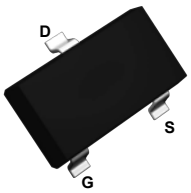
GSFC0600

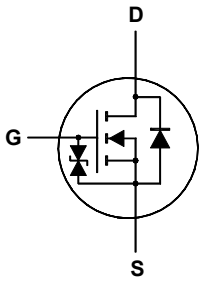
60V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	60V
$R_{DS(ON)}$	2.5Ω (Max)
I_D	0.3A



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
- Typical ESD Protection HBM 1000V to 2000V

Description

The GSFC0600 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
Continuous Drain Current	I_D	300	mA
Drain Current (Pulse Width ≤ 10μs)	I_{DM}	1	A
Total Power Dissipation[1]	P_{tot}	350	mW
Max. Thermal Resistance from Junction to Ambient[1]	$R_{\theta JA}$	357	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	℃

Note:

1. 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	BV_{DSS}	I_D=250μA	60	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=48V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±16V	-	-	±10	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	-	1.2	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=4.5V, I_D=200mA	-	-	2.5	Ω
		V_{GS}=2.5V, I_D=100mA	-	-	4.5	
		V_{GS}=1.8V, I_D=50mA	-	-	5	
Forward Transconductance	gfs	V_{DS}=5V, I_D=200mA	-	0.5	-	S
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V, F=1MHz	-	21	-	pF
Output Capacitance	C_{oss}		-	9	-	
Reverse Transfer Capacitance	C_{rss}		-	5.4	-	
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=4.5V, I_D=1A	-	0.57	-	nC
Gate to Source Charge	Q_{gs}		-	0.3	-	
Gate to Drain Charge	Q_{gd}		-	0.1	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=30V, V_{GS}=4.5V, I_D=200mA, R_G=3.3Ω	-	4	-	nS
Turn-On Rise Time	t_r		-	5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	6	-	
Turn-Off Fall Time	t_f		-	68	-	
Source-Drain Ratings and Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=200mA	-	-	1.2	V
Body-Diode Continuous Current	I_S	-	-	-	300	mA

