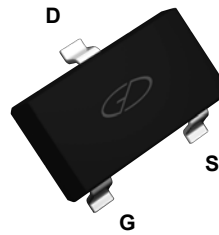
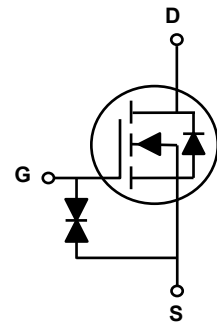


### Main Product Characteristics

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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Drain Current-Continuous( $T_A=25^\circ\text{C}$ )	$I_D$	340	mA
Drain Current-Continuous( $T_A=70^\circ\text{C}$ )		272	
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	1.5	A
Power Dissipation( $T_A=25^\circ\text{C}$ )	$P_D$	350	mW
Thermal Resistance, Junction-to-Ambient <sup>2</sup>	$R_{\theta JA}$	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<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-Body Leakage Current	I <sub>GSS1</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±9	μA
	I <sub>GSS2</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V	-	-	±200	nA
	I <sub>GSS3</sub>	V <sub>GS</sub> =±5V, V <sub>DS</sub> =0V	-	-	±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.4	2.5	V
Static Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =300mA	-	1.3	2.5	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA	-	1.4	3	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =300mA, V <sub>GS</sub> =0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>	-	-	-	340	mA
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, F=1.0MHz	-	18	-	PF
Output Capacitance	C <sub>oss</sub>		-	12	-	PF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	7	-	PF
<b>Switching Characteristics</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =30V, I <sub>D</sub> =0.3A, V <sub>GS</sub> =10V	-	1.7	2.4	nC
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =300mA, V <sub>GS</sub> =10V, R <sub>GEN</sub> =6Ω	-	5	-	nS
Turn-Off Delay Time	t <sub>d(off)</sub>		-	17	-	
Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =300mA, V <sub>R</sub> =25V, di <sub>S</sub> /dt=-100A/μs	-	30	-	nS

Note:

1. Pulse Test: Pulse Width ≤ 300μs, 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**

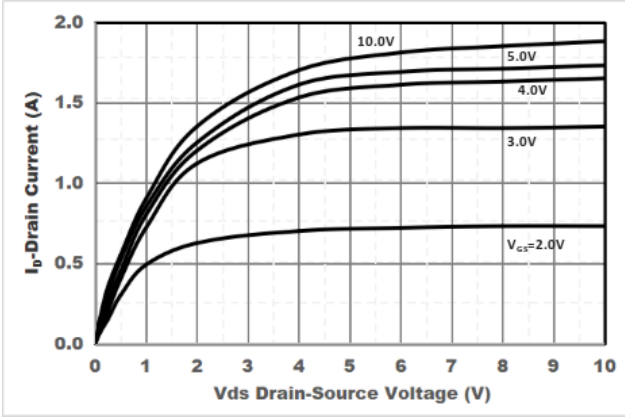


Figure 1. Output Characteristics

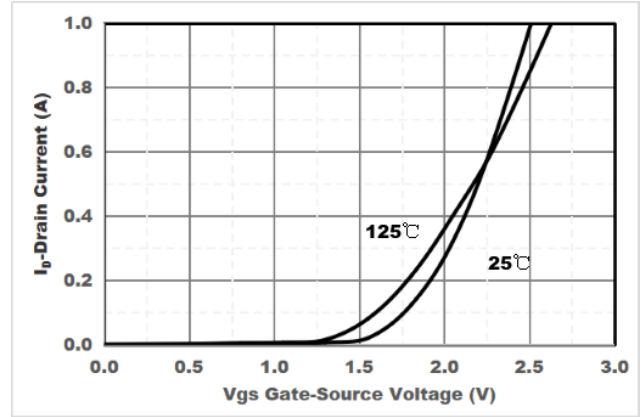


Figure 2. Transfer Characteristics

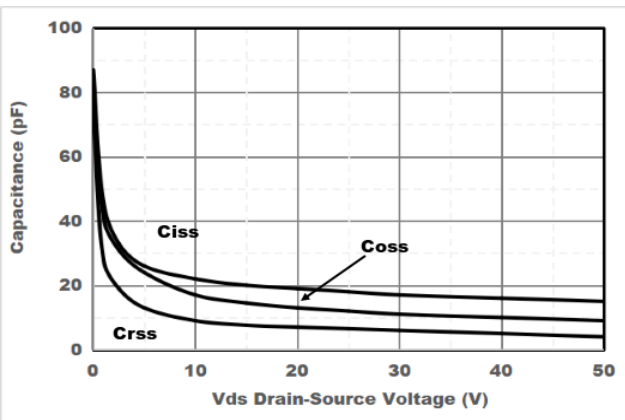


Figure 3. Capacitance Characteristics

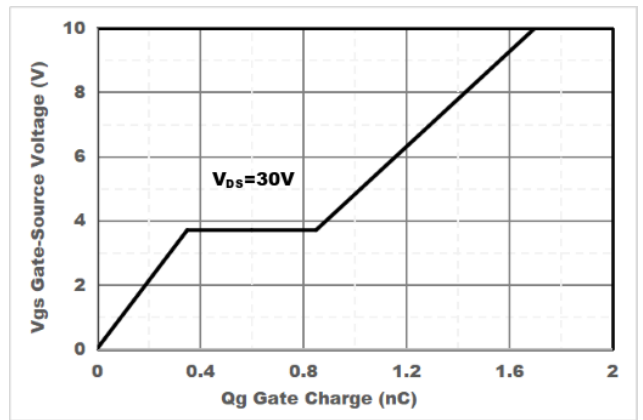


Figure 4. Gate Charge

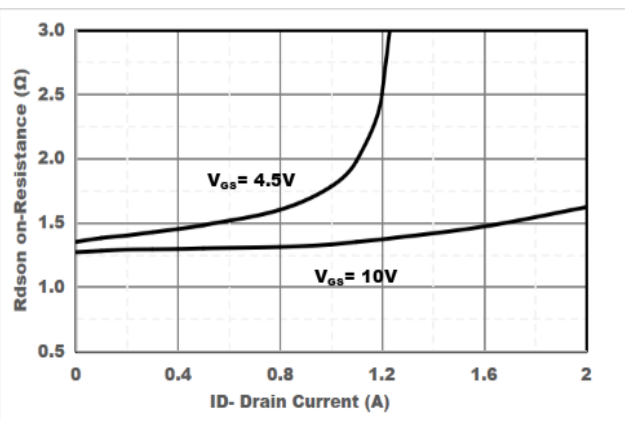


Figure 5. Drain-Source on Resistance

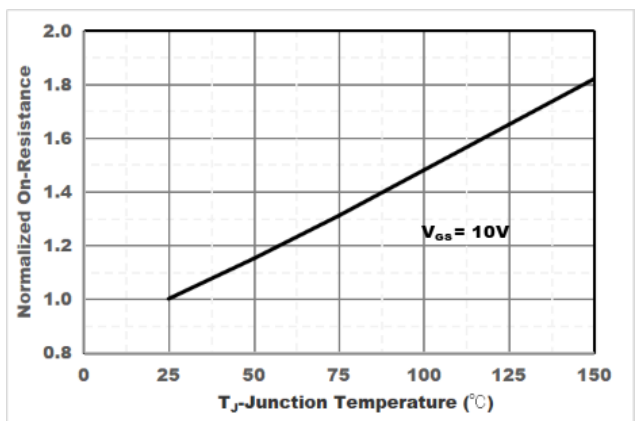


Figure 6. Drain-Source on Resistance

## Typical Electrical and Thermal Characteristic Curves

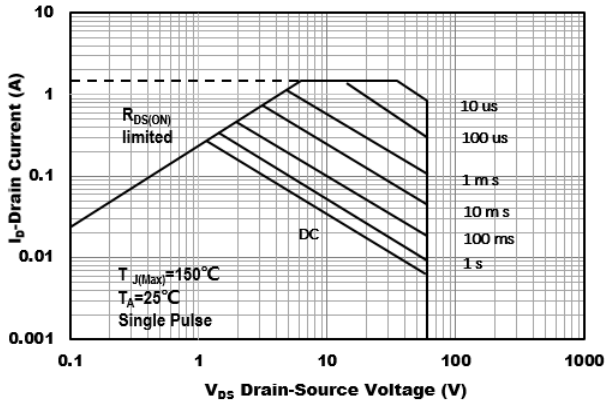


Figure 7. Safe Operation Area

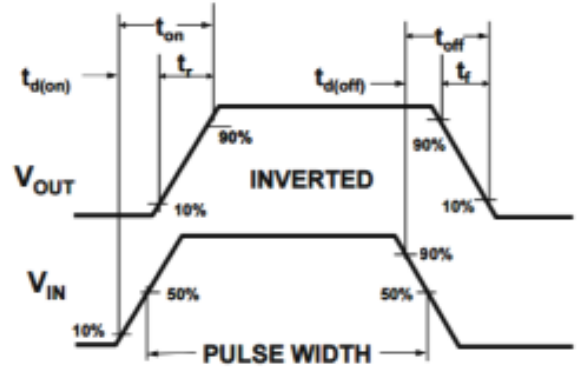
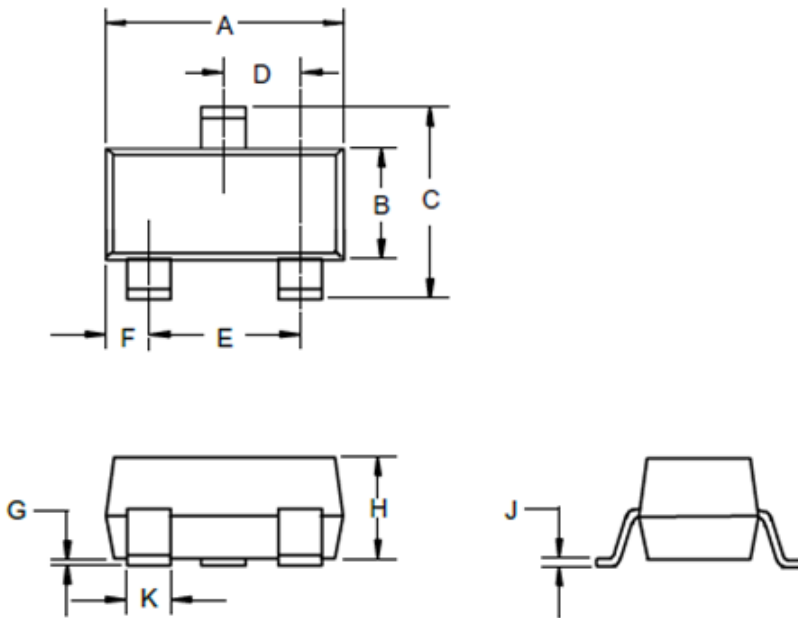


Figure 8. Switching Wave

**Package Outline Dimensions (SOT-323)**



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
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**

