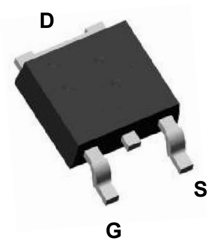
GOOD-ARK
SEMICONDUCTOR

GSJD5N100

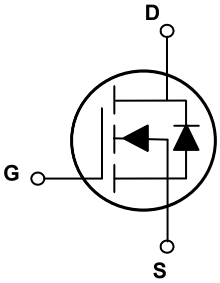
1000V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	1000V
$R_{DS(ON)}$	5.4Ω (Max.)
I_D	5A



TO-252 (DPAK)



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 GSJD5N100 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_C=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	1000	V
Gate-to-Source Voltage	V_{GS}	±30	V
Continuous Drain Current, @ Steady-State (T_C=25°C)	I_D	5	A
Pulsed Drain Current	I_{DM}	10	A
Power Dissipation (T_C=25°C)	P_D	105	W
		0.84	W/°C
Single Pulse Avalanche Energy[1]	E_{AS}	173	mJ
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.19	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C

Electrical Characteristics (T_C=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	1000	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=1000V, V_{GS}=0V	-	-	10	uA
Gate-to-Source Forward Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=30V	-	-	100	nA
		V_{DS}=0V, V_{GS}=-30V	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1A	-	3.8	5.4	Ω
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	3.0	-	5.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	726	-	pF
Output Capacitance	C_{oss}		-	62	-	
Reverse Transfer Capacitance	C_{rss}		-	1.8	-	
Total Gate Charge[2,3]	Q_g	I_D=5A, I_G=1mA, V_{DS}=800V, V_{GS}=10V	-	12	-	nC
Gate-to-Source Charge[2,3]	Q_{gs}		-	6	-	
Gate-to-Drain ("Miller") Charge[2,3]	Q_{gd}		-	0.6	-	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=100V, V_{GS}=10V, R_G=25Ω, I_D=5A	-	12	-	nS
Rise Time[2,3]	t_r		-	16	-	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	24	-	
Fall Time[2,3]	t_f		-	30	-	
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	T_C=25°C, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	5	A
Source Pulse Current	I_{SM}		-	-	10	A
Diode Forward Voltage	V_{SD}	I_S=3A, V_{GS}=0V	-	-	1.4	V
Reverse Recovery Time	t_{rr}	I_F=5A, di/dt=100A/us	-	510	-	nS
Reverse Recovery Charge	Q_{rr}		-	9.1	-	μC

Notes:

1. L=30mH, I_{AS}=3.4A, V_{DD}=100V, R_g=25Ω, starting temperature T_J=25°C.
2. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

