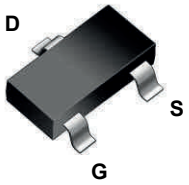
GSFAT03001

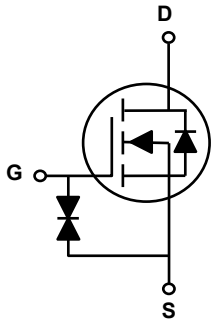
30V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	2.5Ω (Max.)
I_D	100mA



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
- ESD level HBM 2KV

Description

The GSFAT03001 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°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current	I_D	100	mA
Pulsed Peak Drain Current[1]	I_{DM}	500	mA
Total Power Dissipation[2]	P_{tot}	150	mW
Max. Thermal Resistance from Junction to Ambient[2]	$R_{\theta JA}$	833	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C

Notes:

1. $P_W \leq 10\mu s$, duty cycle ≤ 1%, limited $T_{J(max)}$=150°C.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V	-	-	1	μA
Gate-Source Leakage	I_{GSS}	V_{GS}=±20V	-	-	±10	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.9	-	1.7	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=0.1A	-	-	2.5	Ω
		V_{GS}=4.5V, I_D=0.1A	-	-	3	
Forward Transfer Admittance	gfs	V_{DS}=5V, I_D=0.1A	-	331	-	mS
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	20.5	-	pF
Output Capacitance	C_{oss}		-	10	-	
Reverse Transfer Capacitance	C_{rss}		-	5	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=15V, V_{GS}=10V, I_D=0.2A, R_G=3.3Ω	-	3	-	nS
Turn-On Rise Time	t_r		-	2	-	
Turn-Off Delay Time	$t_{d(off)}$		-	3.7	-	
Turn-Off Fall Time	t_f		-	40	-	
Source-Drain Ratings and Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=0.1A	-	-	1.2	V
Body-Diode Continuous Current	I_S	-	-	-	100	mA

