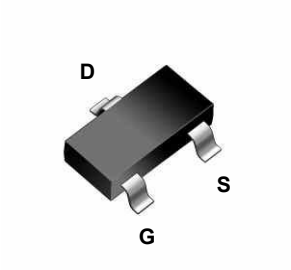
GOOD-ARK SEMICONDUCTOR

GSFAT0600

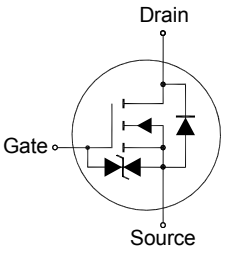
60V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	60V
$R_{DS(ON)}$	4Ω (Max.)
I_D	300mA



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: 2KV

Description

The GSFAT0600 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}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	300	mA
Drain Current (Pulse Width ≤ 10 μs)	I_{DM}	1	A
Power Dissipation	P_{tot}	150	mW
Thermal Resistance, Junction-to-Ambient[1]	$R_{\theta JA}$	833	°C/W
Storage Temperature Range	T_{STG}	-55 To +150	°C
Operating Junction Temperature Range	T_J	-55 To +150	°C

Note:
1. Device mounted on FR-4 substrate PC board, 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	BV_{DSS}	$I_{D=}$10μA	60	-	-	V
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V	-	-	±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V	-	-	1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	-	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=500mA	-	-	3	Ω
		V_{GS}=4.5V, I_D=200mA	-	-	4	
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=200mA	80	-	-	mS
Gate Resistance	R_G	V_{GS}=0V, V_{DS}=0V, F=1MHz	-	200	-	Ω
Dynamic and Switching Characteristics						
Input Capacitance	C_{lss}	V_{DS}=25V, V_{GS}=0V, F=1.0MHz	-	22.5	50	pF
Output Capacitance	C_{oss}		-	12	25	
Reverse Transfer Capacitance	C_{rss}		-	0.5	10	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=30V, I_D=0.5A, V_{GS}=10V,R_G=25Ω	-	2.7	-	nS
Turn-On Rise Time	t_r		-	2.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	13	-	
Turn-Off Fall Time	t_f		-	8	-	
Gate Charge Total	Q_g	V_{DS}=10V, V_{GS}=4.5V, I_D=0.5A	-	0.44	-	nC
Gate to Source Charge	Q_{gs}		-	0.2	-	
Gate to Drain Charge	Q_{gd}		-	0.1	-	
Body-Diode Parameters						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=0.5A, V_{GS}=0V	-	0.85	-	V
Body Diode Reverse Recovery Time	t_{rr}	I_S=0.5A, di/dt=100A/μs	-	30	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_S=0.5A, di/dt=100A/μs	-	29	-	nC

