 5. Drain-Source On-Resistance

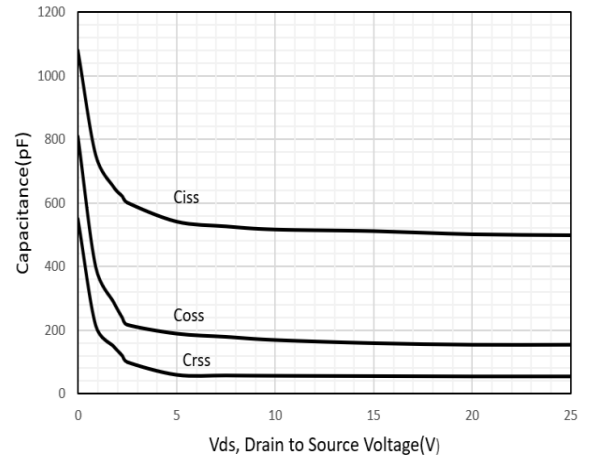


Figure 6. Typical Capacitance Vs. Drain-to-Source Voltage

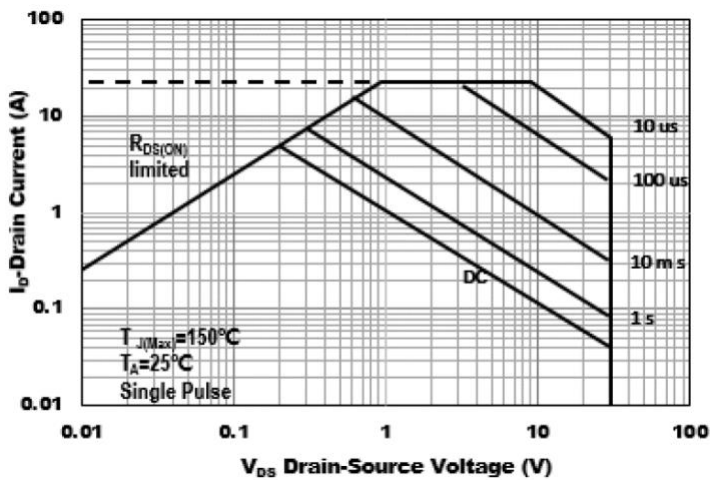


Figure 7. Safe Operation Area

Test Circuit & Waveform

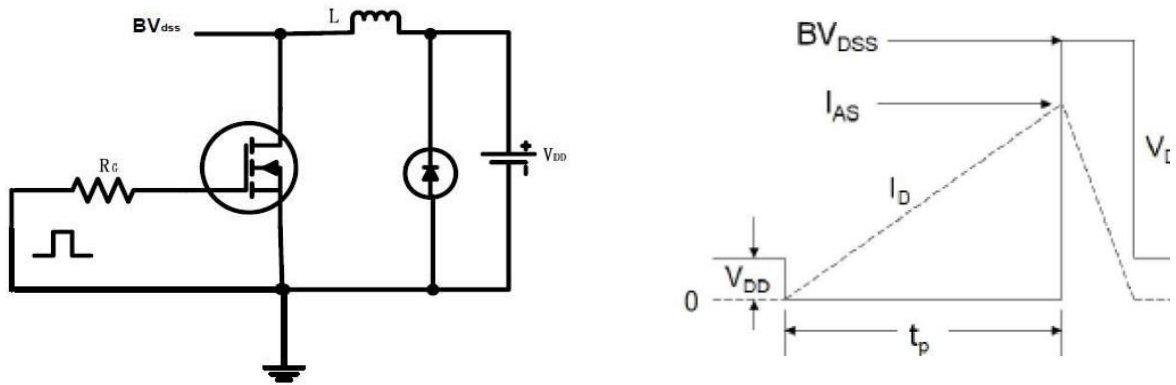


Figure 8. Unclamped Inductive Switching Test Circuit & Waveforms

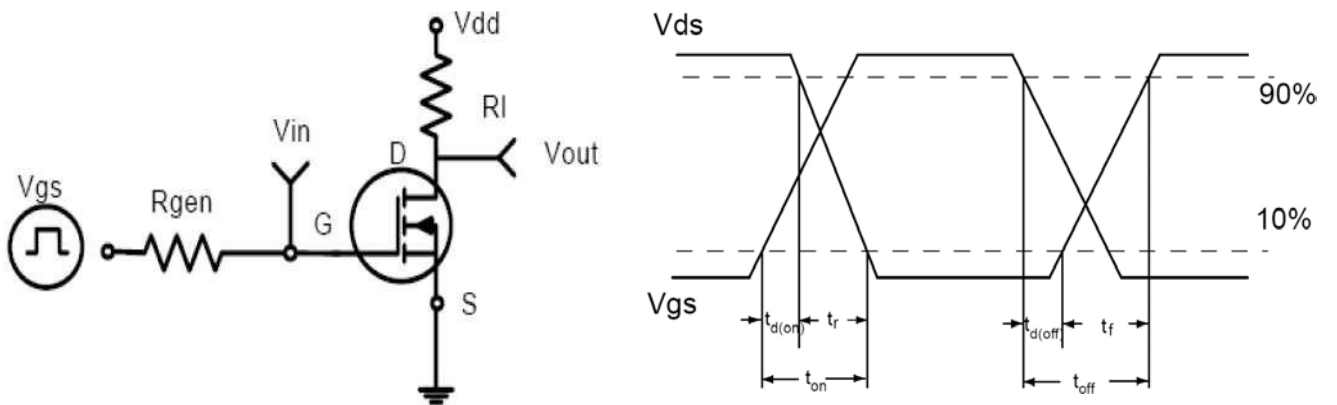


