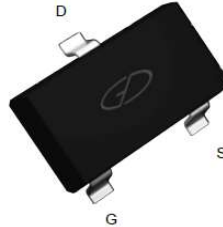
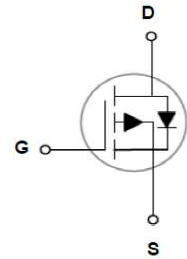


## Main Product Characteristics

$V_{(BR)DSS}$	-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 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	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 <sup>1</sup>	$I_{DM}$	-0.68	A
Power Dissipation@ $T_A=25^\circ\text{C}$	$P_D$	225	mW
Thermal Resistance from Junction to Ambient <sup>2</sup>	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 to +150	$^\circ\text{C}$

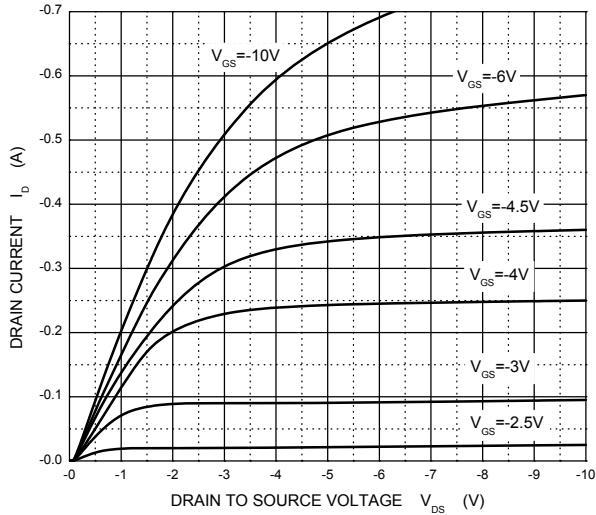
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

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

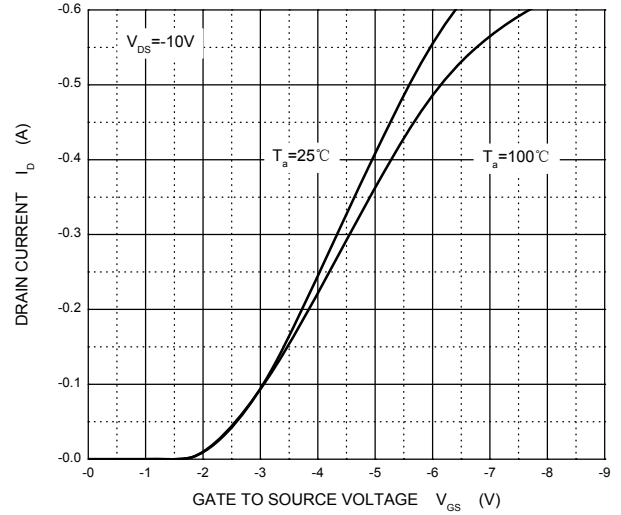
**Notes**

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.

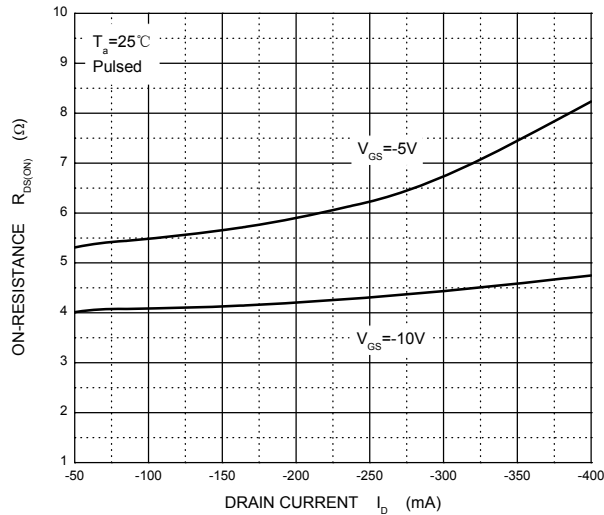
**Typical Electrical and Thermal Characteristics**



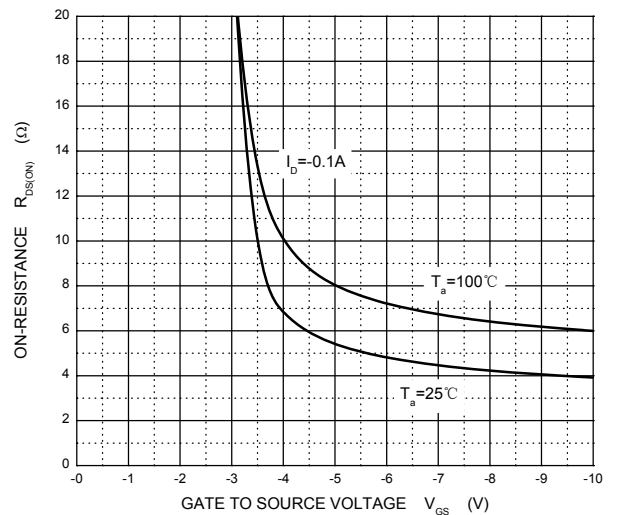
**Figure 1. Typical Output Characteristics**



