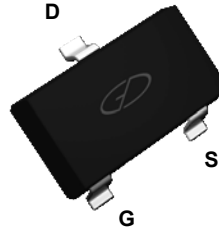
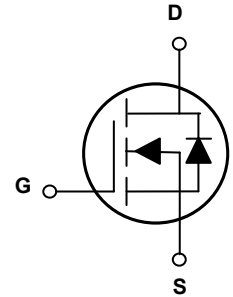


## Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	70m $\Omega$
$I_D$	2.5A



SOT-323



Schematic Diagram

## Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switch mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



## Description

The GSKW0202 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	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Continuous Drain Current, @Steady-State ( $T_A=25^\circ\text{C}$ ) <sup>1</sup>	$I_D$	2.5	A
Continuous Drain Current, @Steady-State ( $T_A=70^\circ\text{C}$ ) <sup>1</sup>		2	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	14	A
Power Dissipation( $T_A=25^\circ\text{C}$ )	$P_D$	0.7	W
Derating Factor( $T_A=25^\circ\text{C}$ )		5.6	W/ $^\circ\text{C}$
Junction-to-Ambient @Steady-State <sup>3</sup>	$R_{\theta JA}$	178	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$	-	-	1	$\mu A$
		$T_J=125^\circ C$	-	-	50	
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{GS}=+10V$	-	-	100	nA
		$V_{GS}=-10V$	-	-	-100	
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=2.5A$	-	57	70	m $\Omega$
		$V_{GS}=2.5V, I_D=2.0A$	-	72	98	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.55	0.78	1.1	V
Input Capacitance	$C_{ISS}$	$V_{DS}=10V, V_{GS}=0V, F=1.0MHz$	-	280	-	$\mu F$
Output Capacitance	$C_{OSS}$		-	46	-	
Reverse Transfer Capacitance	$C_{RSS}$		-	29	-	
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=2.5A, V_{GS}=10V$	-	2.9	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.4	-	
Gate-to-Drain("Miller") Charge	$Q_{gd}$		-	0.6	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=10V, I_D=6.6A, R_L=1.5\Omega, V_{GS}=4.5V, R_{GEN}=3\Omega$	-	13	-	nS
Rise Time	$t_r$		-	54	-	
Turn-Off Delay Time	$t_{d(off)}$		-	18	-	
Fall Time	$t_f$		-	11	-	
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode) <sup>2</sup>	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	2.5	A
Pulsed Source-Drain Current (Body Diode)	$I_{SM}$		-	-	14	A
Diode Forward Voltage	$V_{SD}$	$I_S=2.5A, V_{GS}=0V$	-	0.86	1.2	V

**Notes**

1. Pulse test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
2. Repetitive Rating: pulse width limited by maximum junction temperature.
3. Device mounted on FR-4 PCB, 1inch x 0.85inch x 0.062inch,  $t \leq 10$  sec.

