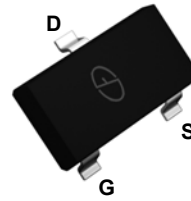
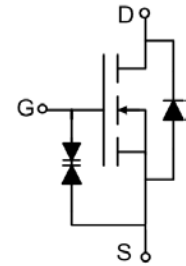


Main Product Characteristics

V_{DS}	60V
$R_{DS(ON)}$	3.9Ω
I_D	200mA



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



Description

The GSF7002K 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 ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	±20	V
Drain Current ¹ -Continuous	I_D	200	mA
Pulsed Drain Current ¹	I_{DP}^2	760	
Power Dissipation	P_D^3	320	mW
	P_D^4	1000	
Operation Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

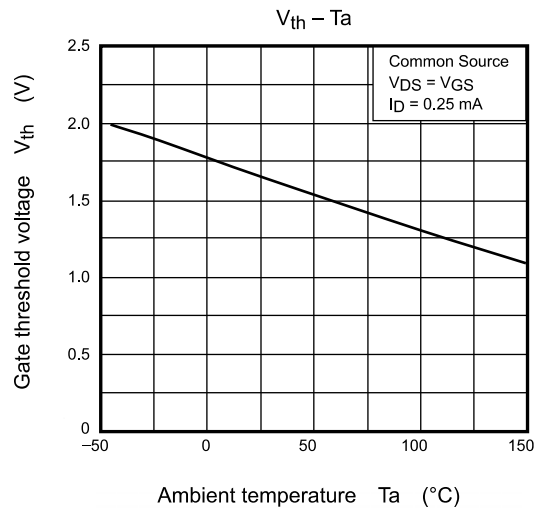
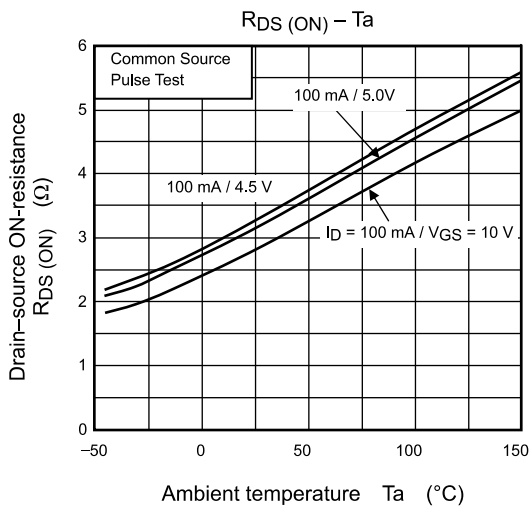
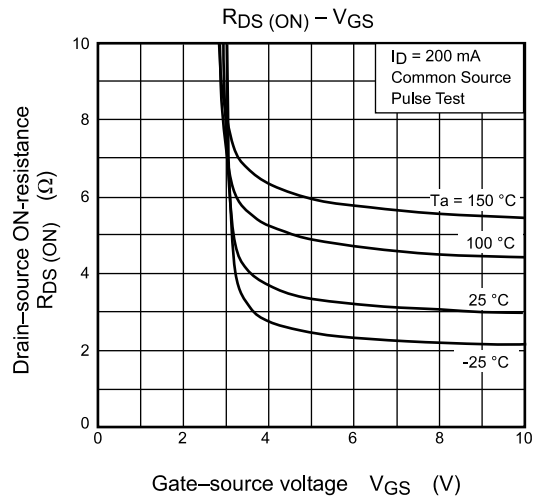
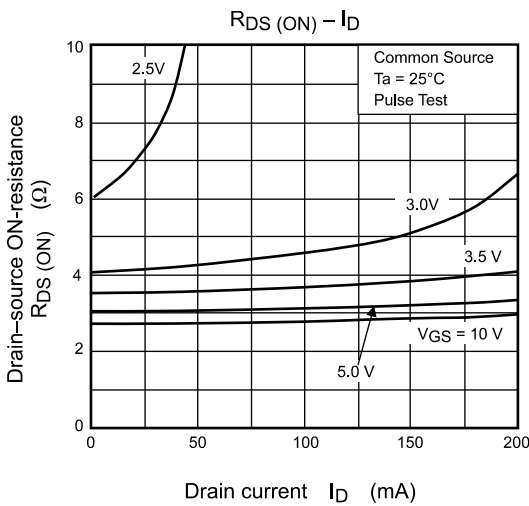
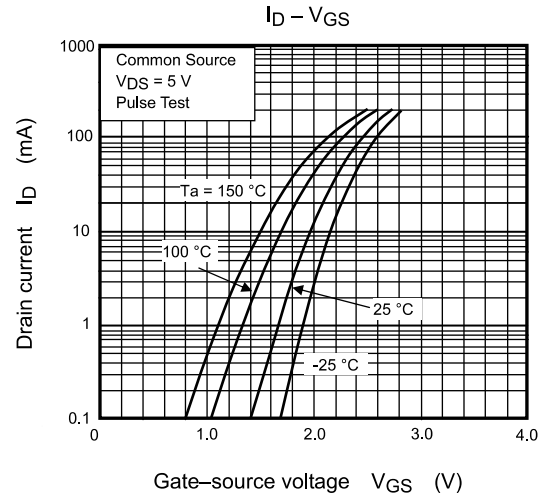
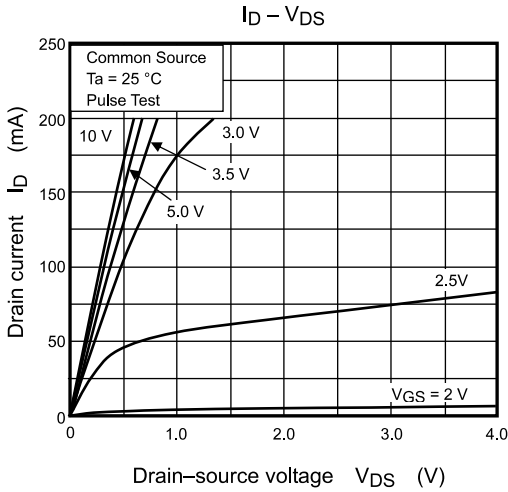
Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	60	-	-	V	
Drain Cutoff Current	I_{DSS}	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$	-	-	1	μA	
		$V_{DS}=60\text{V}, V_{GS}=0\text{V}, T_j=150^{\circ}\text{C}$	-	-	200		
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$	-	-	± 2	μA	
		$V_{GS}=\pm 10\text{V}, V_{DS}=0\text{V}$	-	-	± 0.5		
