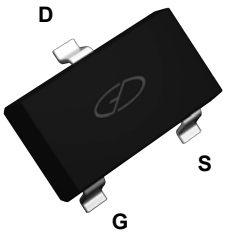
GOOD-ARK SEMICONDUCTOR

GS2N7002KW

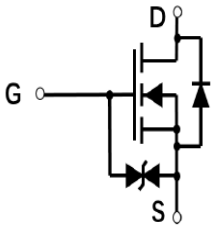
60V N-Channel MOSFET

Main Product Characteristics

V_{DS}	60V
$R_{DS(ON)}$	2.5Ω
I_D	340mA



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 supply 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-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous(T_A=25°C)	I_D	340	mA
Drain Current-Continuous(T_A=70°C)		272	
Drain Current-Pulsed[1]	I_{DM}	1.5	A
Power Dissipation(T_A=25°C)	P_D	350	mW
Thermal Resistance, Junction-to-Ambient[2]	$R_{\theta JA}$	357	°C/W
Storage Temperature Range	T_{STG}	-55 To +150	°C
Operating Junction Temperature Range	T_J	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS1}	V_{GS}=±20V, V_{DS}=0V	-	-	±9	μA
	I_{GSS2}	V_{GS}=±10V, V_{DS}=0V	-	-	±200	nA
	I_{GSS3}	V_{GS}=±5V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.4	2.5	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=300mA	-	1.3	2.5	Ω
		V_{GS}=4.5V, I_D=200mA	-	1.4	3	
Diode Forward Voltage	V_{SD}	I_S=300mA,V_{GS}=0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S	-	-	-	340	mA
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=30V, V_{GS}=0V, F=1.0MHz	-	18	-	PF
Output Capacitance	C_{oss}		-	12	-	PF
Reverse Transfer Capacitance	C_{rss}		-	7	-	PF
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=30V, I_D=0.3A, V_{GS}=10V	-	1.7	2.4	nC
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=30V, I_D=300mA, V_{GS}=10V,R_{GEN}=6Ω	-	5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	17	-	
Reverse Recovery Time	t_{rr}	V_{GS}=0V, I_S=300mA,V_R=25V, dI_S/dt=-100A/μs	-	30	-	nS

Note:

1. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

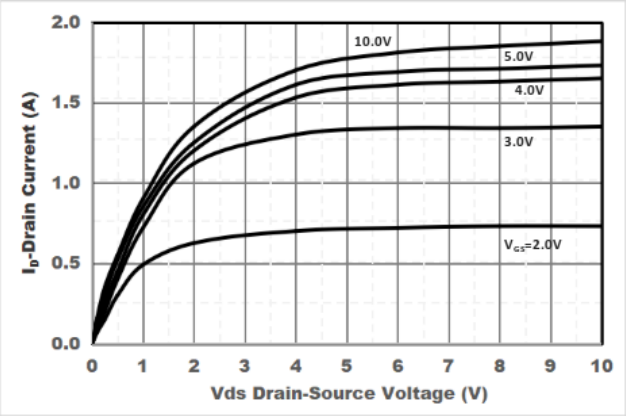


Figure 1. Output Characteristics

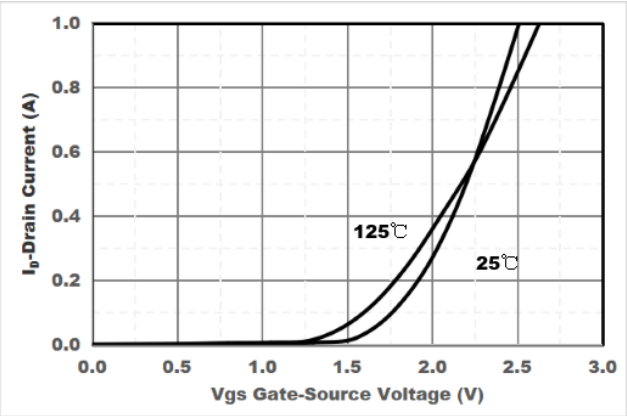


Figure 2. Transfer Characteristics

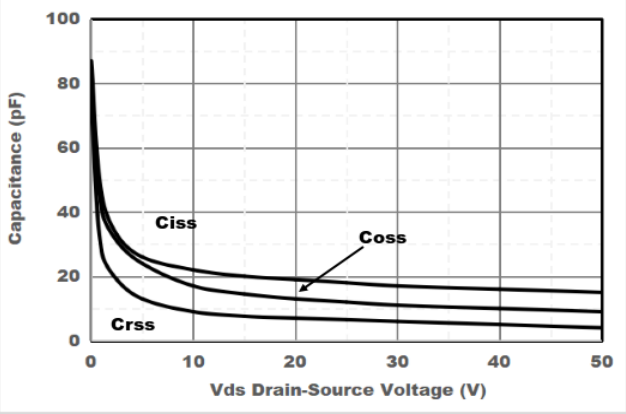


Figure 3. Capacitance Characteristics

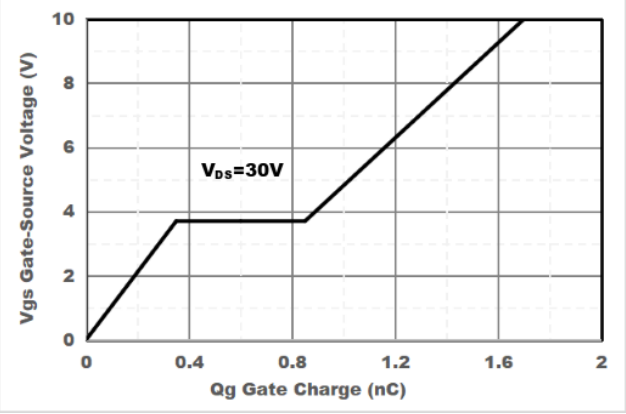


Figure 4. Gate Charge

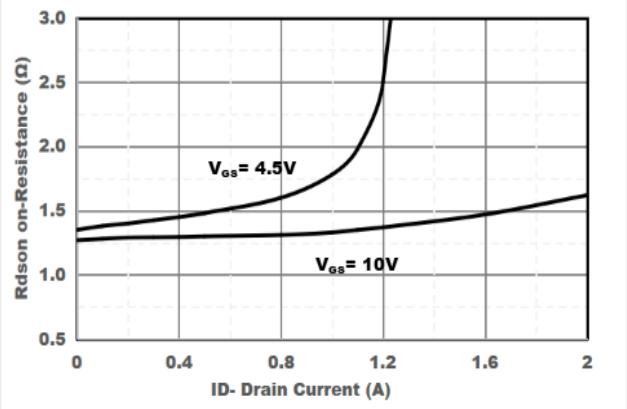


Figure 5. Drain-Source on Resistance

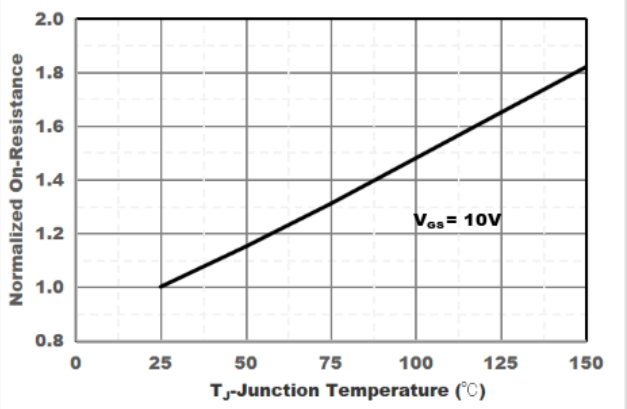


Figure 6. Drain-Source on Resistance

Typical Electrical and Thermal Characteristic Curves

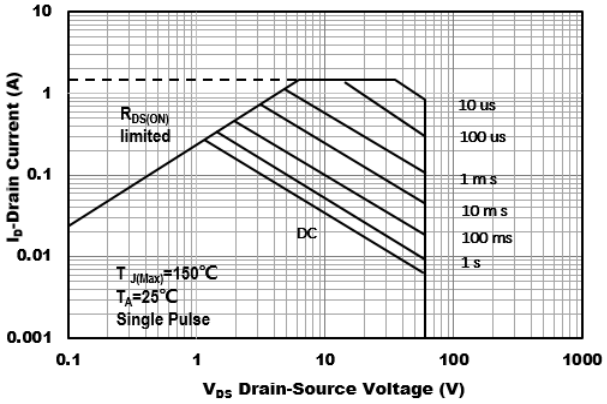


