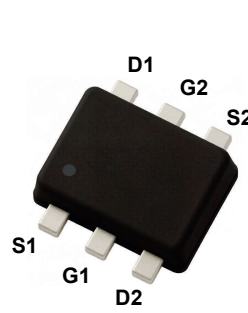
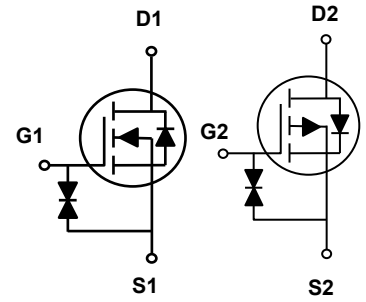


Main Product Characteristics

Polarity	N-Ch	P-Ch
$V_{(BR)DSS}$	60V	-60V
$R_{DS(ON)}$	2.2Ω (Max.)	4Ω (Max.)
I_D	0.5A	-0.35A



SOT-563



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 GSFJ8402K 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

Parameter	Symbol	N-Ch	P-Ch	Unit	
Gate-Source Voltage	V_{GS}	±20	±20	V	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60	-60	V	
Diode Continuous Forward Current ($T_A=25^\circ\text{C}$)	I_S	0.50	-0.35	A	
Pulse Drain Current Tested ($T_A=25^\circ\text{C}$) ¹	I_{DM}	1.6	-1.2	A	
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	0.50	-0.35	A
		$T_A=70^\circ\text{C}$	0.35	-0.25	
Power Dissipation for Dual Operation	P_D	$T_A=25^\circ\text{C}$	0.56		W
		$T_A=70^\circ\text{C}$	0.4		
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	220		$^\circ\text{C/W}$	
Storage and Operating Temperature Range	T_{STG}/T_J	-55 to +150		$^\circ\text{C}$	

N-Channel Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60	-	-	V
Zero Gate Voltage Drain Current (T _A =25°C)	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	μA
Zero Gate Voltage Drain Current (T _A =125°C)		V _{DS} =48V, V _{GS} =0V	-	-	100	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	2.0	3.0	V
Drain-Source On-State Resistance ²	R _{DS(on)}	V _{GS} =10V, I _D =0.15A	-	1.4	2.2	Ω
		V _{GS} =4.5V, I _D =0.1A	-	1.6	3.2	Ω
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHz	-	23.8	-	pF
Output Capacitance	C _{oss}		-	3.9	-	
Reverse Transfer Capacitance	C _{rss}		-	1.5	-	
Total Gate Charge	Q _g	V _{DS} =30V, I _D =0.3A, V _{GS} =10V	-	0.93	-	nC
Gate Source Charge	Q _{gs}		-	0.18	-	
Gate Drain Charge	Q _{gd}		-	0.31	-	
Turn On Delay Time	t _{d(on)}	V _{DD} =30V, I _D =0.1A, R _G =3.3Ω, V _{GS} =10V	-	4.4	-	nS
Turn On Rise Time	t _r		-	2.6	-	
Turn Off Delay Time	t _{d(off)}		-	25.5	-	
Turn Off Fall Time	t _f		-	3.3	-	
Source-Drain Ratings and Characteristics						
Forward on Voltage ²	V _{SD}	I _{SD} =0.1A, V _{GS} =0V	-	0.82	1.2	V

Notes:

1. Pulse width limited by maximum allowable junction temperature.
2. Pulse test: pulse width ≤300us, duty cycle ≤2%.

P-Channel Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-60	-	-	V
Zero Gate Voltage Drain Current (T _A =25°C)	I _{DSS}	V _{DS} =-60V, V _{GS} =0V	-	-	-1	μA
Zero Gate Voltage Drain Current (T _A =125°C)		V _{DS} =-48V, V _{GS} =0V	-	-	-100	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.7	-2.5	V
Drain-Source On-State Resistance ²	R _{DS(ON)}	V _{GS} =-10V, I _D =-0.15A	-	2.5	4	Ω
		V _{GS} =-4.5V, I _D =-0.1A	-	3	6	Ω
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f=1MHz	-	25.2	-	pF
Output Capacitance	C _{oss}		-	5.9	-	
Reverse Transfer Capacitance	C _{rss}		-	1.4	-	
Total Gate Charge	Q _g	V _{DS} =-30V, I _D =-0.2A, V _{GS} =-10V	-	0.53	-	nC
Gate Source Charge	Q _{gs}		-	0.14	-	
Gate Drain Charge	Q _{gd}		-	0.1	-	
Turn On Delay Time	t _{d(on)}	V _{DD} =-30V, I _D =-0.1A, R _G =3.3Ω, V _{GS} =-10V	-	1.6	-	nS
Turn On Rise Time	t _r		-	5.2	-	
Turn Off Delay Time	t _{d(off)}		-	12	-	
Turn Off Fall Time	t _f		-	6.1	-	
Source-Drain Ratings and Characteristics						
Forward on Voltage ²	V _{SD}	I _{SD} =-0.1A, V _{GS} =0V	-	-0.78	-1.2	V

Notes:

1. Pulse width limited by maximum allowable junction temperature.
2. Pulse test: pulse width ≤300us, duty cycle ≤2%.

N-Channel Typical Electrical and Thermal Characteristic Curves

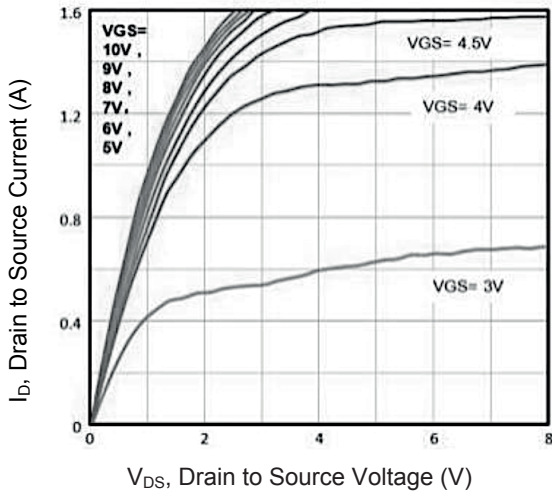


Figure 1. Typical Output Characteristics

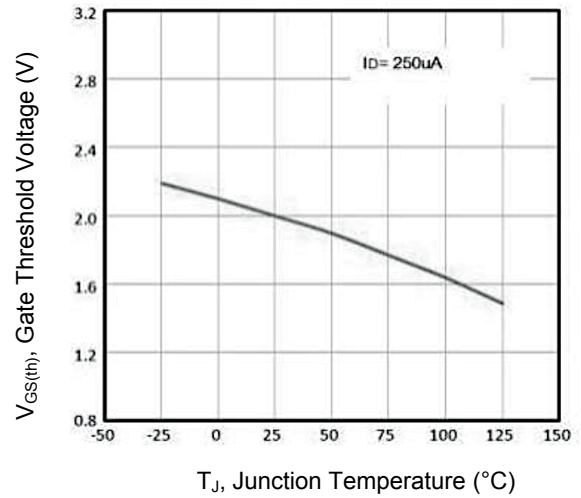


Figure 2. Gate Threshold Voltage vs. T_J

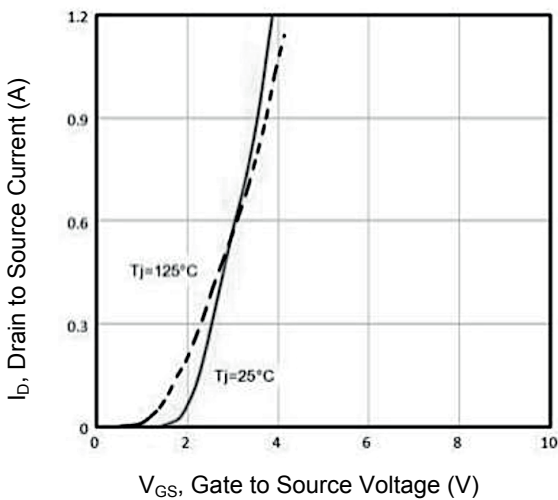


Figure 3. Typical Transfer Characteristics

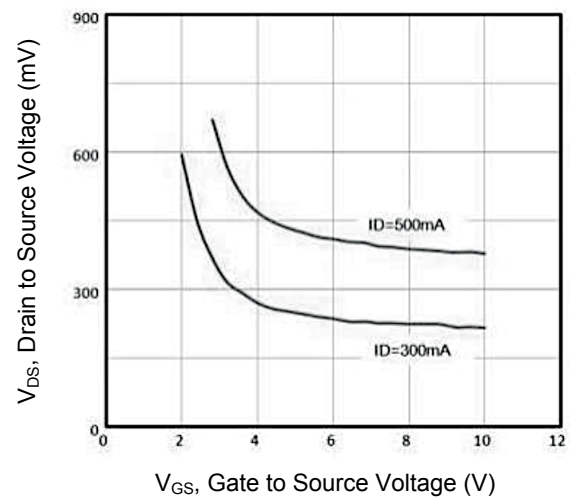


Figure 4. Drain-Source Voltage vs. Gate-Source Voltage