Figure 9. Resistive Switching Test Circuit & Waveforms

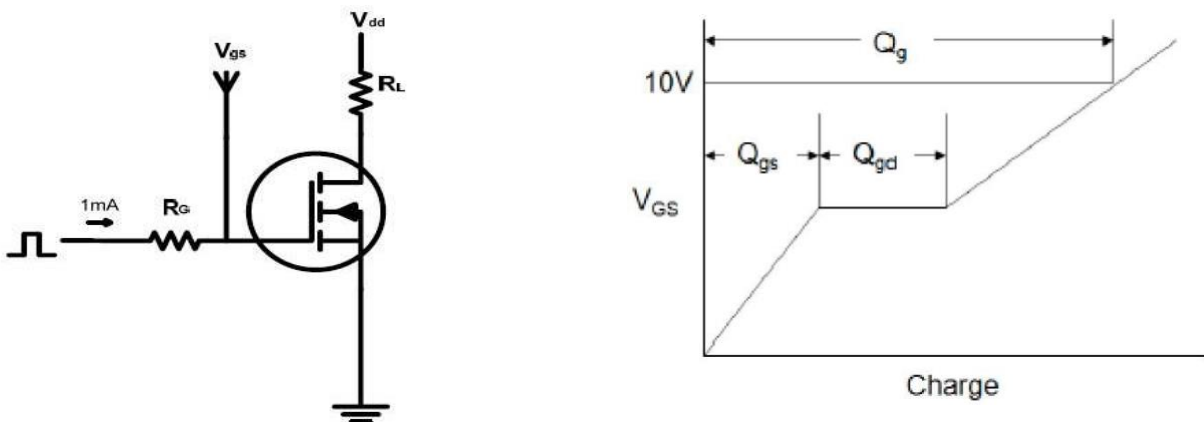
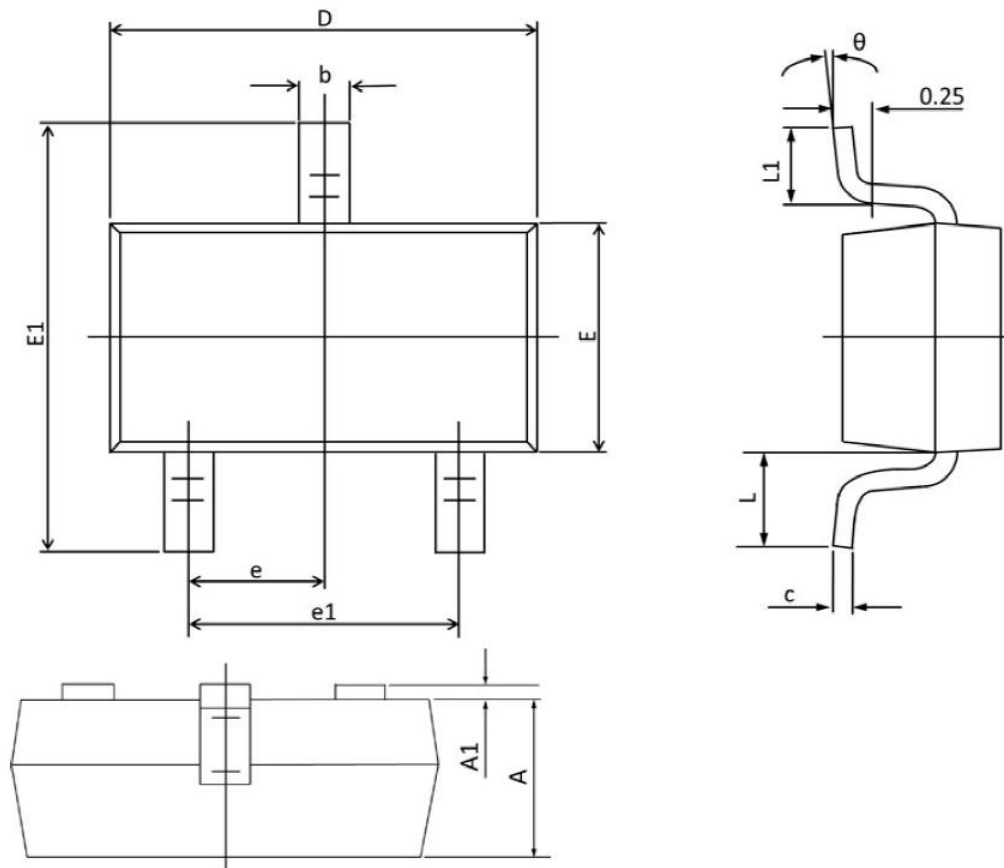


Figure 10. Gate Charge Test Circuit & Waveform

Package Outline Dimensions SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
b	0.300	0.500	0.012	0.020
c	0.090	0.110	0.003	0.004
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	1°	7°	1°	7°