Figure 7. Safe Operation Area

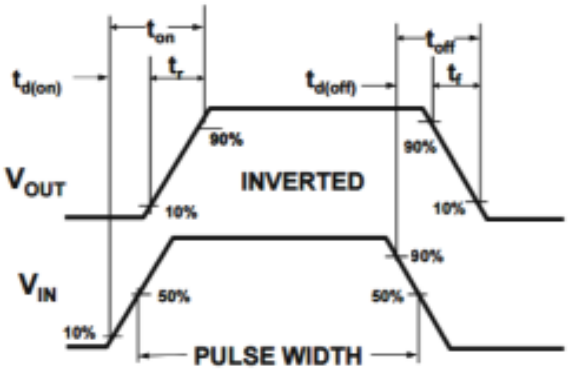
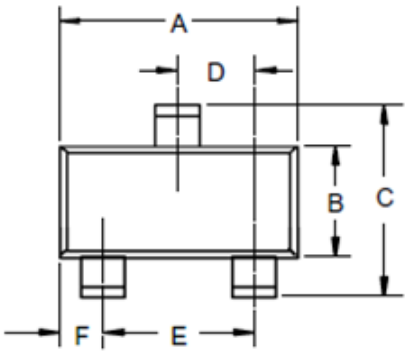
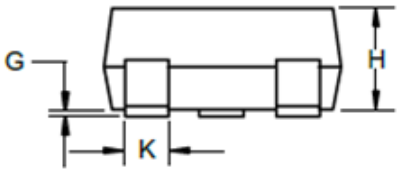
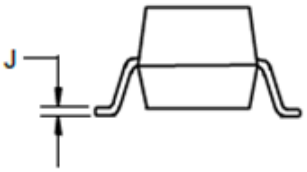


Figure 8. Switching Wave

Package Outline Dimensions (SOT-323)

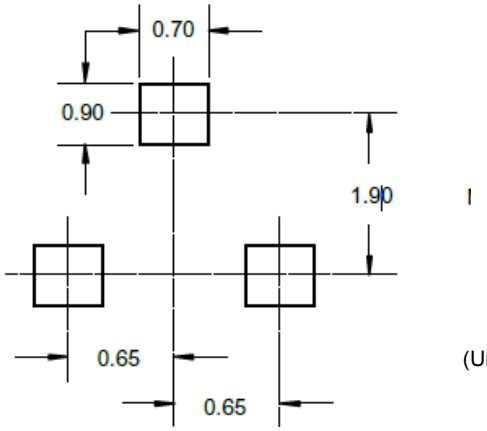






DIMENSIONS					
	INCHES		MM		
DIM	MIN	MAX	MIN	MAX	NOTE
A	.071	.087	1.80	2.20	
B	.045	.053	1.15	1.35	
C	.083	.096	2.10	2.45	
D	.026 Nominal		0.65Nominal		
E	.047	.055	1.20	1.40	
F	.012	.016	.30	.40	
G	.000	.004	.000	.100	
H	.035	.039	.90	1.00	
J	.004	.010	.100	.250	
K	.006	.016	.15	.40	

Recommended Pad Layout



(Unit: mm)