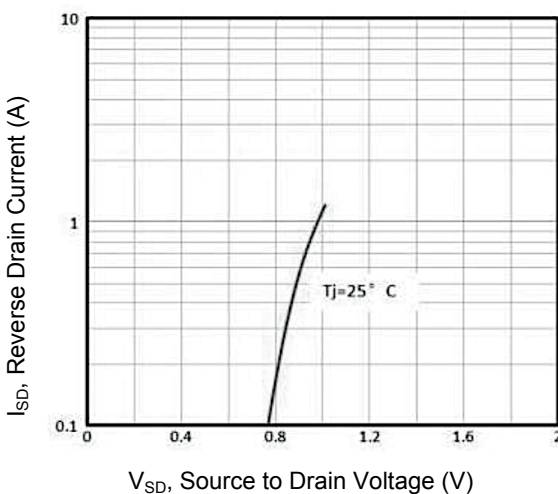


Figure 5. Typical Source-Drain Diode Forward Voltage

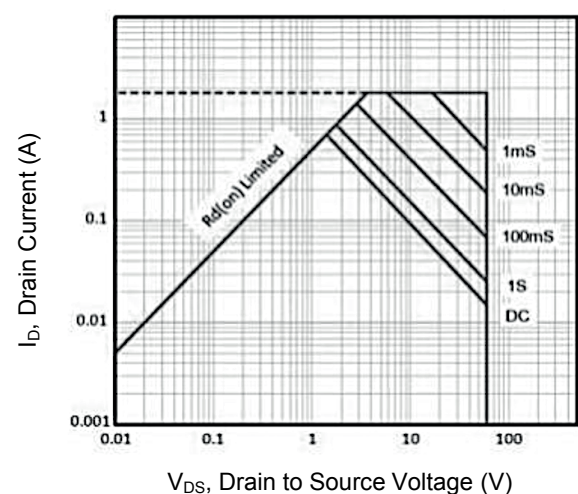


Figure 6. Maximum Safe Operation Area

N-Channel Typical Electrical and Thermal Characteristic Curves

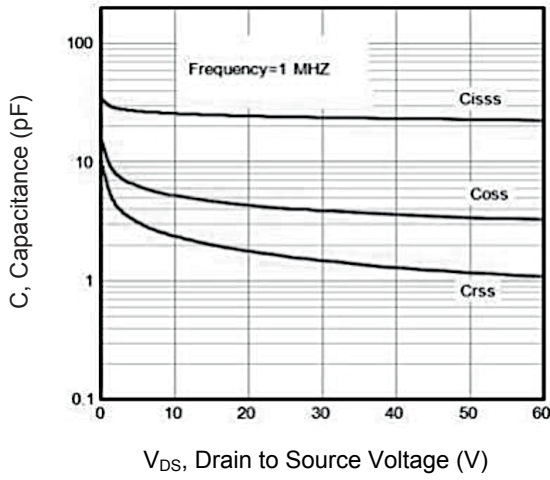


Figure 7. Typical Capacitance vs. Drain-Source Voltage

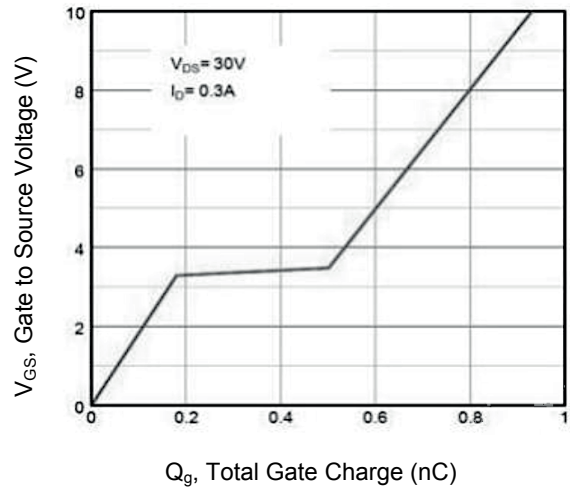


Figure 8. Typical Gate Charge vs. Gate-Source Voltage

P-Channel Typical Electrical and Thermal Characteristic Curves