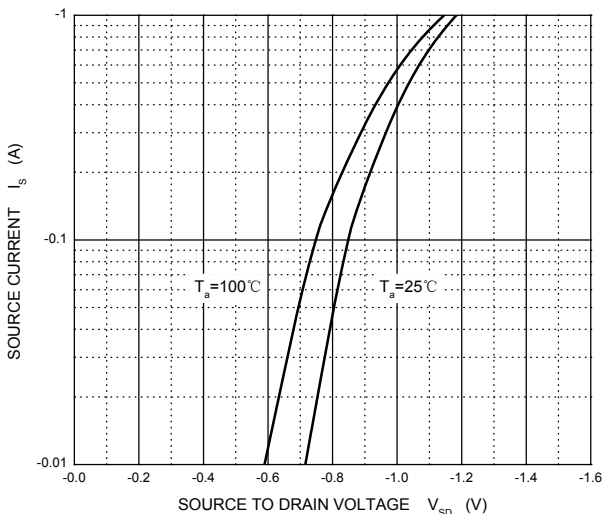
**Figure 2. Transfer Characteristics**



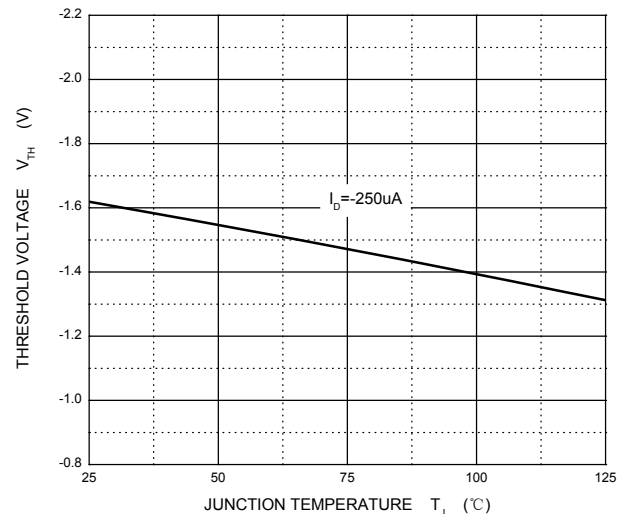
**Figure 3. Drain-Source On-Resistance vs.  $I_D$**



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



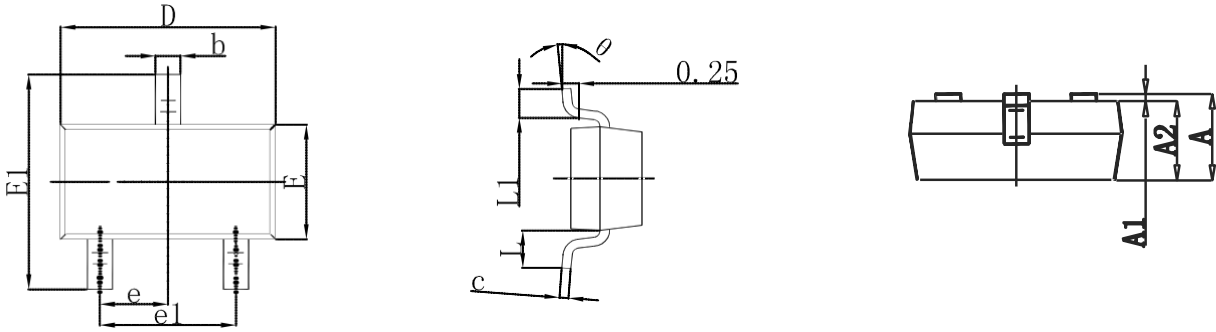
**Figure 5. Body Characteristics**



**Figure 6.  $V_{th}$  Vs. Junction Temperature**

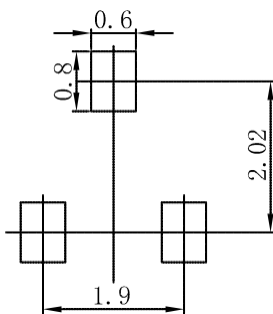
**Package Outline Dimensions**

**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:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.