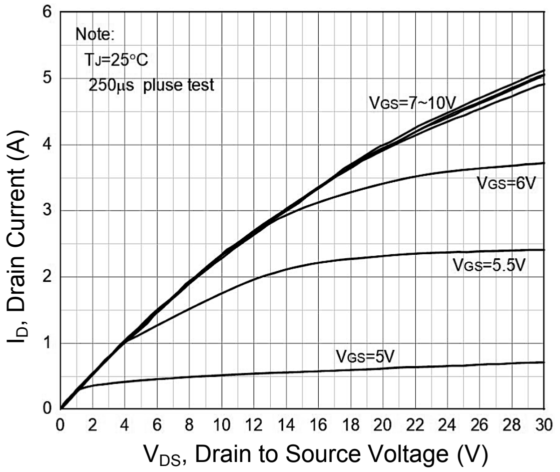


Figure 1. Typical Output Characteristics

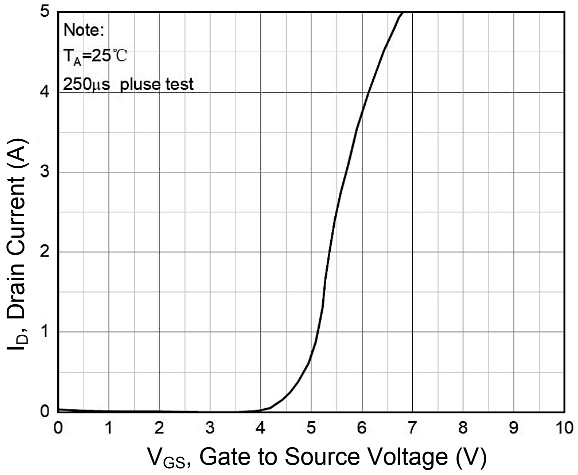


Figure 2. Transfer Characteristics

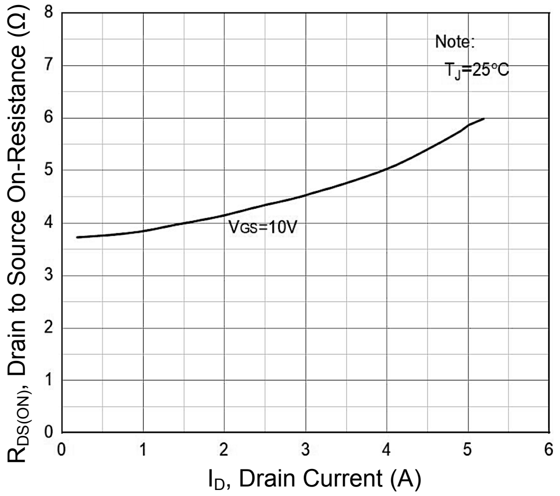


Figure 3. $R_{DS(ON)}$ vs. Drain Current

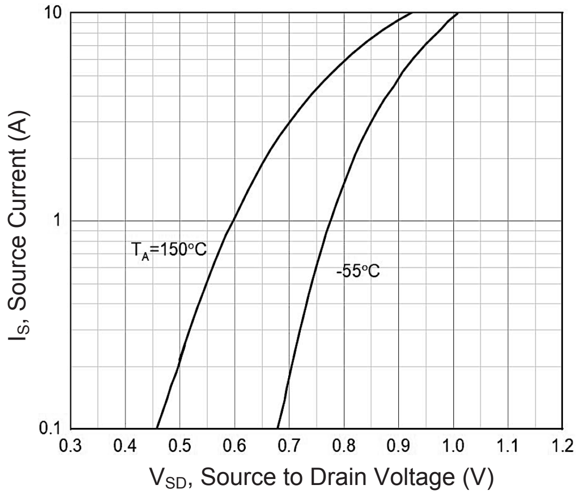


Figure 4. Body Diode Characteristic

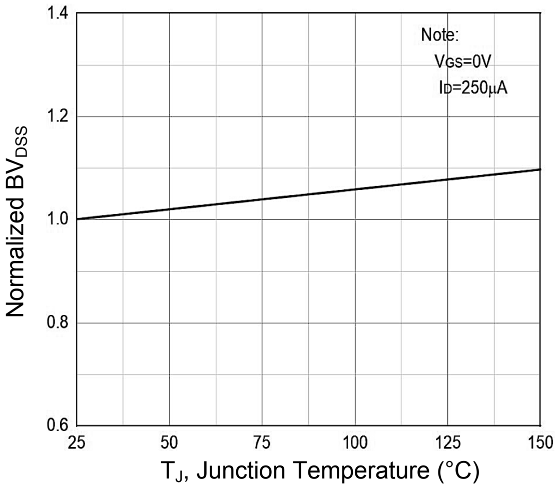


Figure 5. Normalized BV_{DSS} vs. T_J

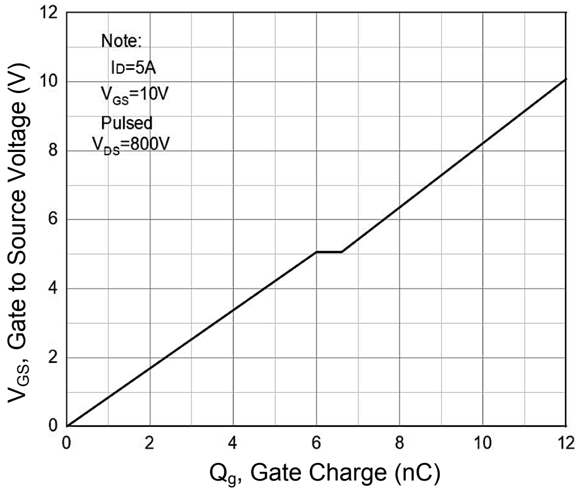


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

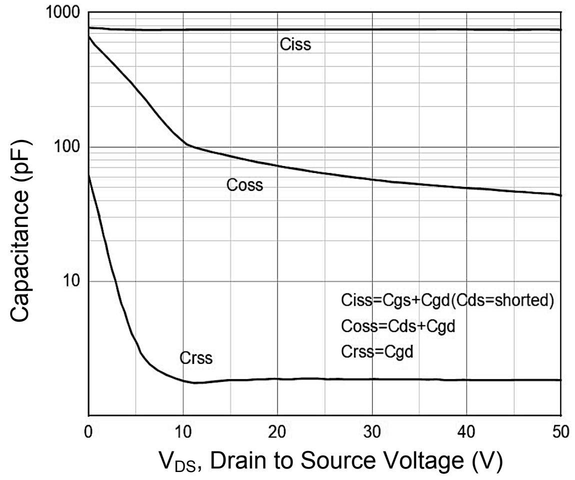


Figure 7. Capacitance Characteristic

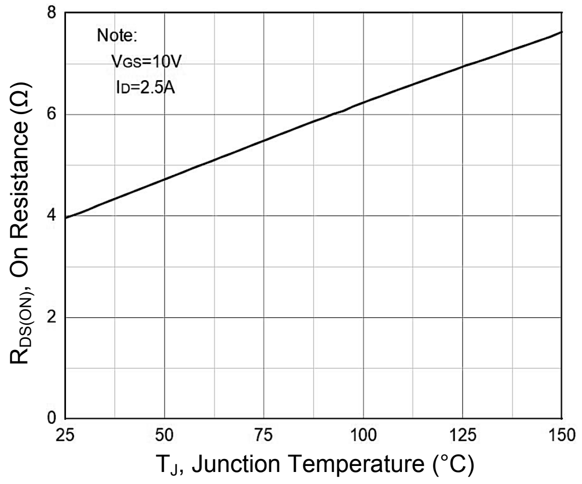


Figure 8. $R_{DS(ON)}$ vs. T_J