		$V_{GS}=\pm 5\text{V}, V_{DS}=0\text{V}$	-	-	± 0.1		
Gate Threshold Voltage	V_{TH}	$I_D=250\mu\text{A}, V_{DS}=V_{GS}$	1.0	-	2.5	V	
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=10\text{V}, I_D=200\text{mA}^5$	-	450	-	mS	
Drain-Source On-Resistance	$R_{DS(ON)}^5$	$I_D=100\text{mA}, V_{GS}=10\text{V}$	-	2.8	3.9	Ω	
		$I_D=100\text{mA}, V_{GS}=10\text{V}, T_j=150^{\circ}\text{C}$	-	5.4	8.1		
		$I_D=100\text{mA}, V_{GS}=5\text{V}$	-	3.1	4.4		
		$I_D=100\text{mA}, V_{GS}=4.5\text{V}$	-	3.2	4.7		
Total Gate Charge	$Q_{G(tot)}$	$V_{DS}=30\text{V}, I_D=200\text{mA}, V_{GS}=4.5\text{V}$	-	0.27	0.35	nC	
Gate-Source Charge	Q_{GS}		-	0.08	-		
Gate-Drain Charge	Q_{GD}		-	0.08	-		
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	-	11	17	μF	
Output Capacitance	C_{oss}		-	3	-		
Reverse Transfer Capacitance	C_{rss}		-	0.7	-		
Switching Time	Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=40\text{V}, I_D=160\text{mA}, V_{GS}=0\text{V to }10\text{V}, R_G=50\Omega$	-	2	4	ns
	Rise Time	t_r		-	3	-	
	Turn-Off Delay Time	$t_{d(off)}$		-	7	14	
	Fall Time	t_f		-	24	-	
Drain-Source Forward Voltage	V_{DSF}	$I_D=-115\text{mA}, V_{GS}=0\text{V}^5$	-	-0.87	-1.2	V	