Typical Electrical and Thermal Characteristic Curves

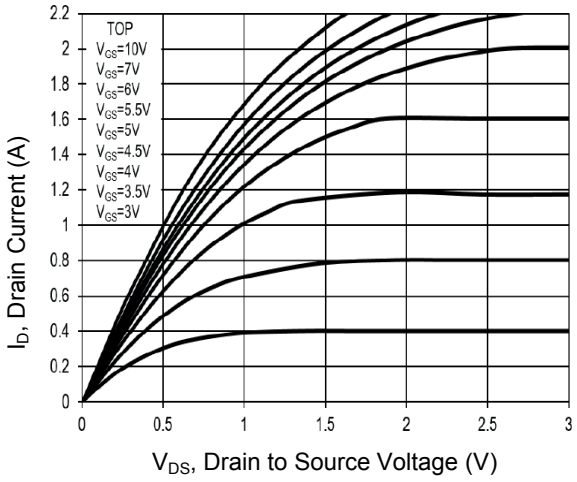


Figure 1. Typical Output Characteristics

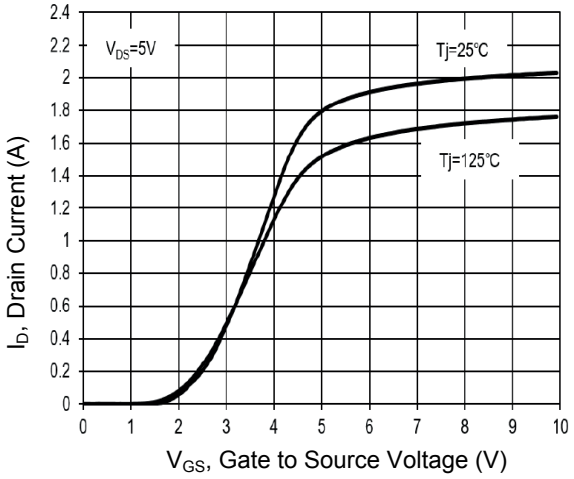


Figure 2. Typical Transfer Characteristics

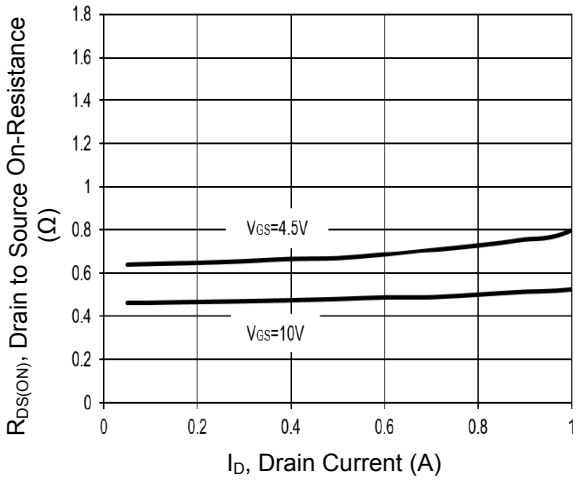


Figure 3. On-Resistance vs. Drain Current

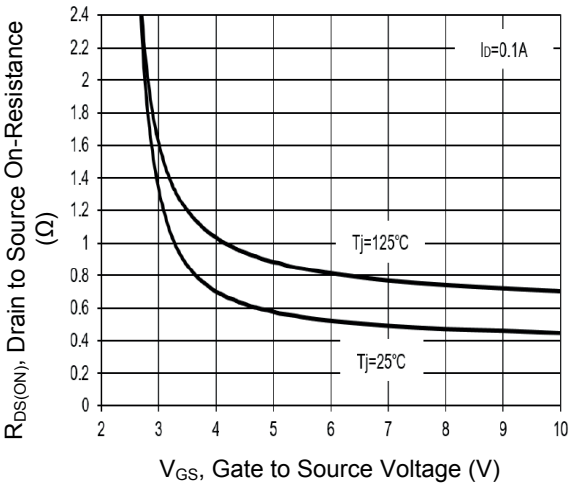


Figure 4. On-Resistance vs. Gate to Source Voltage

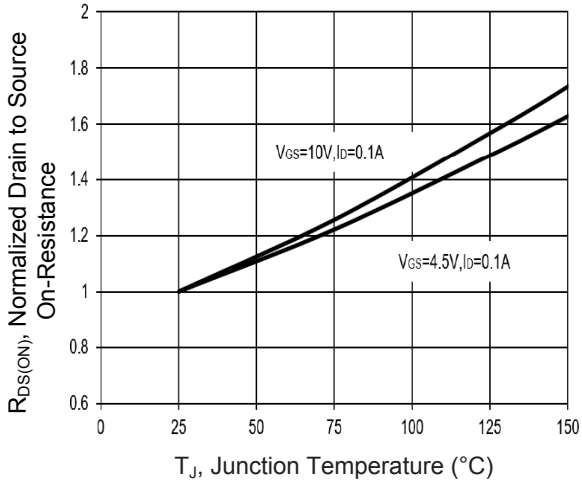


Figure 5. On-Resistance vs. T_J

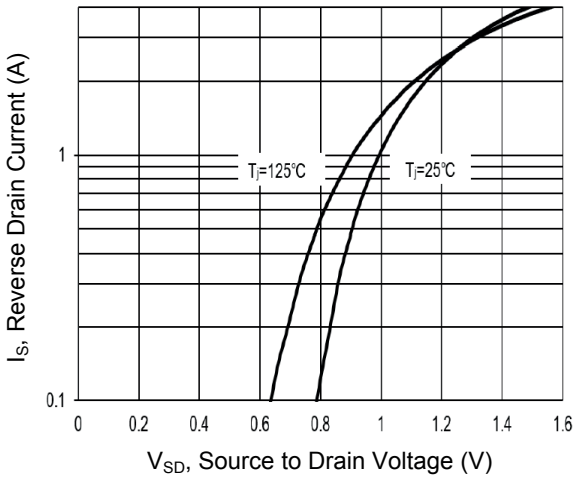


Figure 6. Typical Body Diode Forward Characteristics

Typical Electrical and Thermal Characteristic Curves

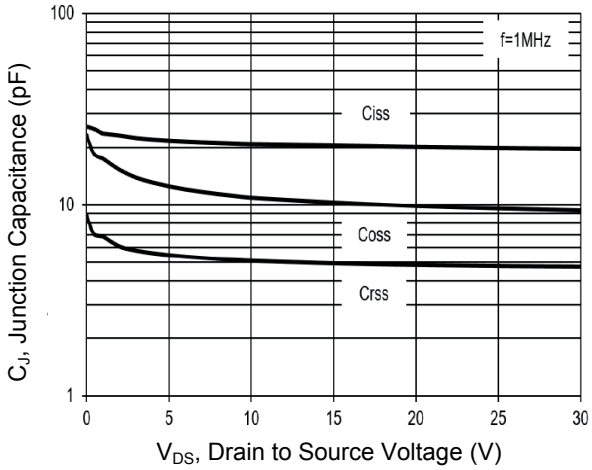


Figure 7. Typical Junction Capacitance

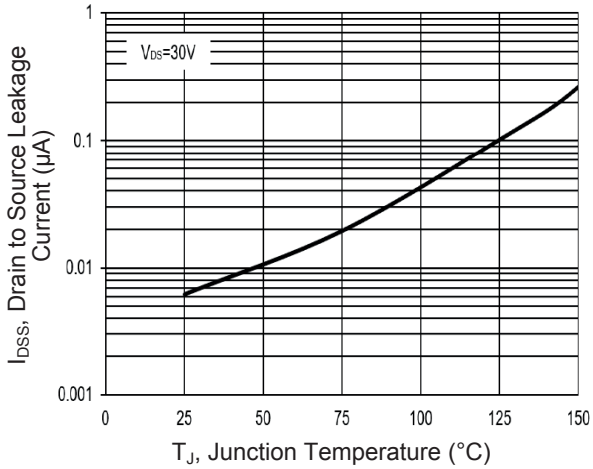