Typical Electrical and Thermal Characteristic Curves

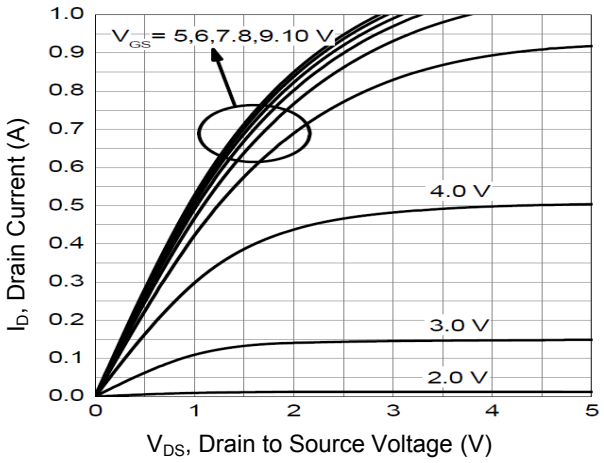


Figure 1. Typical Output Characteristics

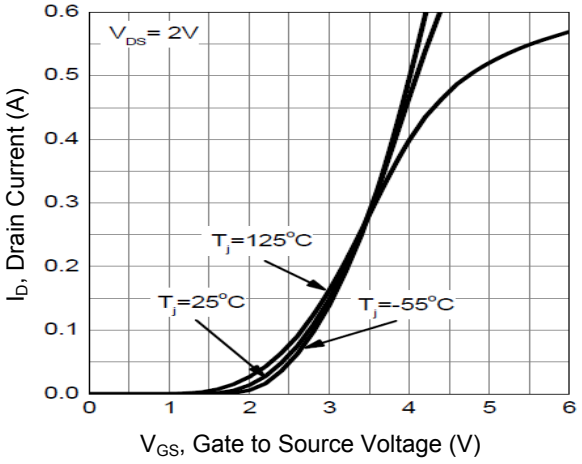


Figure 2. Typical Transfer Characteristics

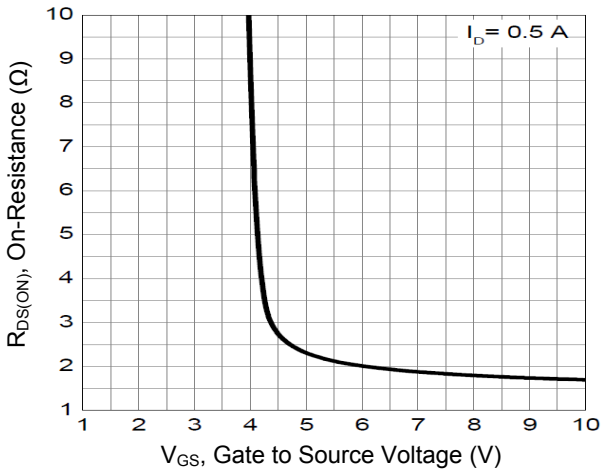


Figure 3. Gate-Source Voltage vs. $R_{DS(on)}$

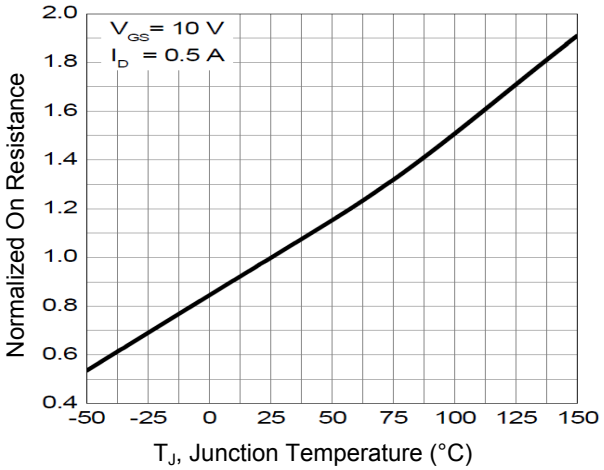


Figure 4. On-Resistance vs. T_J

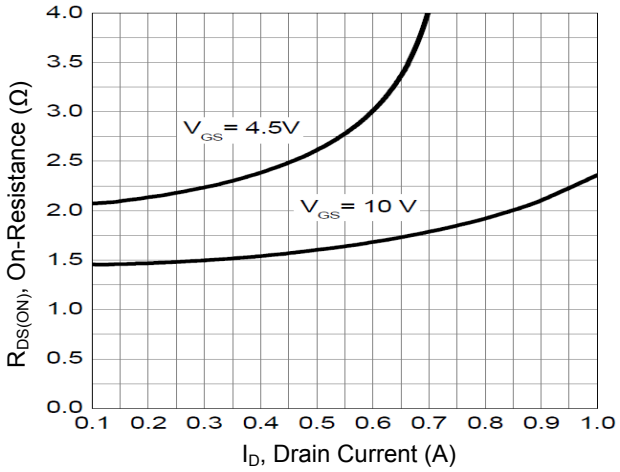


Figure 5. On Resistance vs. Drain Current

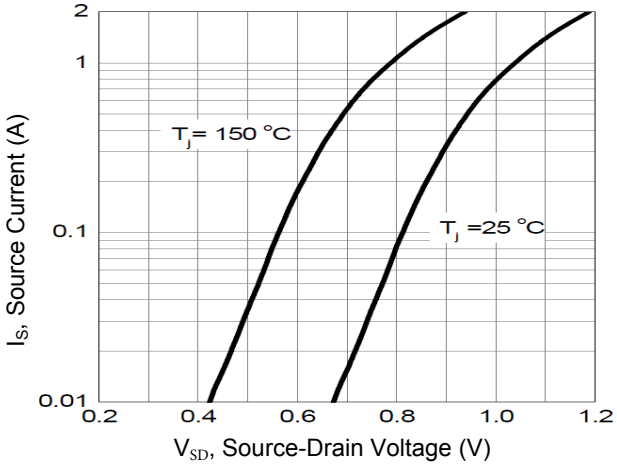


Figure 6. Typical Forward Characteristics

Typical Electrical and Thermal Characteristic Curves

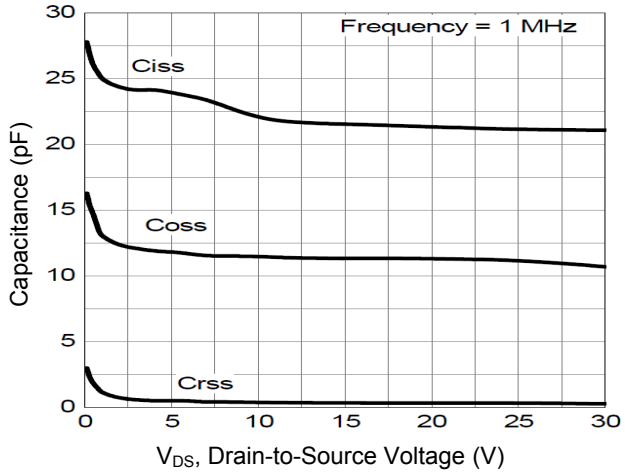


Figure 7. Capacitance Characteristics

