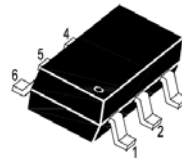
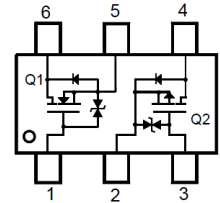


Main Product Characteristics

Polarity	N-Ch	P-Ch
V_{DSS}	60V	-60V
$R_{DS(ON)}$	4 Ω (Max.)	7 Ω (Max.)
I_D	0.5A	-0.35A



SOT-23-6L



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 GSFR0600 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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	60	-60	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Drain Current-Continuous	I_D	500	-350	mA
Drain Current-Pulsed ¹	I_{DM}	1.5	-1	A
Power Dissipation ²	P_D	900		mW
Operating Junction Temperature Range	T_J	-55 To +150		$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150		$^\circ\text{C}$
Thermal Resistance Junction to Ambient ²	$R_{\theta JA}$	139		$^\circ\text{C/W}$

Note:

1. Pulse test: pulse width $\leq 100\mu\text{s}$, duty cycle $\leq 2\%$. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1 inch square copper plate in still air.

N-Channel 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	60	-	-	V
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±16V	-	-	±10	μA
Drain-Source Leakage Current	I _{DSS}	V _{DS} =48V	-	-	1	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.8	-	2.5	V
Static Drain-Source On-State 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	-	265	-	mS
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	200	-	Ω
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, F=1.0MHz	-	22.5	-	pF
Output Capacitance	C _{oss}		-	12	-	
Reverse Transfer Capacitance	C _{rss}		-	0.5	-	
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	-	-	1.2	V
Body-Diode Continuous Current	I _S	-	-	-	500	mA
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

P-Channel 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	-60	-	-	V
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±16V	-	-	±10	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-48V	-	-	-1	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.8	-	-2.5	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-500mA	-	-	5	Ω
		V _{GS} =-4.5V, I _D =-200mA	-	-	7	
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, F=1.0MHZ	-	38	-	pF
Output Capacitance	C _{oss}		-	9	-	
Reverse Transfer Capacitance	C _{rss}		-	6	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =-25V, I _D =-0.1A, V _{GS} =-10V, R _G =6.8Ω	-	14	-	nS
Turn-On Rise Time	t _r		-	4	-	
Turn-Off Delay Time	t _{d(off)}		-	15	-	
Turn-Off Fall Time	t _f		-	77	-	
Gate Charge Total	Q _g	V _{DS} =-25V, V _{GS} =-4.5V, I _D =-0.1A	-	1.1	-	nC
Gate to Source Charge	Q _{gs}		-	0.3	-	
Gate to Drain Charge	Q _{gd}		-	0.2	-	
Body-Diode Parameters						
Body Diode Voltage	V _{SD}	I _S =-500mA	-	-	-1.2	V
Body-Diode Continuous Current	I _S	-	-	-	-350	mA
Body Diode Reverse Recovery Time	t _{rr}	I _S =-0.1A, di/dt=100A/μs	-	60	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _S =-0.1A, di/dt=100A/μs	-	58	-	nC

Typical Electrical and Thermal Characteristic Curves (N-Channel)