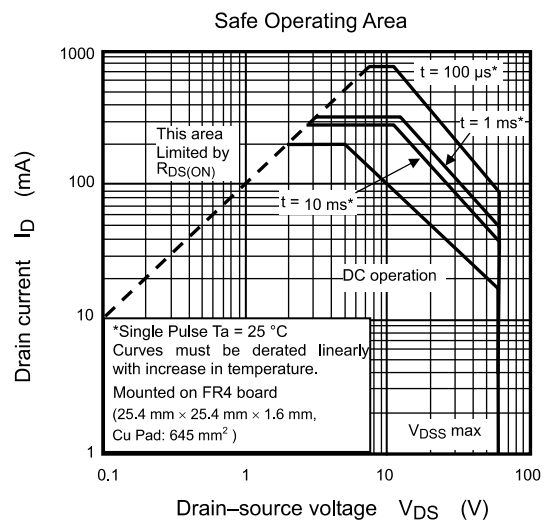
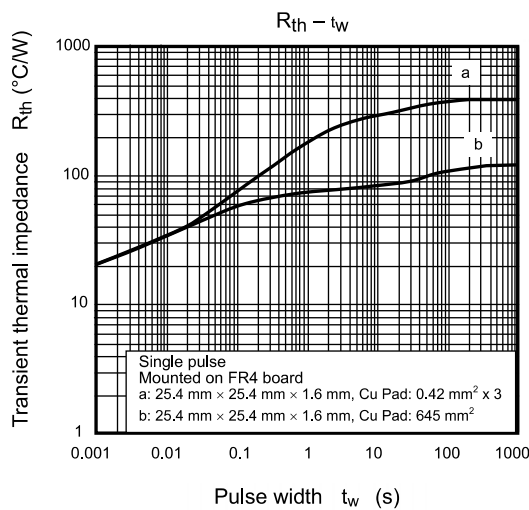
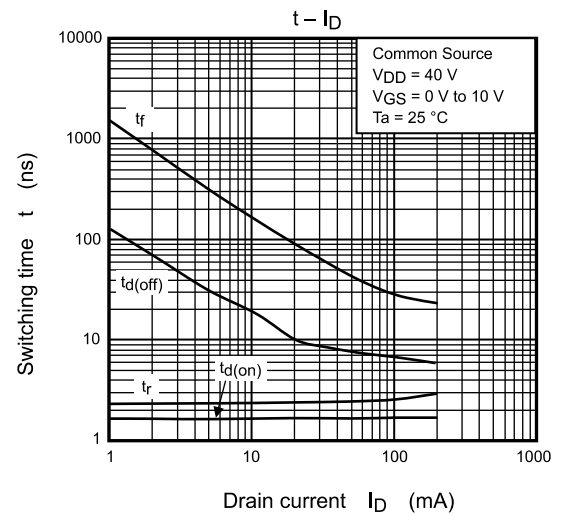
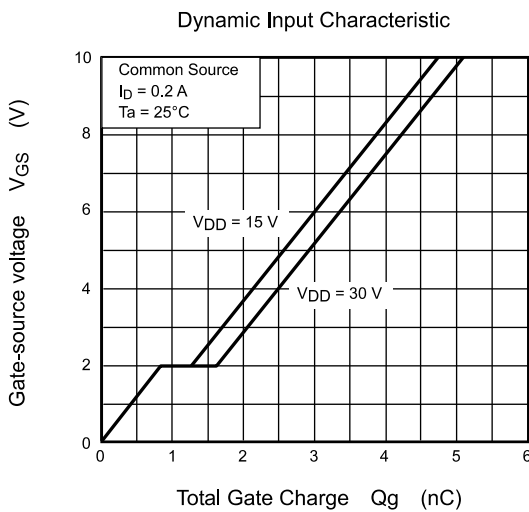
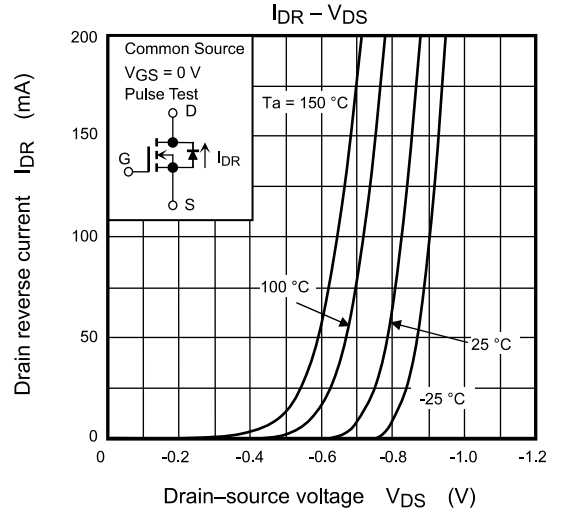
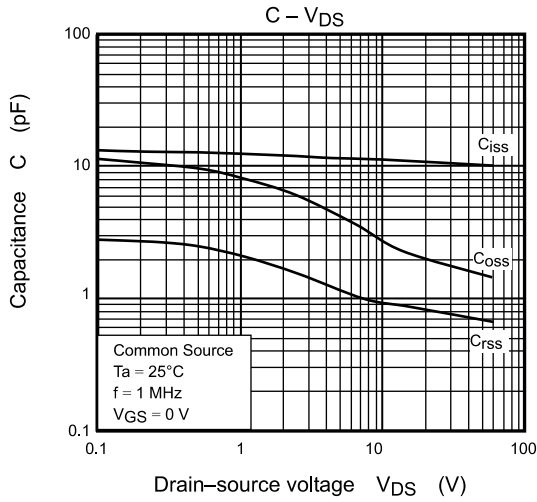
Notes:

- The channel temperature should not exceed 150°C during use.
- Pulse Test: Pulse Width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$.
- Mounted on an FR4 board (25.4mm x 25.4mm 1.6mm, Cu Pad:0.42mm²x3)
- Mounted on an FR4 board (25.4mm x 25.4mm 1.6mm, Cu Pad:645mm²)
- Pulse test

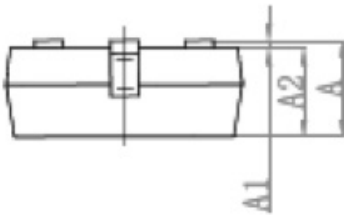
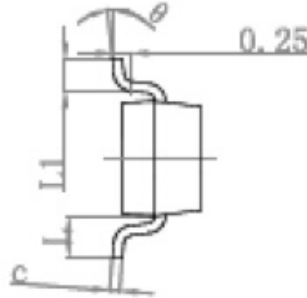
Typical Electrical and Thermal Characteristic Curves



Typical Electrical and Thermal Characteristic Curves

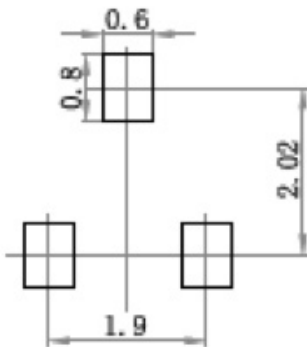


Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
L	1.800	2.000	0.071	0.079
L1	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05mm.
 3. The pad layout is for reference purposes only.