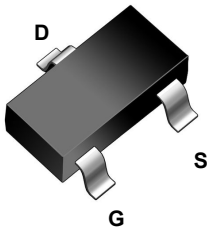
GOOD-ARK SEMICONDUCTOR

GS2N7002KW

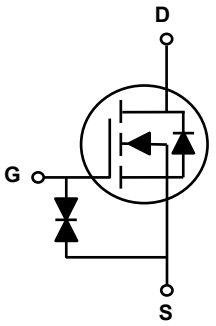
60V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	60V
$R_{DS(ON)}$	2.5Ω (Max.)
I_D	0.34A



SOT-323



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 GS2N7002KW 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	Max.	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, @ Steady-State (T_A=25°C)[1]	I_D	0.34	A
Continuous Drain Current, @ Steady-State (T_A=70°C)		0.272	A
Pulsed Drain Current[2]	I_{DM}	1.5	A
Power Dissipation (T_A=25°C)	P_D	310	mW
Linear Derating Factor (T_A=25°C)		2.48	mW/°C
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)[3]	$R_{\theta JA}$	410	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	60	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	-	-	1	μA
		V_{DS}=60V, V_{GS}=0V, T_J=125°C	-	-	50	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS}=±20V	-	-	±100	nA
		V_{GS}=±10V	-	-	±50	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.3A	-	1.9	2.5	Ω
		V_{GS}=4.5V, I_D=0.2A	-	2.0	3.0	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	1.5	2.5	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V f=1MHz	-	16.8	-	pF
Output Capacitance	C_{oss}		-	11.5	-	
Reverse Transfer Capacitance	C_{rss}		-	6.6	-	
Total Gate Charge	Q_g	I_D=0.3A, V_{DS}=30V, V_{GS}=10V	-	1.8	2.4	nC
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=30V, R_{GEN}=6Ω, I_D=0.3A	-	5.6	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	17.7	-	
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	0.34	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	0.68	A
Diode Forward Voltage	V_{SD}	I_S=0.3A, V_{GS}=0V	-	0.82	1.2	V
Reverse Recovery Time	T_{rr}	T_J=25°C, I_F=0.3A, di/dt=100A/μs, V_R=25V	-	30.2	-	nS

Notes:

1. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

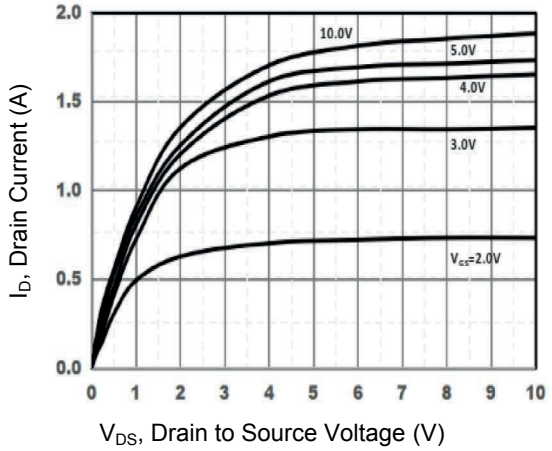


Figure 1. Output Characteristics

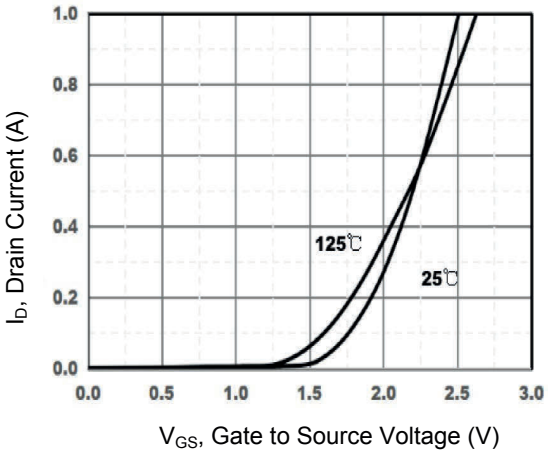


Figure 2. Transfer Characteristics

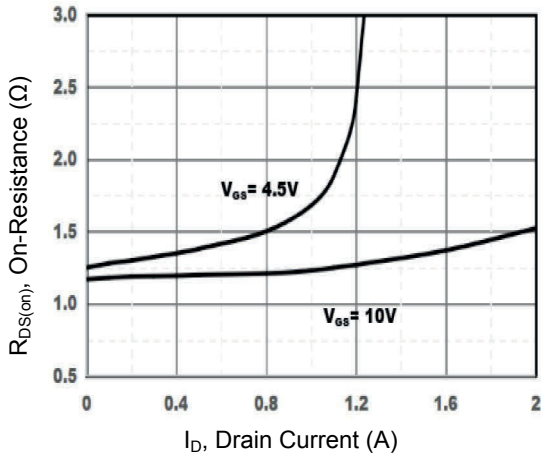


Figure 3. On-Resistance vs. I_D

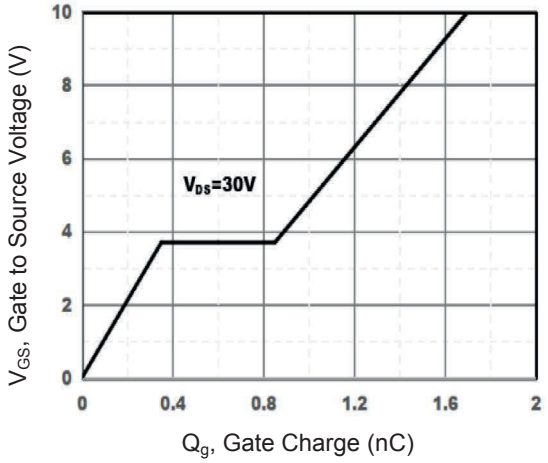


Figure 4. Gate Charge

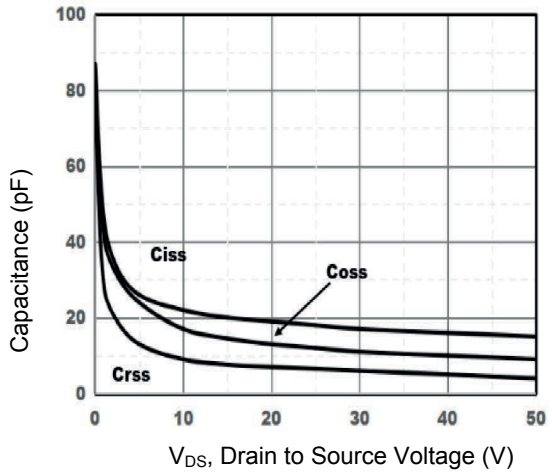


Figure 5. Capacitance Characteristics

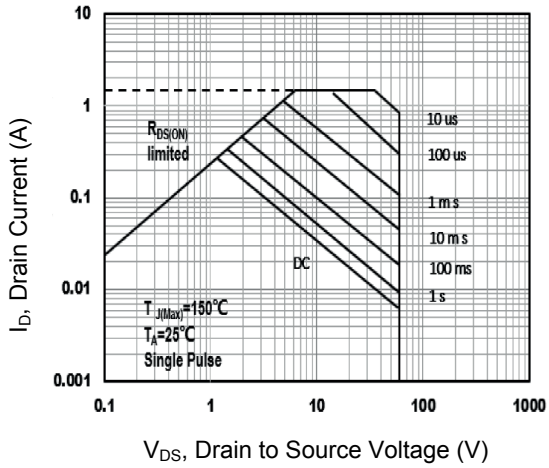
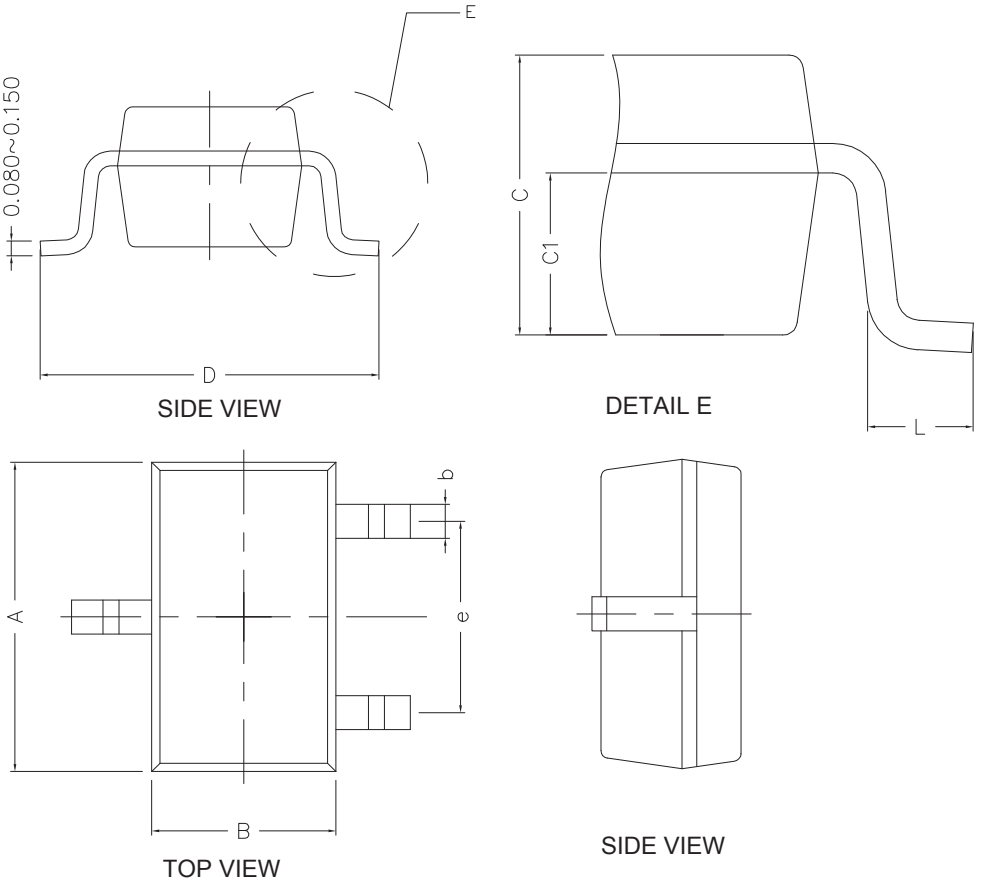


Figure 6. Safe Operation Area

Package Outline Dimensions (SOT-323)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.00	2.20	0.079	0.087
B	1.15	1.35	0.045	0.053
C	0.90	1.00	0.035	0.039
C1	0.50	0.60	0.020	0.024
D	2.10	2.50	0.083	0.098
L	0.22	0.50	0.009	0.020
b	0.20	0.40	0.008	0.016
e	1.30 TYP		0.051 TYP	

Order Information

Device	Package	Marking	Packaging	SPQ
GS2N7002KW	SOT-323	*2* (* varied by lot)	Tape & Reel	3,000 Pcs / Reel