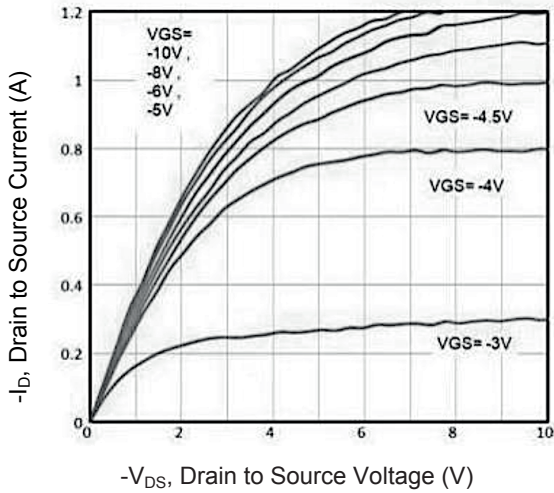


Figure 9. Typical Output Characteristics

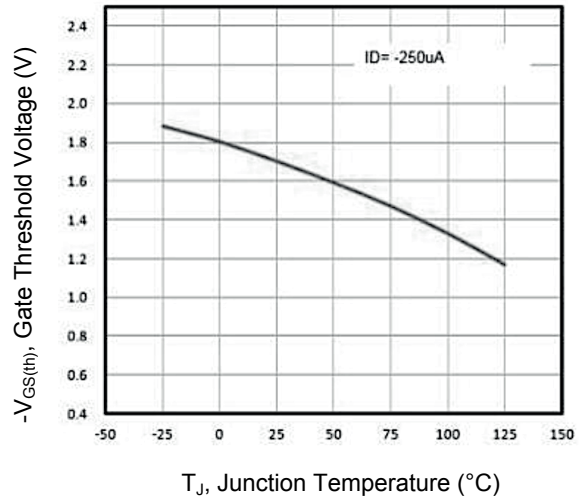


Figure 10. Gate Threshold Voltage vs. T_J

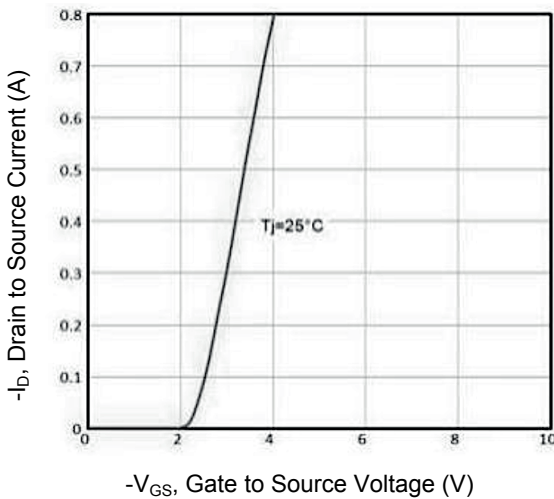


Figure 11. Typical Transfer Characteristics

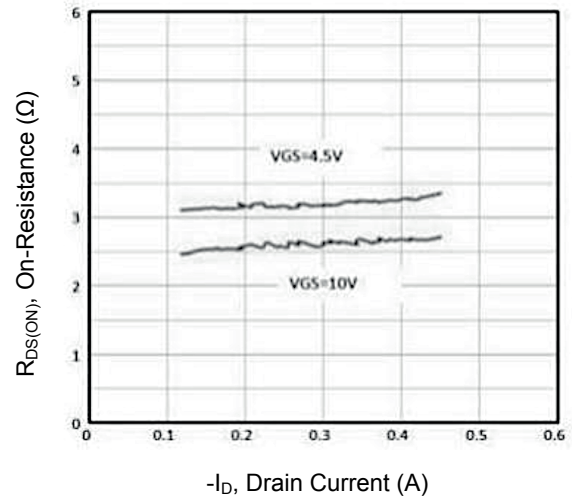


Figure 12. On-Resistance vs. Drain Current

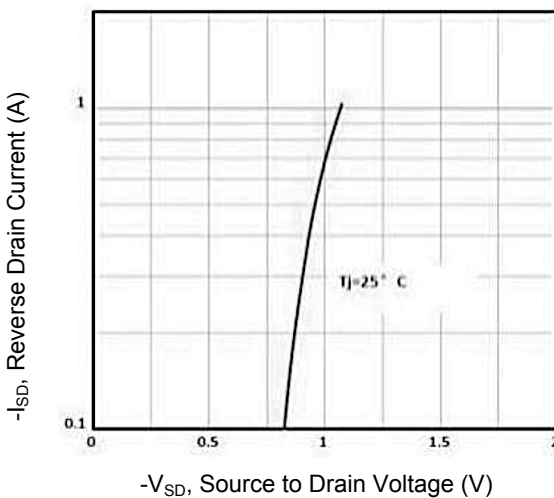


Figure 13. Typical Source-Drain Diode Forward Voltage

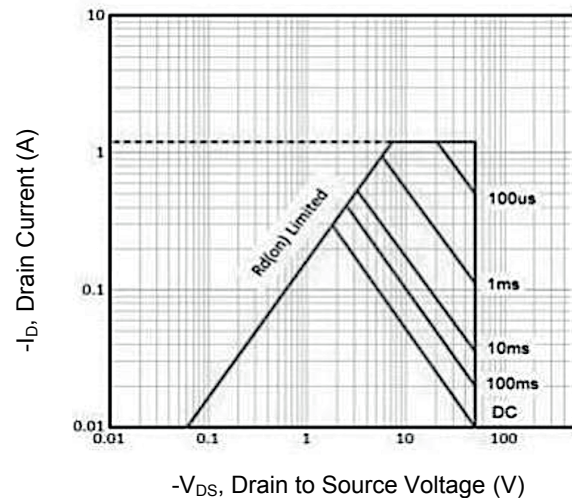
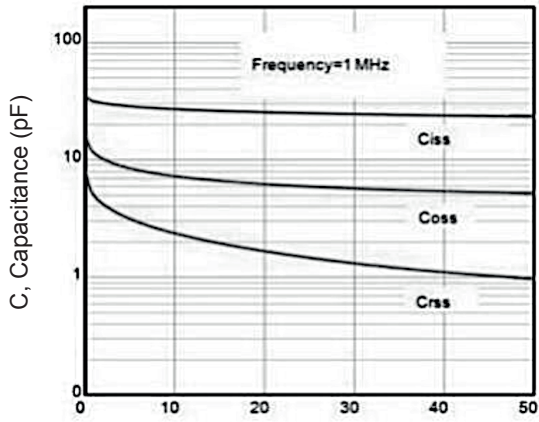


