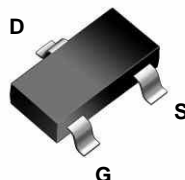
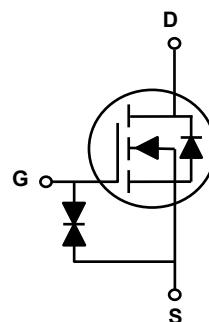


Main Product Characteristics

BV_{DSS}	50V
$R_{DS(ON)}$	1.6Ω
I_D	360mA



SOT-523



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 GSF0500AT 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 supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous ¹	I_D	360	mA
Single Pulse Avalanche Energy ⁴	E_{AS}	0.2	mJ
Power Dissipation ¹	P_D	0.15	W
Thermal Resistance, Junction-to-Air ¹	$R_{\theta JA}$	834	°C/W
Thermal Resistance, Junction-to-Lead ¹	$R_{\theta JL}$	500	°C/W
Thermal Resistance, Junction-to-Case ¹	$R_{\theta JC}$	421	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	50	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=50V, V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 10	μA
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=0.5A$	-	-	1.6	Ω
		$V_{GS}=4.5V, I_D=0.2A$	-	-	2.5	
		$V_{GS}=2.5V, I_D=0.1A$	-	-	4.5	
Gate Threshold Voltage ²	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.8	-	1.5	V
Dynamic and Switching Characteristics						
Total Gate Charge ³	Q_g	$V_{DS}=25V, I_D=0.2A$ $V_{GS}=10V$	-	4.7	-	nC
Gate-Source Charge ³	Q_{gs}		-	4.2	-	
Gate-Drain Charge ³	Q_{gd}		-	0.2	-	
Turn-On Delay Time ³	$t_{d(on)}$	$V_{DD}=30V, R_G=6\Omega$ $V_{GS}=10V, I_D=0.29A$	-	-	5	nS
Rise Time ³	t_r		-	-	18	
Turn-Off Delay Time ³	$t_{d(off)}$		-	-	36	
Fall Time ³	t_f		-	-	14	
Input Capacitance ³	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $F=1\text{MHz}$	-	27	-	pF
Output Capacitance ³	C_{oss}		-	13	-	
Reverse Transfer Capacitance ³	C_{rss}		-	6	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Diode Forward Voltage ¹	V_{SD}	$V_{GS}=0V, I_S=0.5A$	-	-	1.4	V
Reverse Recovery Time	t_{rr}	$I_F=1A$ $di/dt=100A/\mu s$	-	20	-	nS
Reverse Recovery Charge	Q_{rr}		-	10.7	-	nC

Note:

1. Surface Mounted on FR4 Board, $t \leq 10$ sec .
2. Pulsed test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production
4. The EAS data shows Max. rating. The testing condition is $V_{DS}=48V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$