Electrical Characteristic Curves

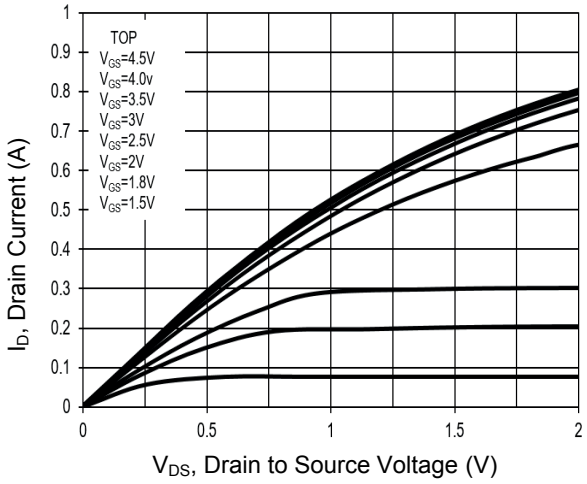


Figure 1. Typical Output Characteristics

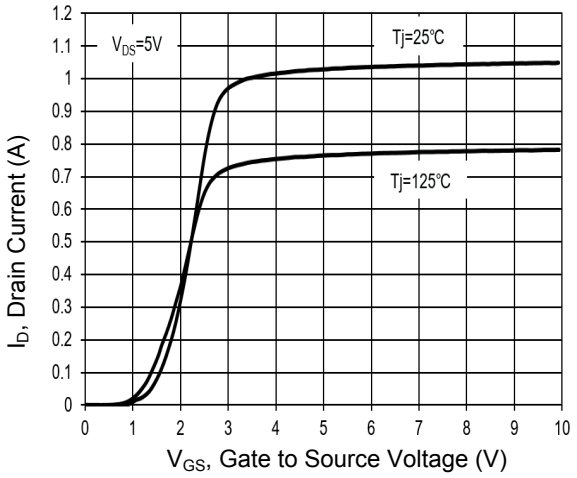


Figure 2. Typical Transfer Characteristics

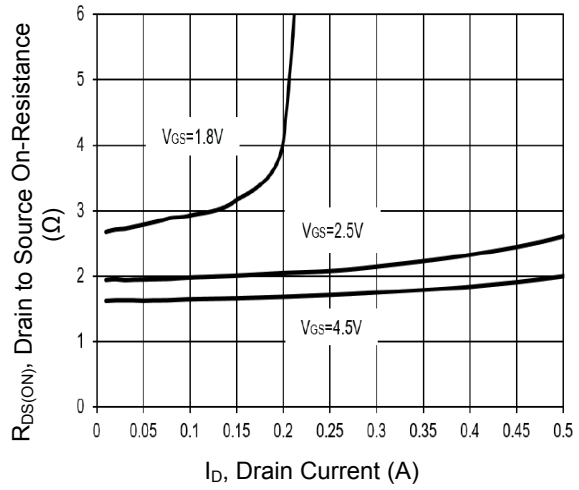


Figure 3. On Resistance vs. Drain Current

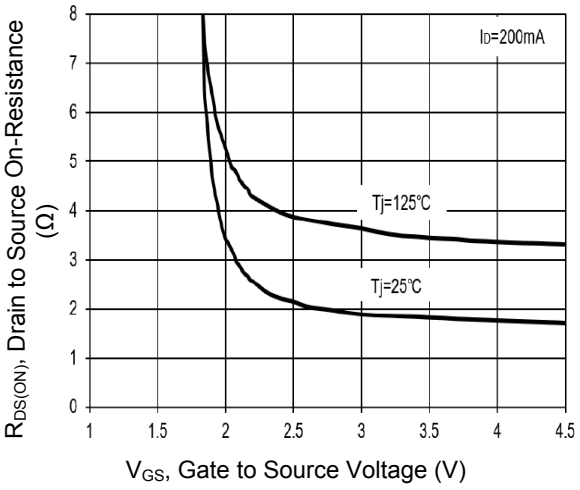


Figure 4. On Resistance vs. Gate to Source Voltage

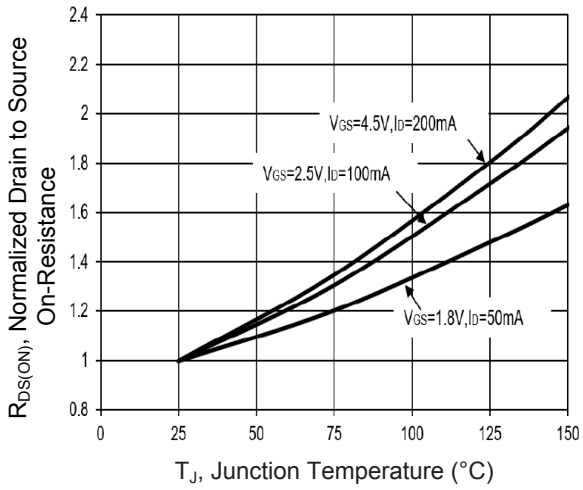


Figure 5. On-Resistance vs. T_J

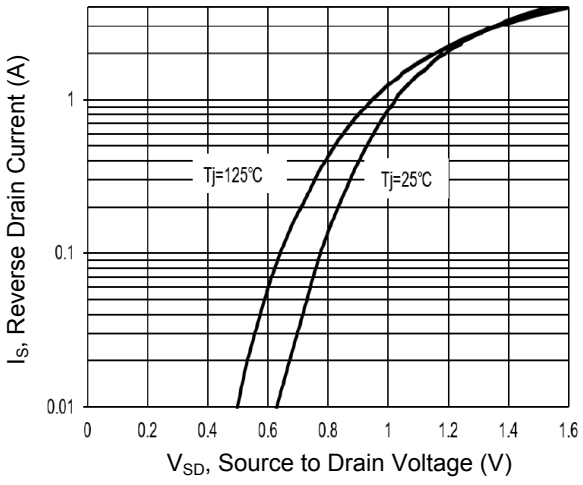