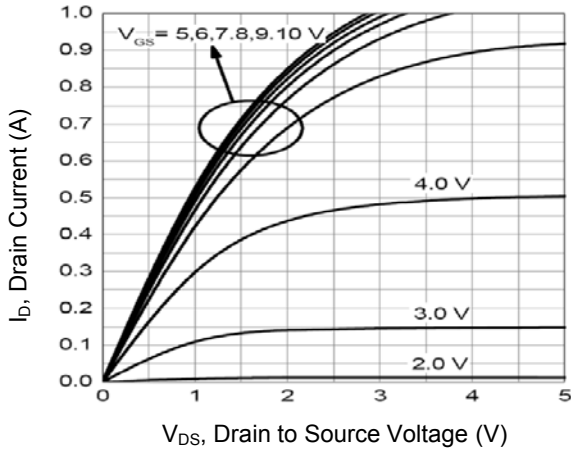


Figure 1. Typical Output Characteristics

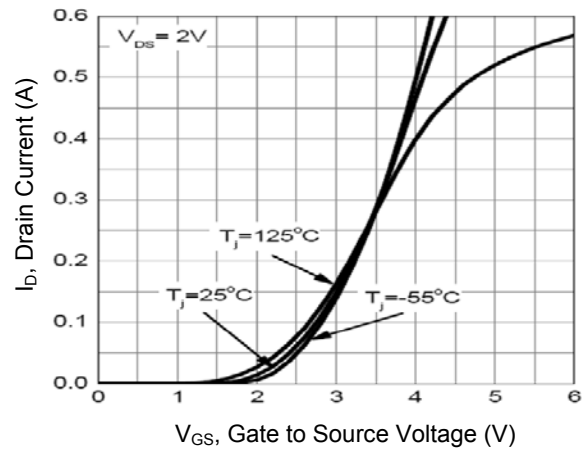


Figure 2. Typical Transfer Characteristics

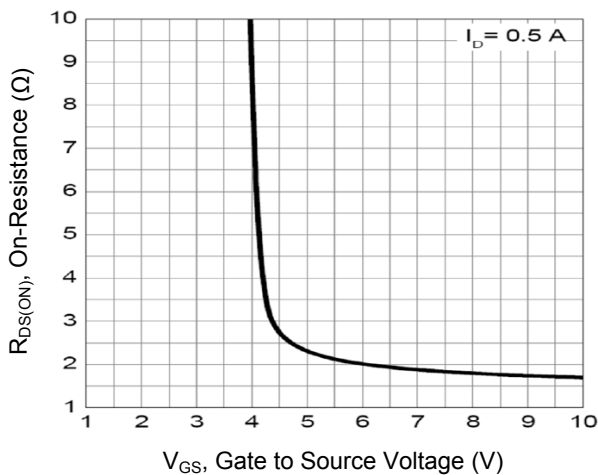


Figure 3. Gate to Source Voltage vs. $R_{DS(on)}$

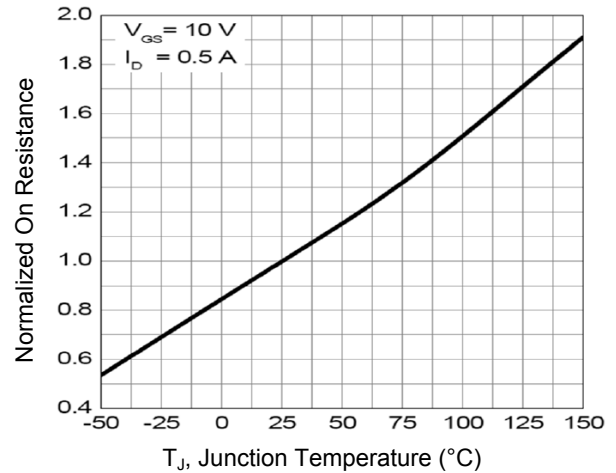


Figure 4. On-Resistance vs. T_J

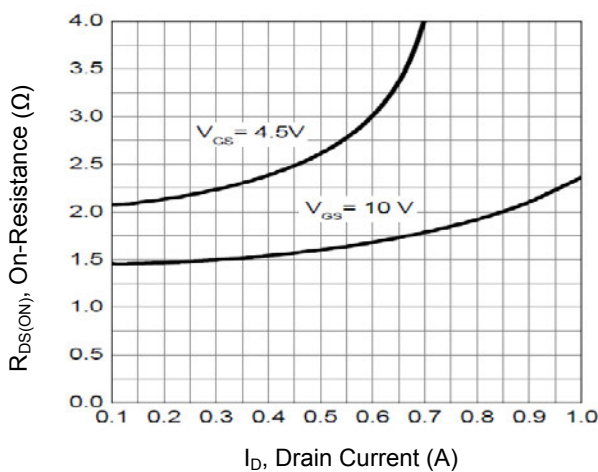


Figure 5. On Resistance vs. Drain Current