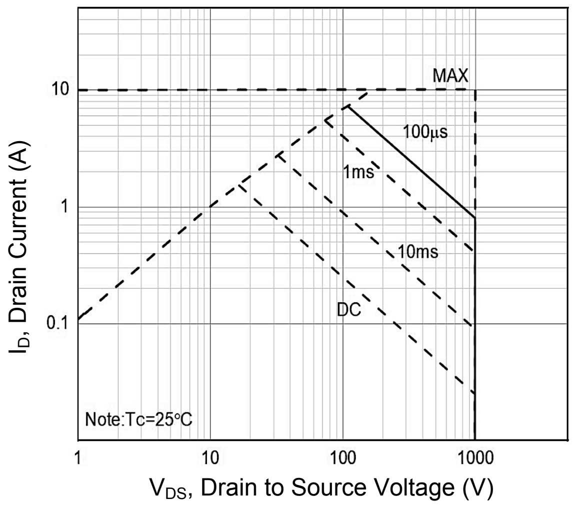


Figure 9. Safe Operation Area

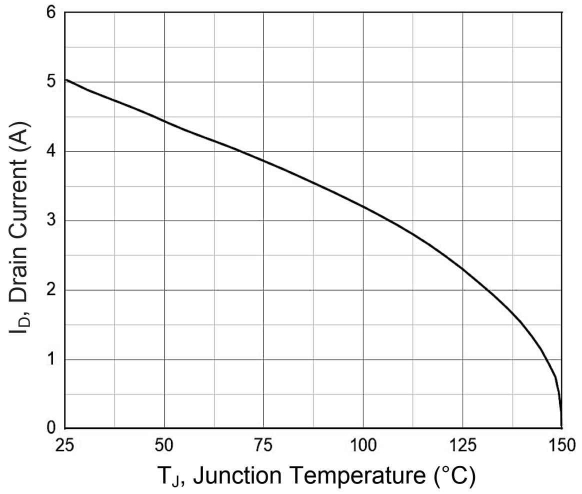
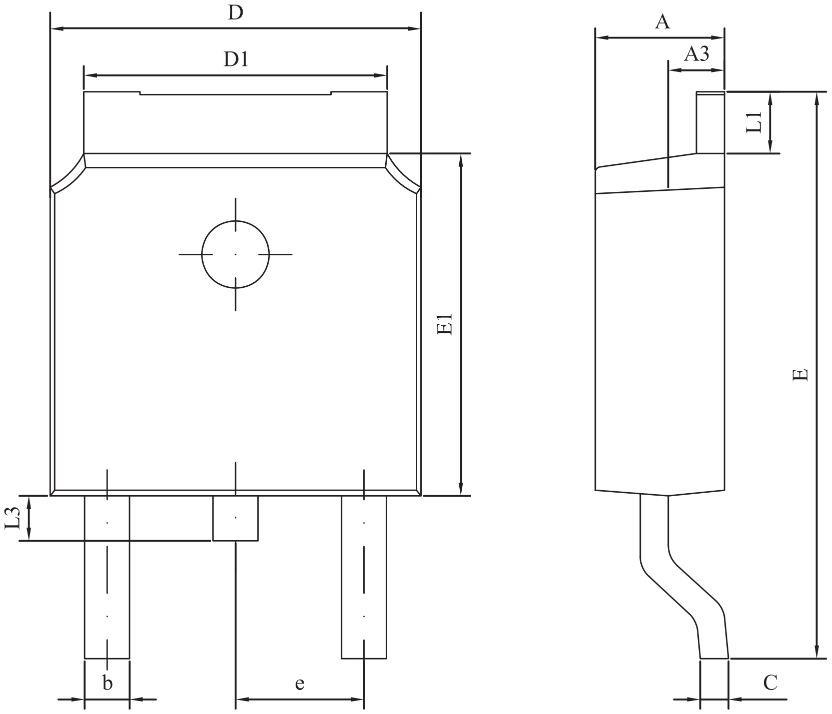


Figure 10. Drain Current vs. T_J

Package Outline Dimensions TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.15	2.40	0.085	0.094
A3	0.90	1.10	0.035	0.043
b	0.50	0.90	0.020	0.035
C	0.40	0.65	0.016	0.026
D	6.30	6.90	0.248	0.272
D1	4.95	5.50	0.195	0.217
E	9.40	10.41	0.370	0.410
E1	5.90	6.30	0.232	0.248
e	2.286 BSC		0.090 BSC	
L1	0.89	1.27	0.035	0.050
L3	0.60	1.10	0.024	0.043

Order Information

Device	Package	Marking	Packaging	SPQ
GSJD5N100	TO-252 (DPAK)	D5N100	Tape & Reel	2,500 Pcs / Reel