**Typical Electrical and Thermal Characteristic Curves**

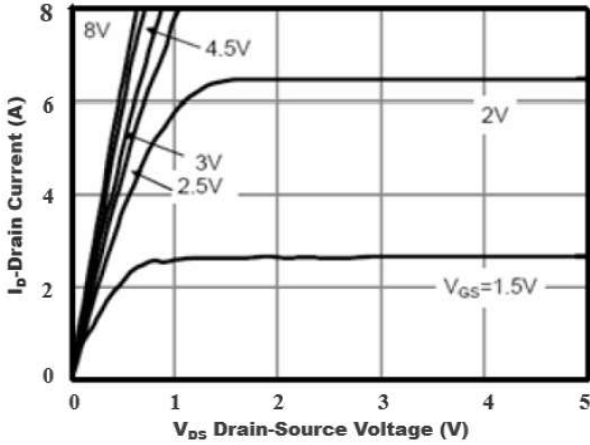


Figure 1. Typical Output Characteristics

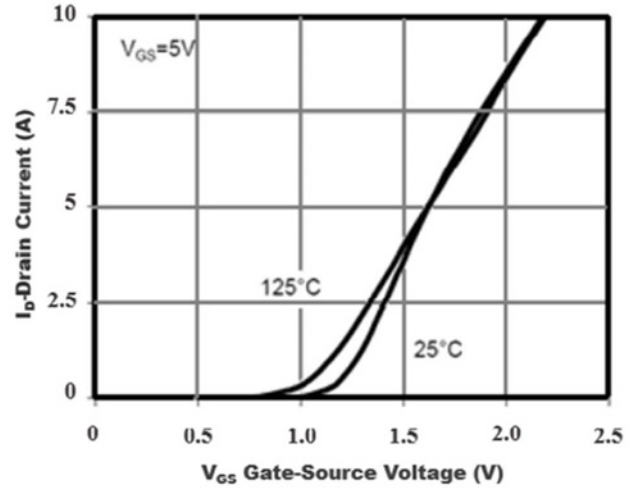


Figure 2. Transfer Characteristics

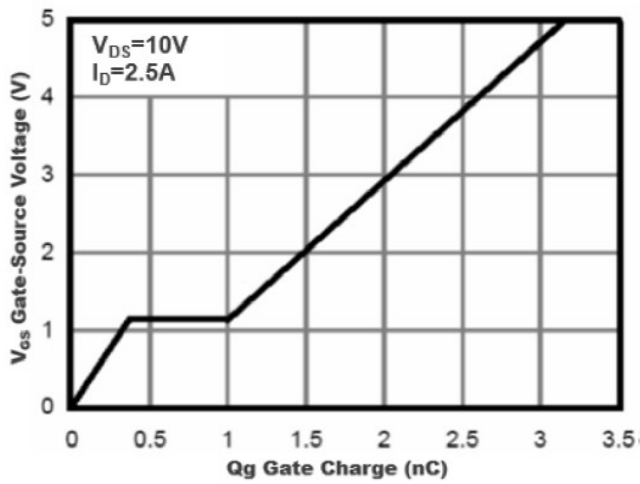


Figure 3. Gate Charge

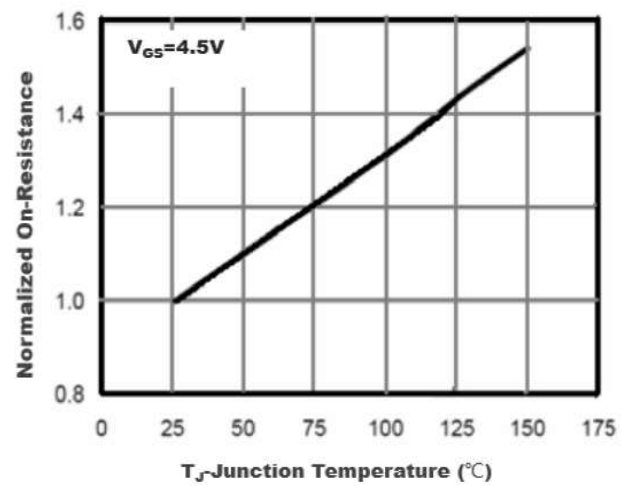