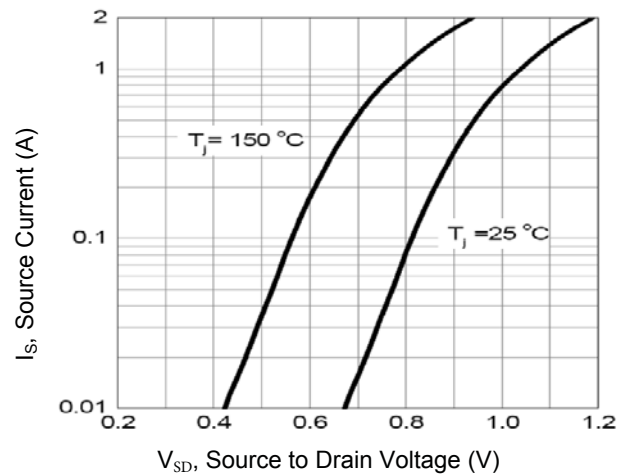


Figure 6. Typical Forward Characteristics

Typical Electrical and Thermal Characteristic Curves (N-Channel)

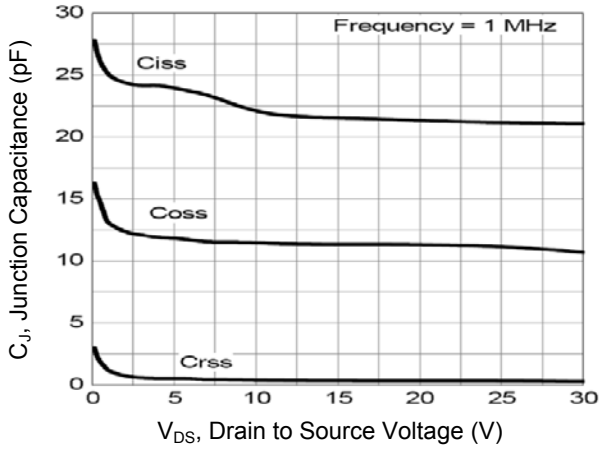


Figure 7. Typical Junction Capacitance

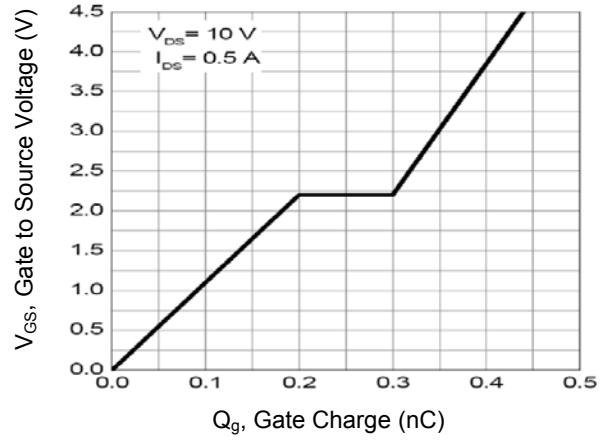


Figure 8. Gate Charge

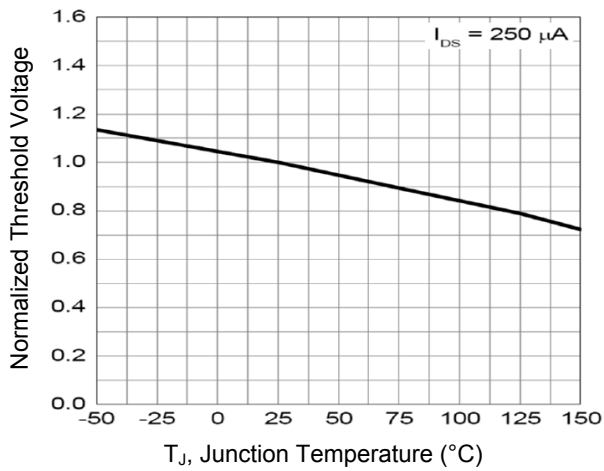


Figure 9. Gate Threshold Variation vs. T_J

Typical Electrical and Thermal Characteristic Curves (P-Channel)

