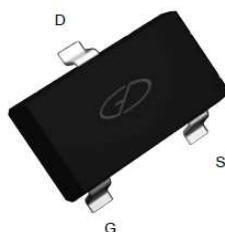
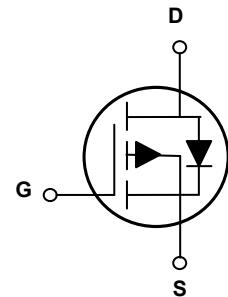


Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	8Ω
I_D	-0.17A



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 GSF0500 utilizes the latest techniques to achieve ultra high 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	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current@ Steady-State($T_A=25^\circ\text{C}$)	I_D	-0.17	A
Continuous Drain Current@ Steady-State($T_A=70^\circ\text{C}$)	I_D	-0.14	A
Pulsed Drain Current ¹	I_{DM}	-0.68	A
Power Dissipation@ $T_A=25^\circ\text{C}$	P_D	225	mW
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	556	°C/W
Junction Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_D = -250\mu\text{A}$	-60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}} = -60\text{V}, V_{\text{GS}} = 0\text{V}$	-	-	-1	μA
		$V_{\text{DS}} = -48\text{V}, V_{\text{GS}} = 0\text{V}$	-	-	-0.5	μA
Gate-Body Leakage Current	I_{GSS}	$V_{\text{GS}} = \pm 20\text{V}, V_{\text{DS}} = 0\text{V}$	-	-	± 100	nA
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_D = -250\mu\text{A}$	-0.9	-1.4	-2.0	V
Drain-Source On-Resistance	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = -10\text{V}, I_D = -0.15\text{A}$	-	3.3	8.0	Ω
		$V_{\text{GS}} = -4.5\text{V}, I_D = -0.15\text{A}$	-	3.5	10	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{\text{DS}} = -30\text{V}, V_{\text{GS}} = 0\text{V}, f = 1\text{MHz}$	-	30	-	pF
Output Capacitance	C_{oss}		-	10	-	pF
Reverse Transfer Capacitance	C_{rss}		-	5	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = -30\text{V}, V_{\text{GS}} = 4.5\text{V}$ $R_{\text{GEN}} = 2.5\Omega, I_D = -0.15\text{A}$	-	2.5	-	ns
Turn-on Rise Time	t_{r}		-	1	-	ns
Turn-off Delay Time	$t_{\text{d}(\text{off})}$		-	16	-	ns
Turn-off Fall Time	t_{f}		-	8	-	ns
SOURCE-DRAIN DIODE CHARACTERISTICS						
Continuous Current	I_S		-	-	-0.17	A
Pulsed Current	I_{SM}		-	-	-0.68	A
Diode Forward Voltage	V_{SD}	$I_S = -0.17\text{A}, V_{\text{GS}} = 0\text{V}$	-	-	-1.2	V