Typical Electrical and Thermal Characteristic Curves

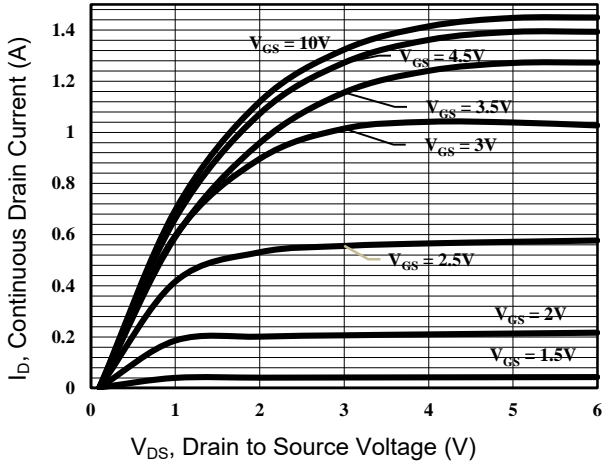


Figure 1. Output Characteristics

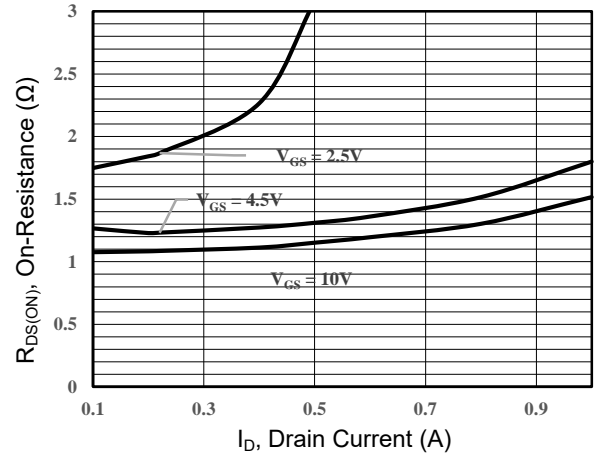


Figure 2. On Resistance vs. I_D

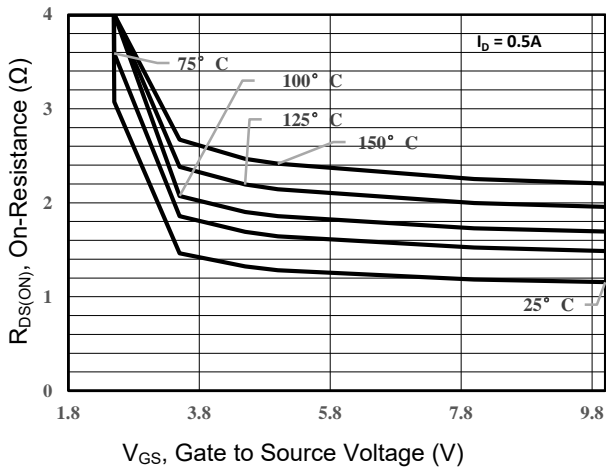


Figure 3. On Resistance vs. V_{GS}

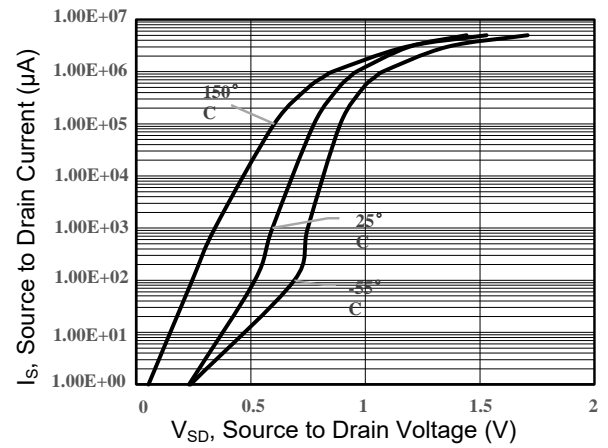


Figure 4. Body Diode Characteristics

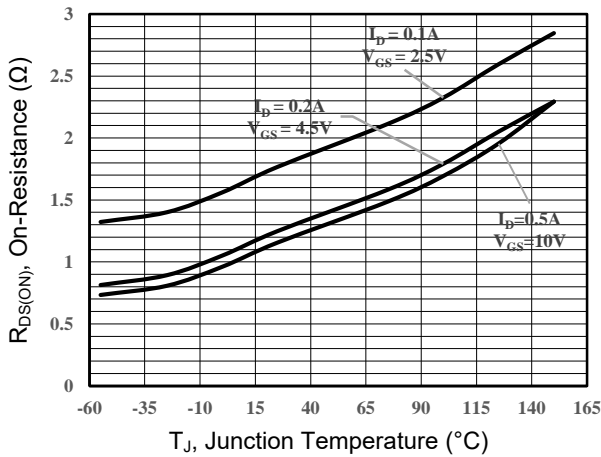


Figure 5. On Resistance vs. T_J

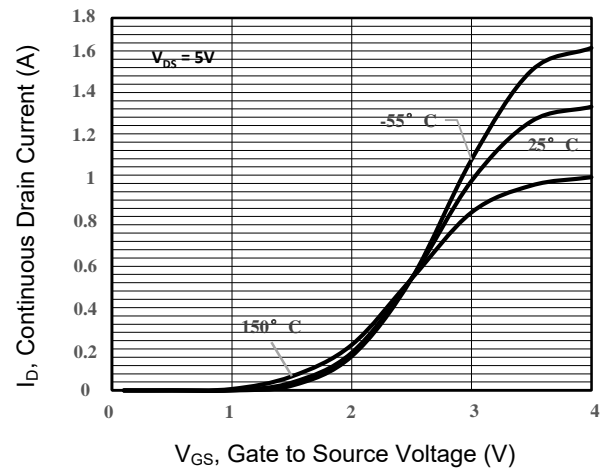


Figure 6. Transfer Characteristics

Typical Electrical and Thermal Characteristic Curves