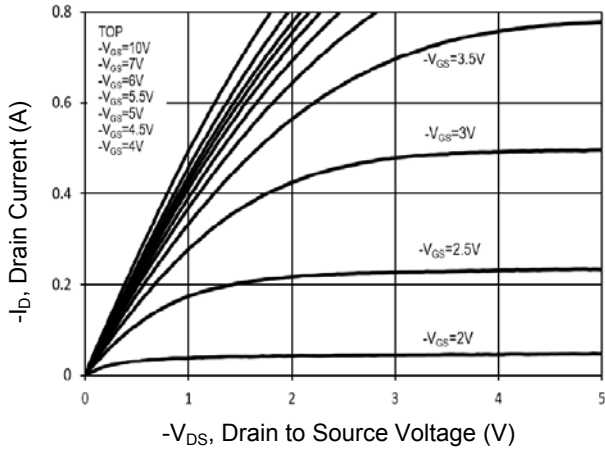


Figure 1. Output Characteristics

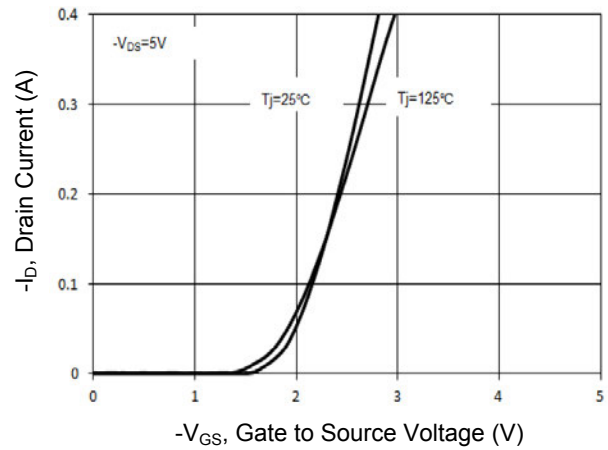


Figure 2. Transfer Characteristics

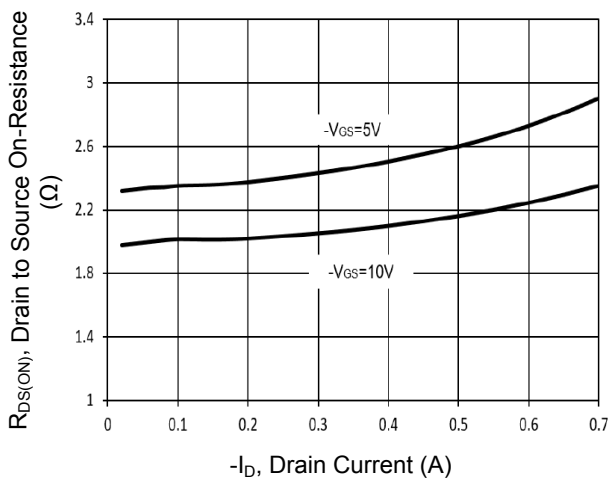


Figure 3. On-Resistance vs. Drain Current

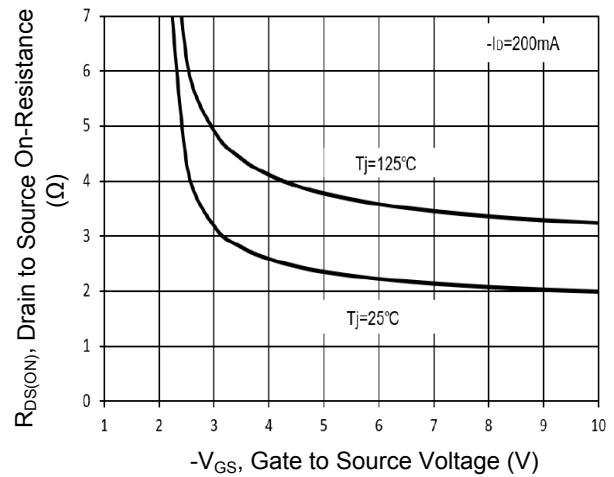


Figure 4. On-Resistance vs. Gate to Source Voltage

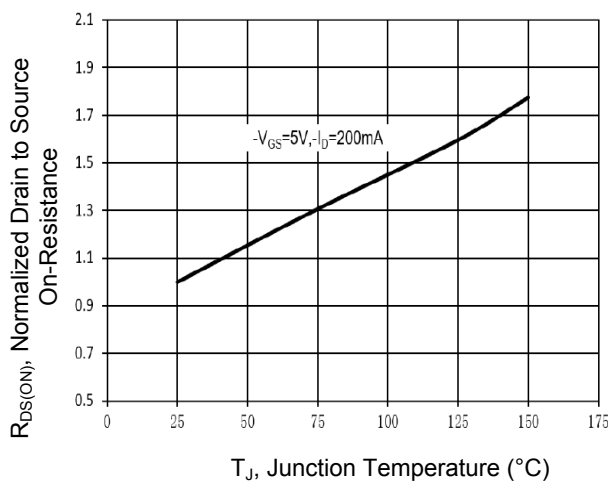


Figure 5. On Resistance vs. T_J

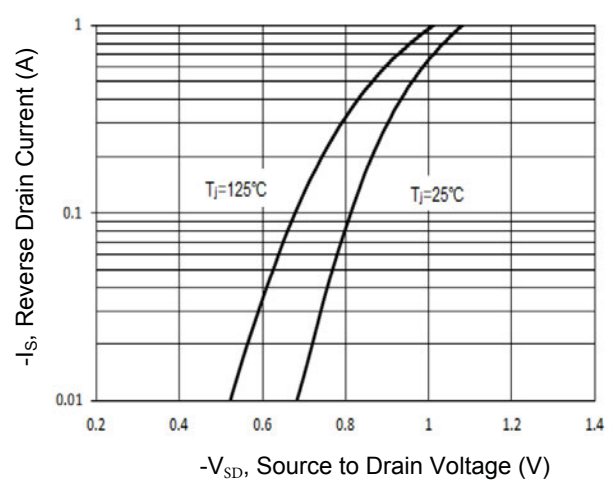


Figure 6. Typical Body Diode Forward Characteristics

Typical Electrical and Thermal Characteristic Curves (P-Channel)