Notes

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

Typical Electrical and Thermal Characteristics

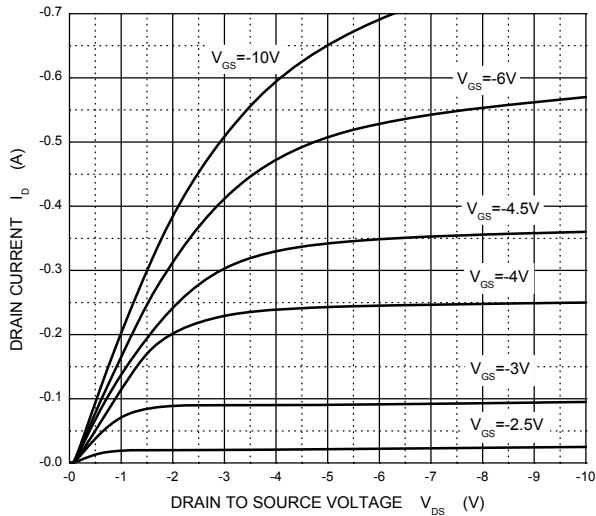


Figure 1. Typical Output Characteristics

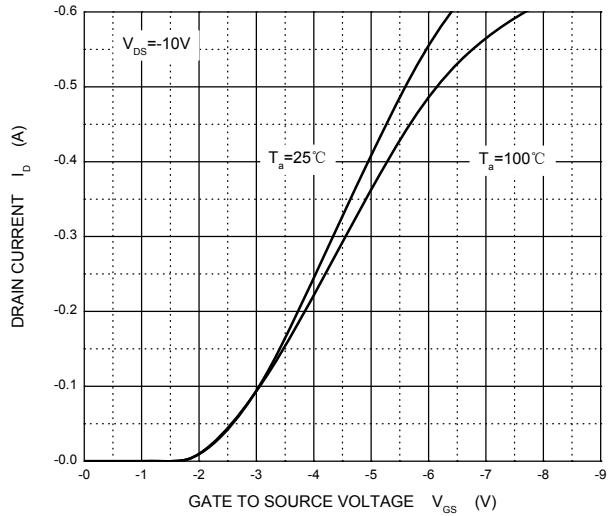


Figure 2. Transfer Characteristics

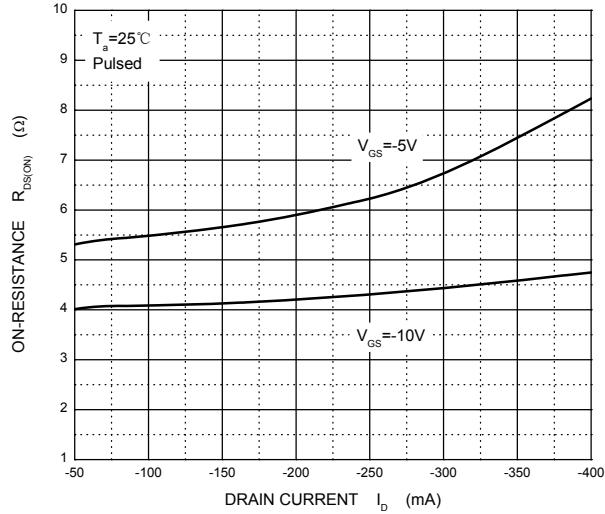


Figure 3. Drain-Source On-Resistance vs. I_D

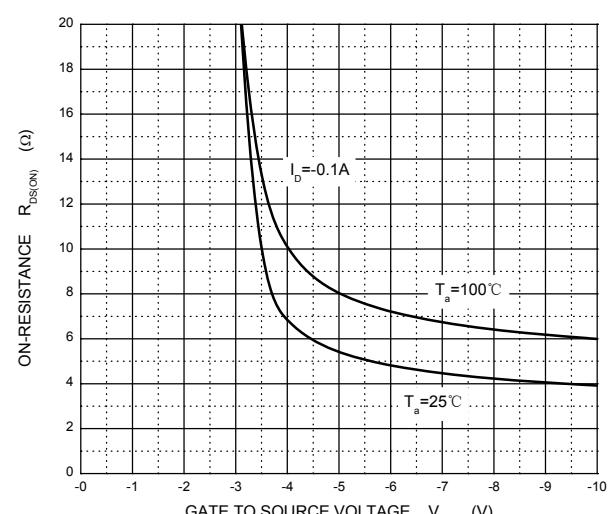


Figure 4. Drain-Source On-Resistance vs. V_{GS}

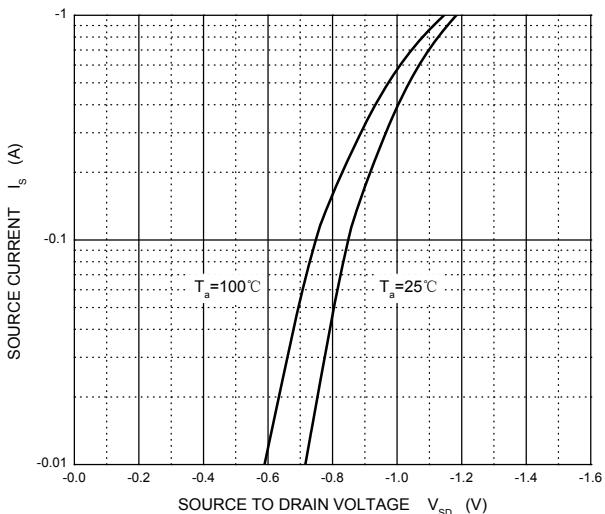


Figure 5. Body Characteristics

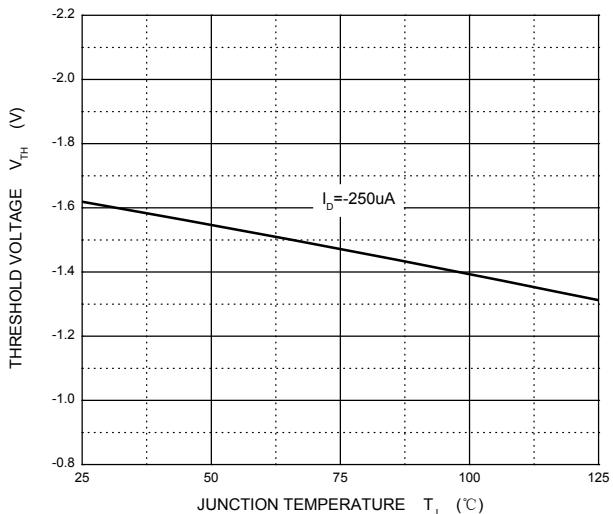
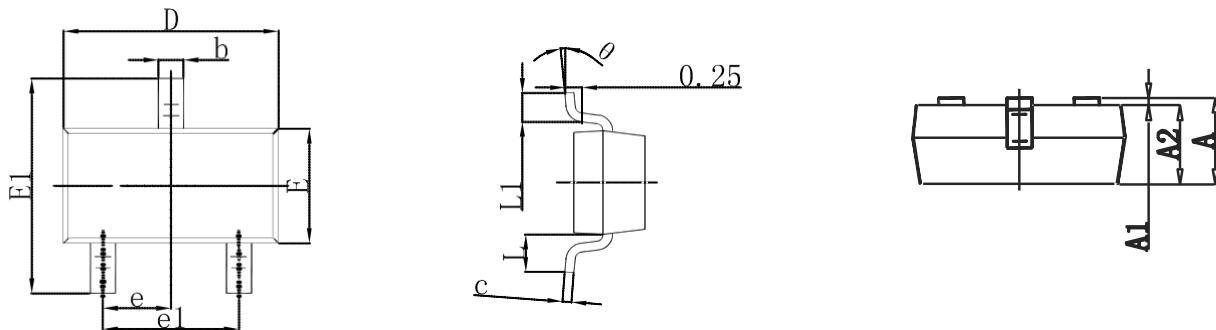


Figure 6. V_{th} Vs. Junction Temperature

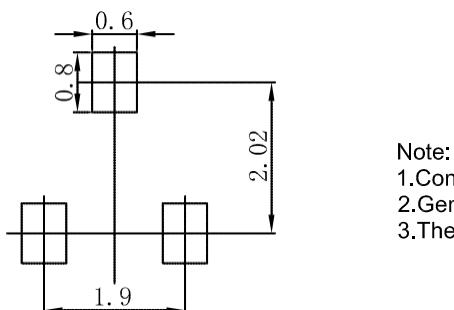
Package Outline Dimensions

SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
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	0°	8°	0°	8°

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.