Figure 4. Normalized On-Resistance Vs. Junction Temperature

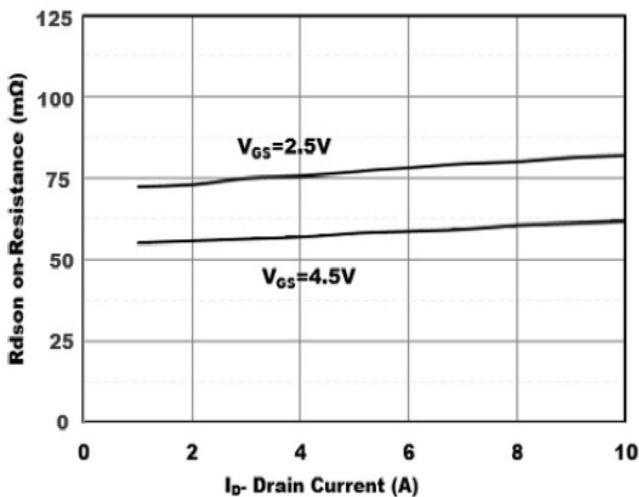


Figure 5. Drain-Source On-Resistance

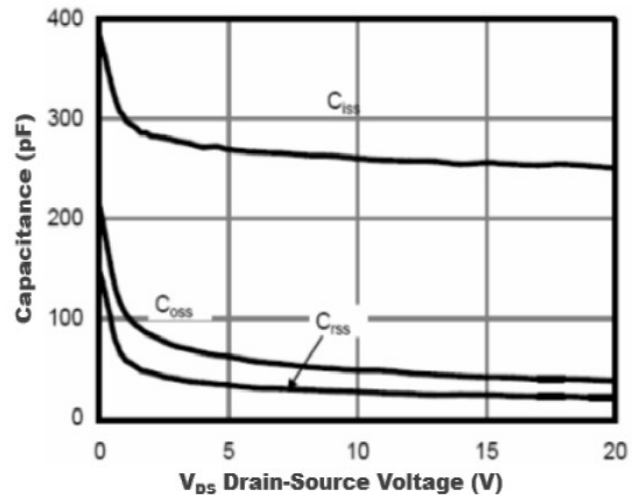
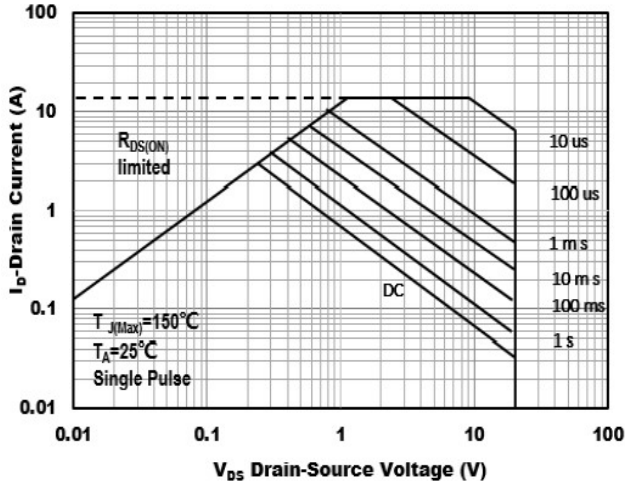
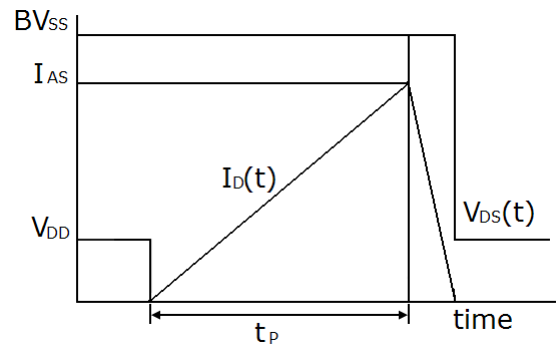
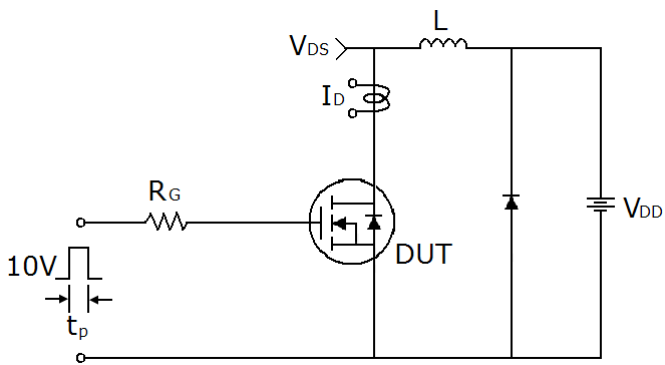