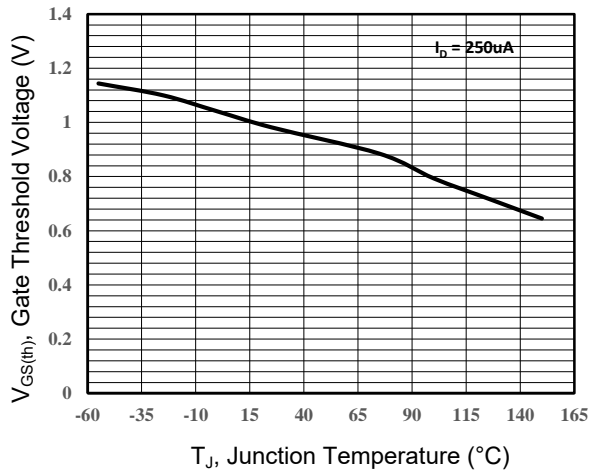


Figure 7. Gate Threshold Voltage V_{GSth} vs. T_J

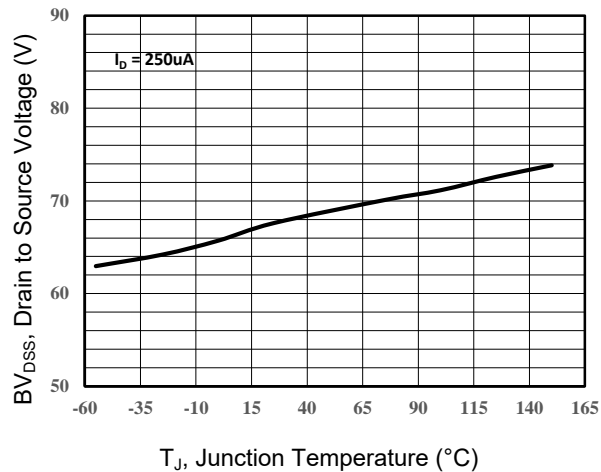
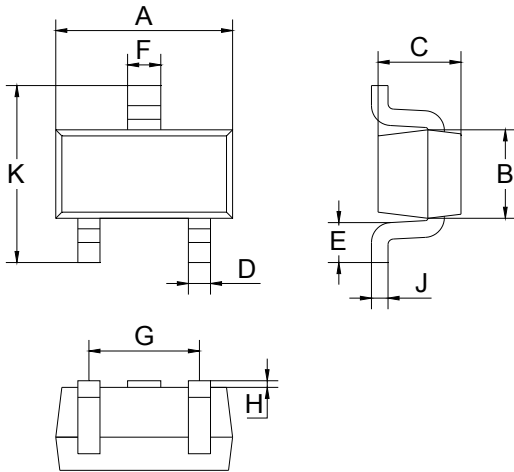


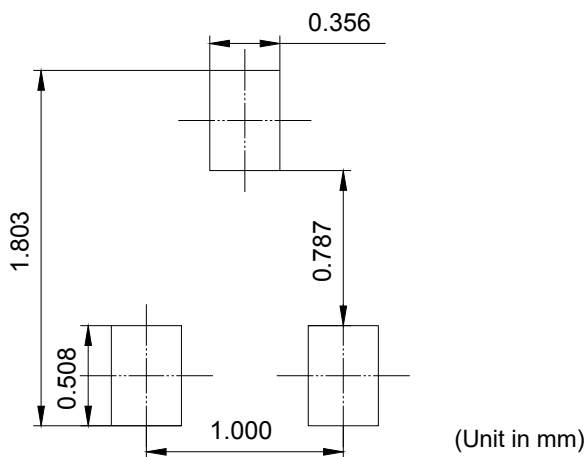
Figure 8. BV_{DSS} vs. T_J

Package Outline Dimensions SOT-523



SOT-523 (Unit: mm)		
Dimension	Min.	Max.
A	1.50	1.70
B	0.75	0.85
C	0.60	0.80
D	0.15	0.30
E	0.30	0.40
F	0.25	0.40
G	0.90	1.10
H	0.02	0.10
J	0.08	0.18
K	1.45	1.75

Recommended Pad Layout



Order Information

Device	Package	Marking Code	Carrier	Quantity	HSF Status
GSF0500AT	SOT-523	MM5	Tape & Reel	3,000/Reel	RoHS Compliant