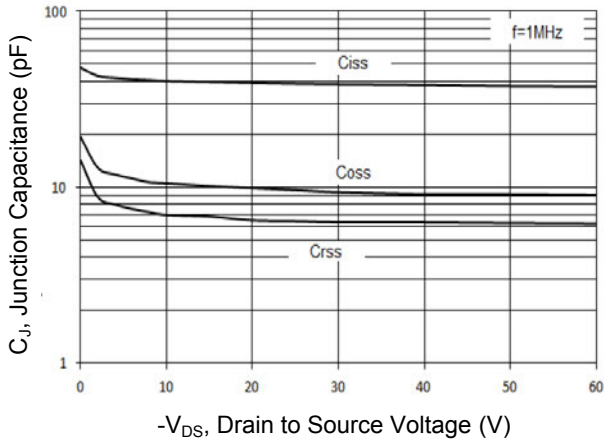


Figure 7. Capacitance Characteristics

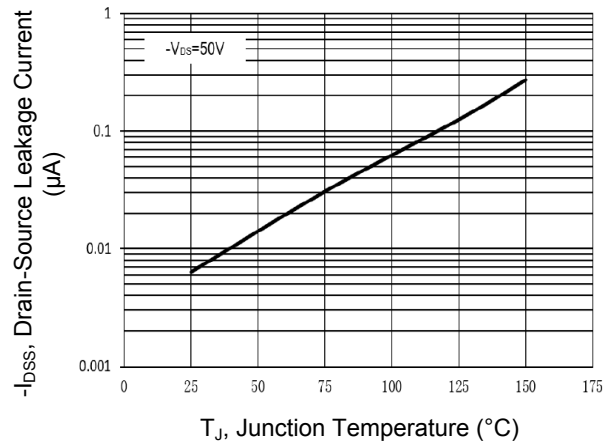


Figure 8. Drain to Source Leakage Current vs. T_J

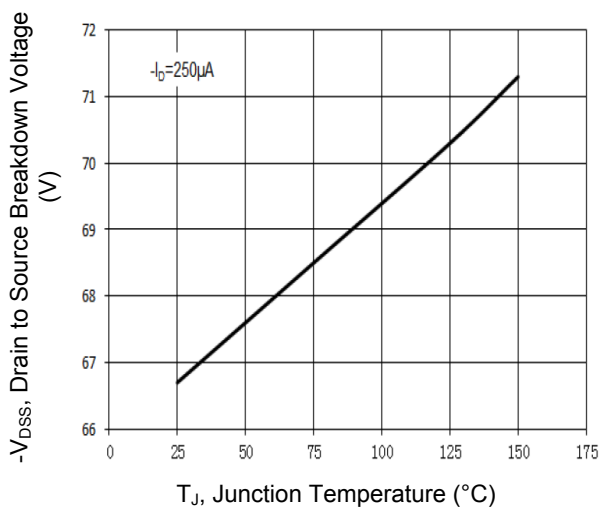


Figure 9. $V_{(BR)DSS}$ vs. Junction Temperature

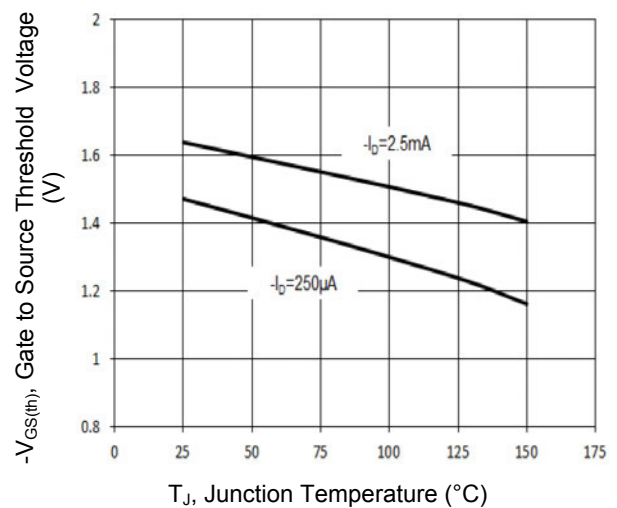


Figure 10. Gate to Source Threshold Voltage vs. T_J