Figure 6. Typical Capacitance vs. Drain-to-Source Voltage

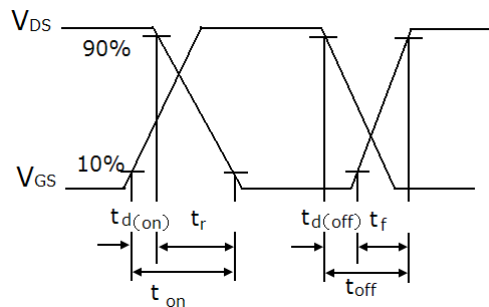
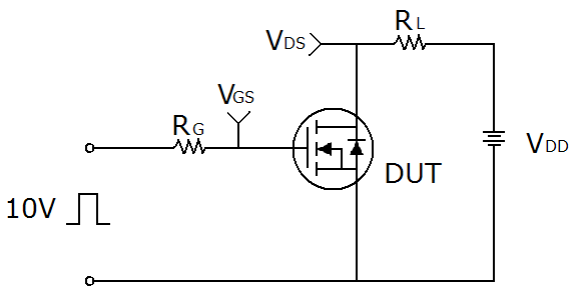
**Typical Electrical and Thermal Characteristic Curves**



**Figure 7. Safe Operation Area**



**Figure 8. Unclamped Inductive Switching Test Circuit & Waveforms**



**Figure 9. Resistive Switching Test Circuit & Waveforms**

### Typical Electrical and Thermal Characteristic Curves

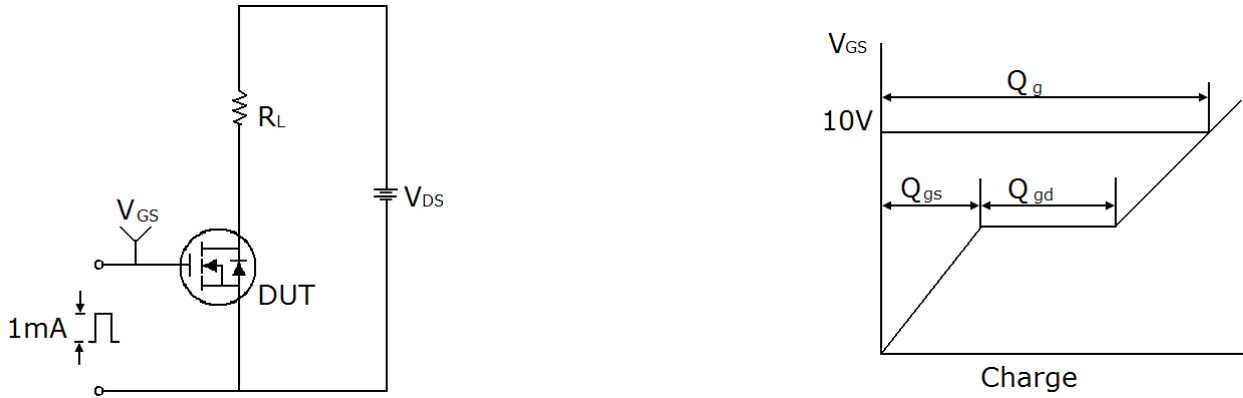
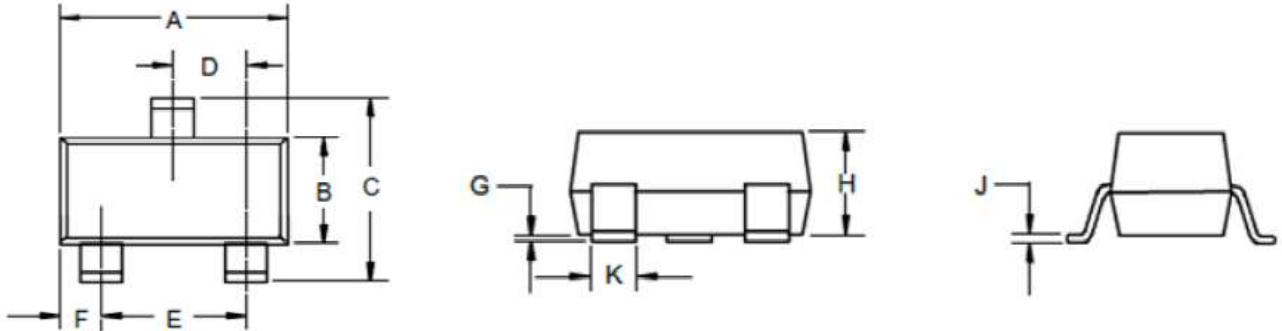


Figure 10. Gate Charge Test Circuit & Waveform

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



DIMENSIONS				
DIM	INCHES		MM	
	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**