Figure 6. Typical Body Diode Forward Characteristics

Typical Electrical and Thermal Characteristic Curves

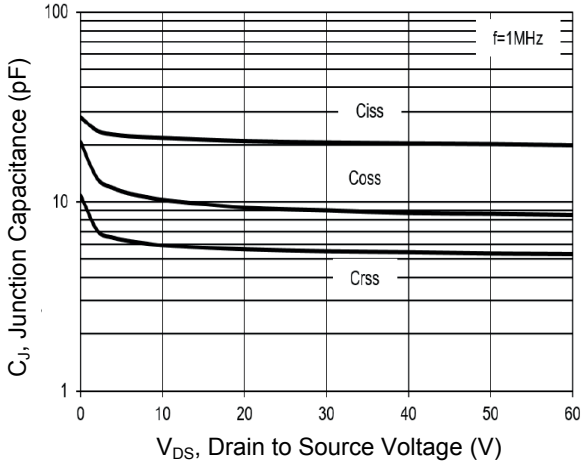


Figure 7. Typical Junction Capacitance

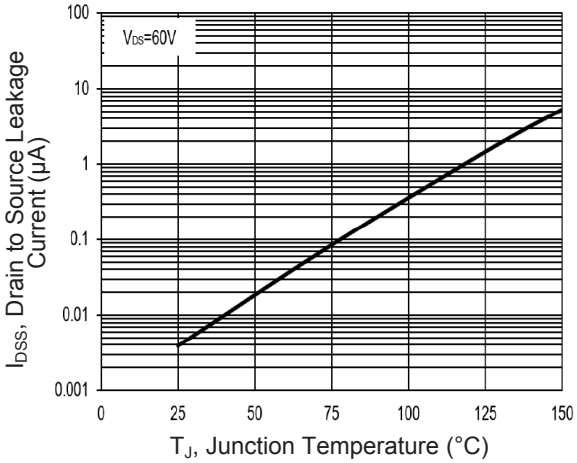


Figure 8. Drain to Source Leakage Current vs. T_J

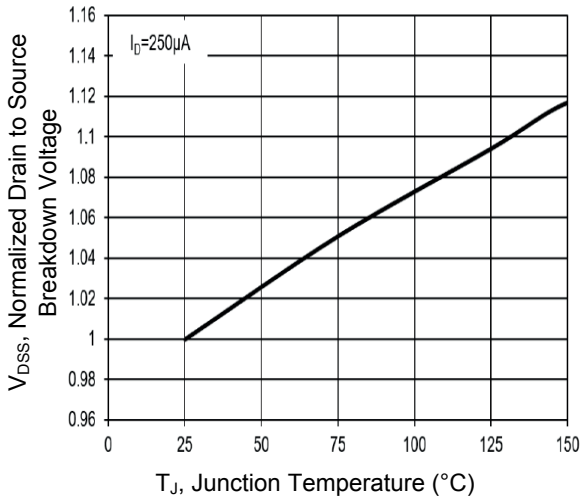


Figure 9. Drain to Source Breakdown Voltage vs. T_J

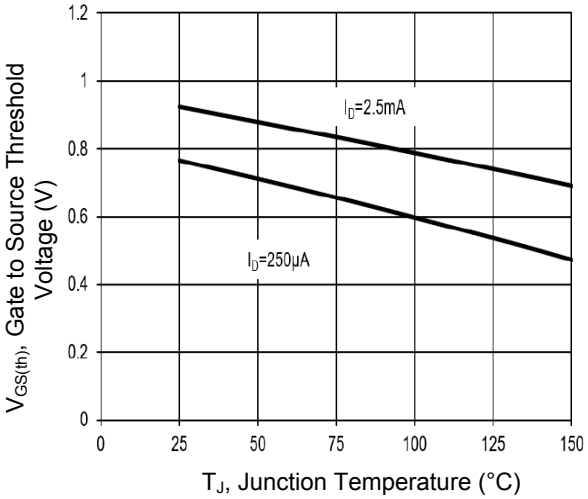


Figure 10. Gate Threshold Voltage vs. T_J

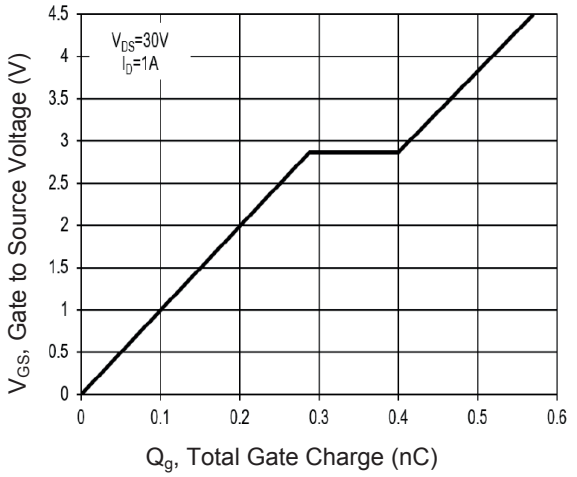