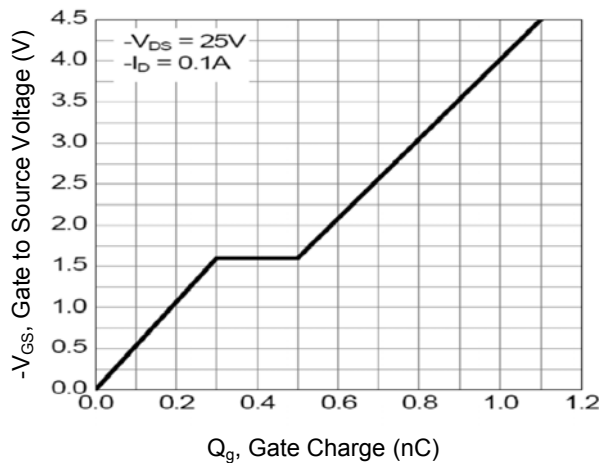
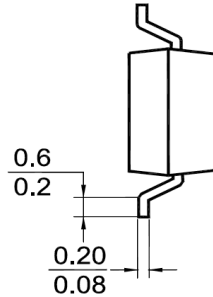
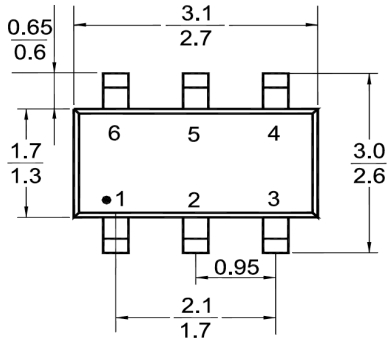
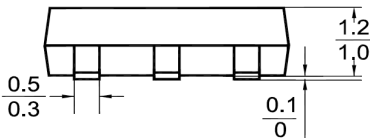


Figure 11. Gate Charge

Package Outline Dimensions (SOT-23-6L)

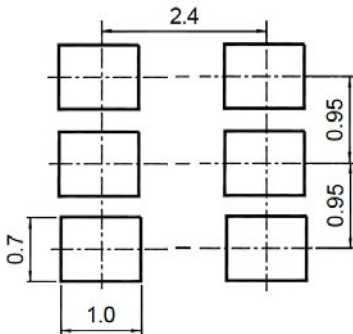


Unit: mm



Unit: mm

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFR0600	SOT-23-6L	QF	Tape & Reel	3,000pcs / Reel