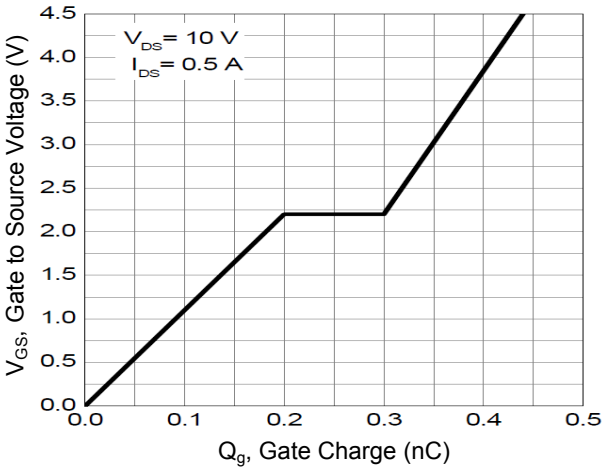


Figure 8. Gate Charge Characteristics

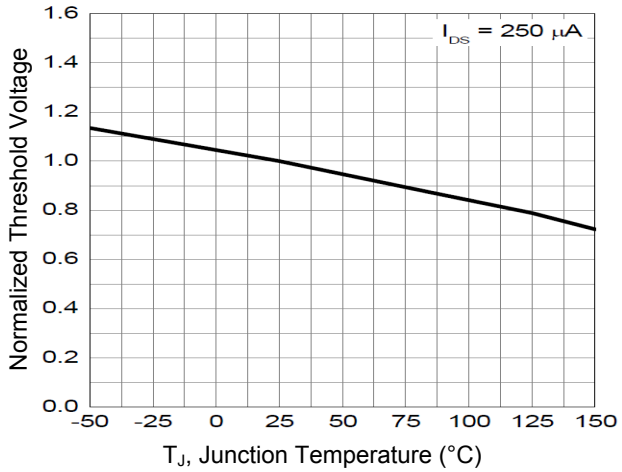
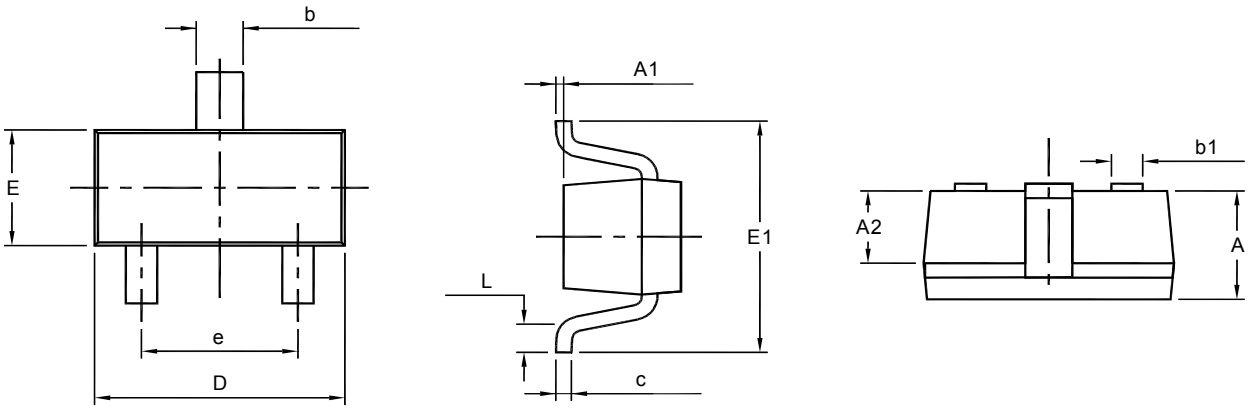


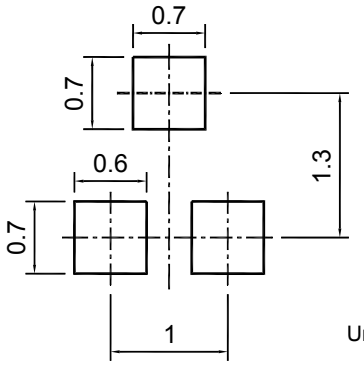
Figure 9. Gate Threshold Variation vs. T_J

Package Outline Dimensions (SOT-523)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.650	0.850	0.026	0.033
A1	0.000	0.100	0.000	0.004
A2	0.400	0.600	0.016	0.024
b	0.250	0.350	0.010	0.014
b1	0.150	0.250	0.006	0.010
c	0.050	0.150	0.002	0.006
D	1.500	1.750	0.059	0.069
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.950	1.050	0.037	0.041
L	0.170	-	0.007	-

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFAT0600	SOT-523	MP	Tape & Reel	4,000pcs / Reel