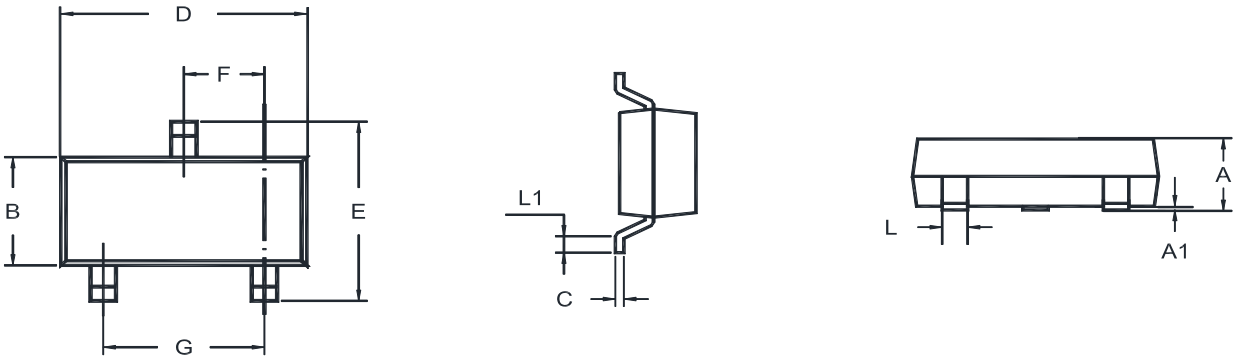


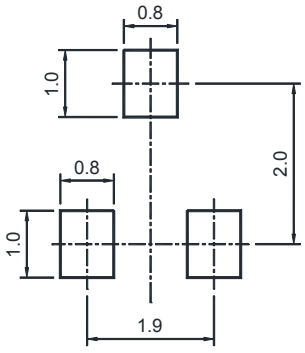
Figure 11. Gate Charge

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.890	1.200	0.035	0.047
A1	0.013	0.100	0.001	0.004
B	1.200	1.400	0.047	0.055
C	0.080	0.190	0.003	0.007
D	2.800	3.040	0.110	0.120
E	2.200	2.600	0.087	0.102
F	0.890	1.020	0.035	0.040
G	1.780	2.040	0.070	0.080
L	0.370	0.510	0.015	0.020
L1	0.200 MIN		0.008 MIN	

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFC0600	SOT-23	LP1	Tape & Reel	3,000 Pcs / Reel