Figure 8. Drain to Source Leakage Current vs. T_J

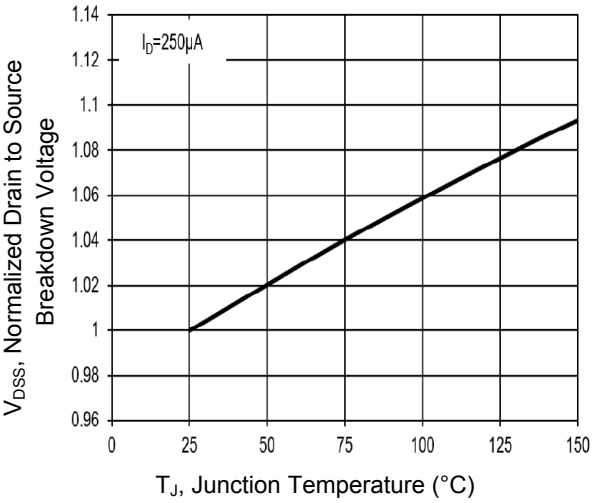


Figure 9. $V_{(BR)DSS}$ vs. Junction Temperature

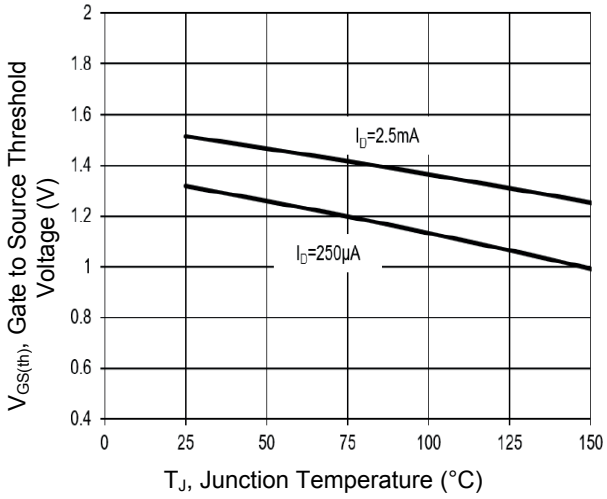
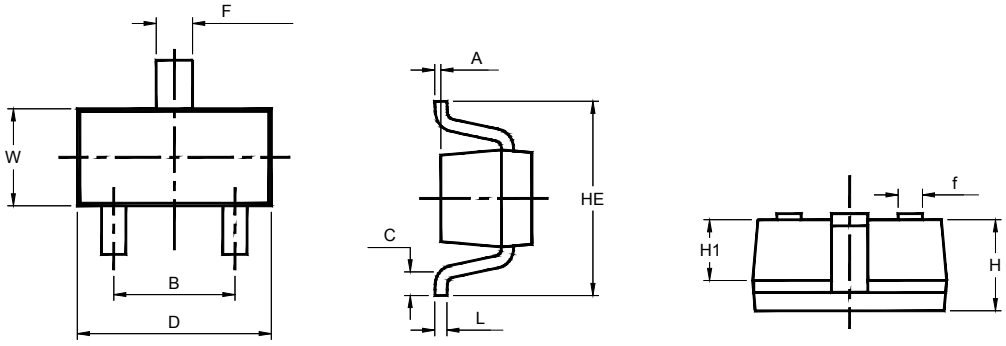


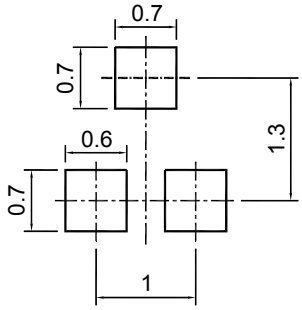
Figure 10. Gate Threshold Voltage vs. T_J

Package Outline Dimensions (SOT-523)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	-	0.10	-	0.004
B	0.95	1.05	0.037	0.041
C	0.17	-	0.007	-
D	1.50	1.70	0.059	0.067
H	0.65	0.85	0.026	0.033
H1	0.40	0.60	0.016	0.024
HE	1.50	1.70	0.059	0.067
F	0.25	0.35	0.010	0.014
f	0.15	0.25	0.006	0.010
L	0.05	0.15	0.002	0.006
W	0.70	0.90	0.028	0.035

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFAT03001	SOT-523	NP	Tape & Reel	4,000 pcs / Reel