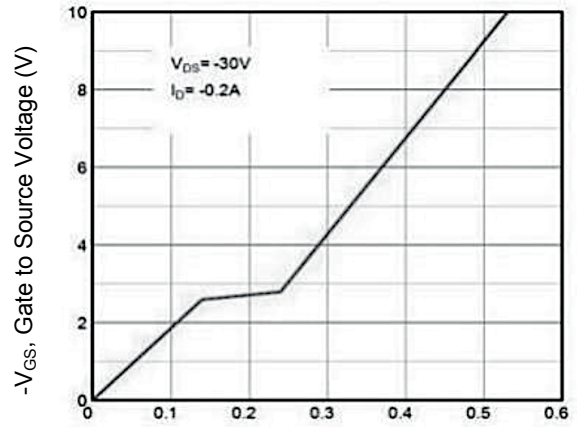
Figure 14. Maximum Safe Operation Area

P-Channel Typical Electrical and Thermal Characteristic Curves



-V_{DS}, Drain to Source Voltage (V)

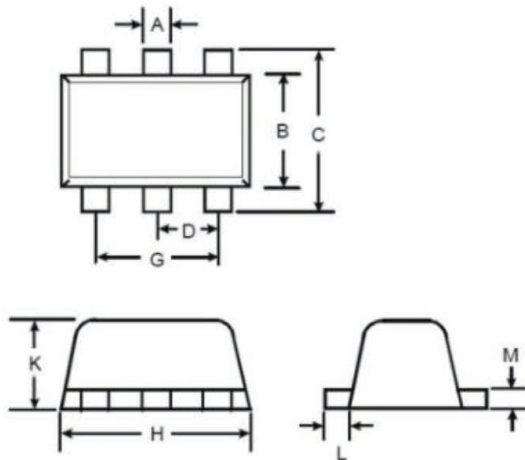
Figure 15. Typical Capacitance vs. Drain-Source Voltage



Q_g, Total Gate Charge (nC)

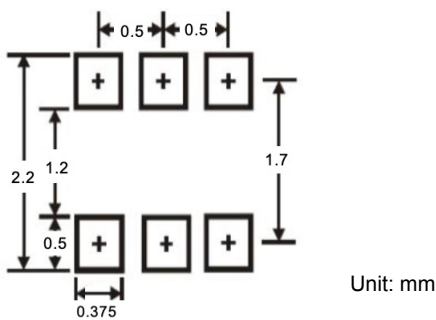
Figure 16. Typical Gate Charge vs. Gate-Source Voltage

Package Outline Dimensions (SOT-563)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.15	0.30	0.006	0.012
B	1.10	1.25	0.043	0.049
C	1.55	1.70	0.061	0.067
D	0.50 TYP		0.020 TYP	
G	0.90	1.10	0.035	0.043
H	1.50	1.70	0.059	0.067
K	0.55	0.60	0.022	0.024
L	0.10	0.30	0.004	0.012
M	0.10	0.18	0.004	0.007

Recommended Pad Layout



Order Information

Device	Package	Marking	Packaging	SPQ
GSFJ8402K	SOT-563	KNP	Tape & Reel	3,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com