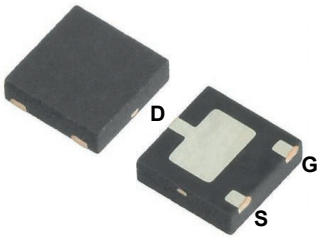
GOOD-ARK
SEMICONDUCTOR

GSFNP39110

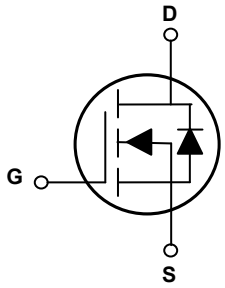
100V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	390mΩ (Max.)
I_D	2A



DFN1010



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 GSFNP39110 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_J=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, @ Steady-State (T_C=25°C)	I_D	2	A
Continuous Drain Current, @ Steady-State (T_C=100°C)		1.2	A
Pulsed Drain Current (T_C=25°C)[1]	I_{DM}	8	A
Power Dissipation (T_C=25°C)	P_D	0.9	W
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	138	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C
Soldering Temperature (SMD)	T_{sold}	260	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	100	-	-	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25°C, I_D=1mA	-	0.1	-	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=80V, V_{GS}=0V, T_J=125°C	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1A	-	320	390	mΩ
		V_{GS}=4.5V, I_D=1A	-	400	540	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.2	1.8	2.6	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$		-	-4	-	mV/°C
Forward Transconductance	gfs	V_{DS}=10V, I_D=1A	-	2.9	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[2,3]	Q_g	V_{DS}=50V, I_D=1A, V_{GS}=10V	-	3.2	-	nC
Gate-Source Charge[2,3]	Q_{gs}		-	0.45	-	
Gate-Drain Charge[2,3]	Q_{gd}		-	0.62	-	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=50V, R_G=3.3Ω, V_{GS}=10V, I_D=1A	-	1.6	-	nS
Rise Time[2,3]	t_r		-	4.2	-	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	11.5	-	
Fall Time[2,3]	t_f		-	3.6	-	
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, F=1MHz	-	136	-	pF
Output Capacitance	C_{oss}		-	22	-	
Reverse Transfer Capacitance	C_{rss}		-	10.8	-	
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	-	12	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	2	A
Pulsed Source Current	I_{SM}		-	-	8	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A, T_J=25°C	-	-	1.3	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≦ 300us, duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

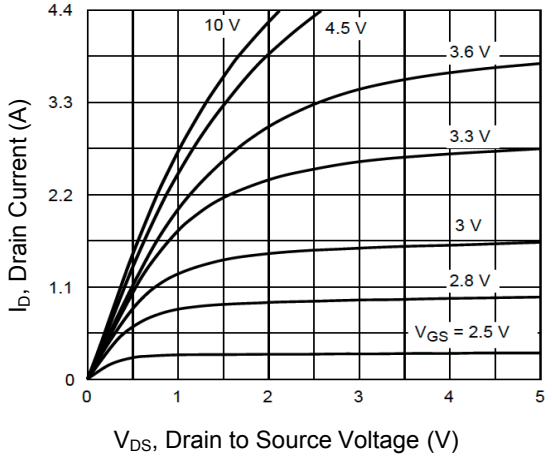


Figure 1. Typical Output Characteristics

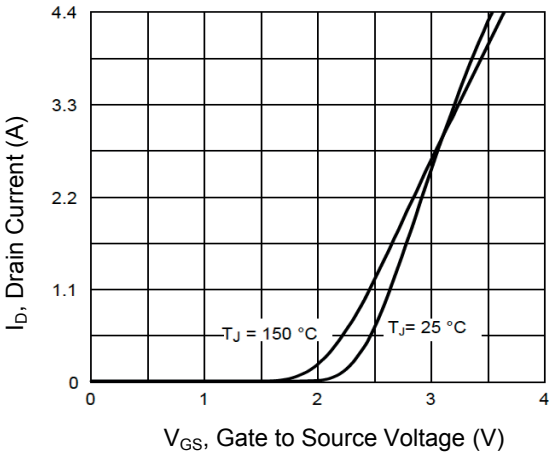


Figure 2. Transfer Characteristics

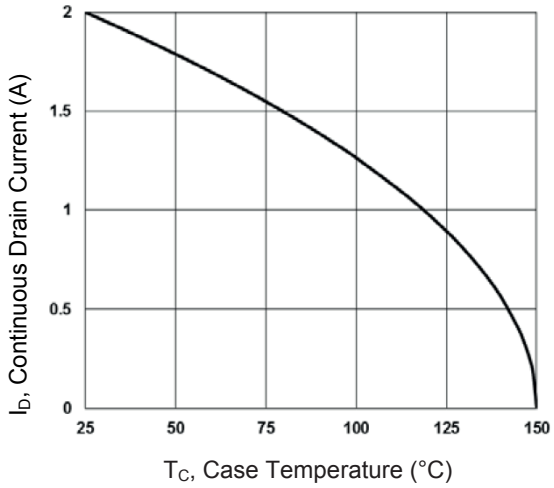


Figure 3. Continuous Drain Current vs. T_C

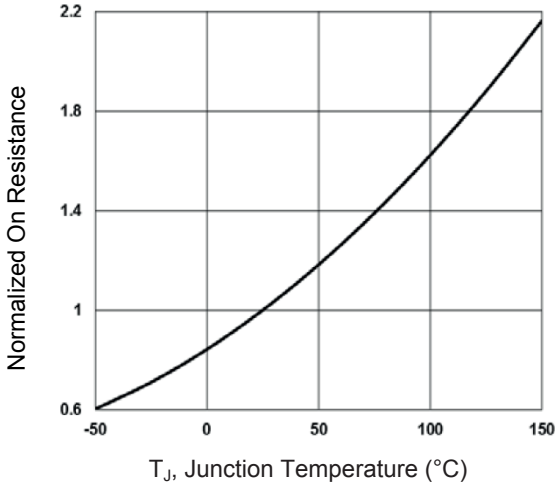


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

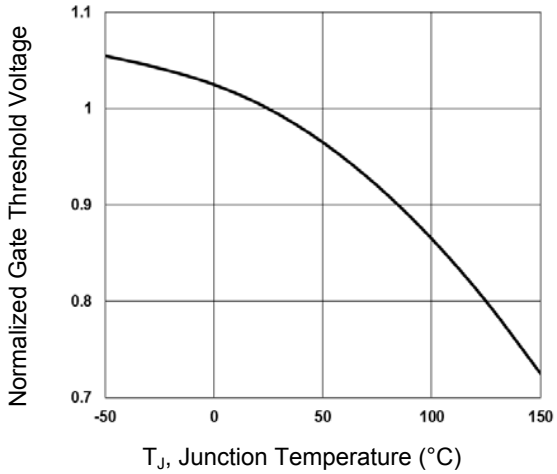


Figure 5. Normalized V_{th} vs. T_J

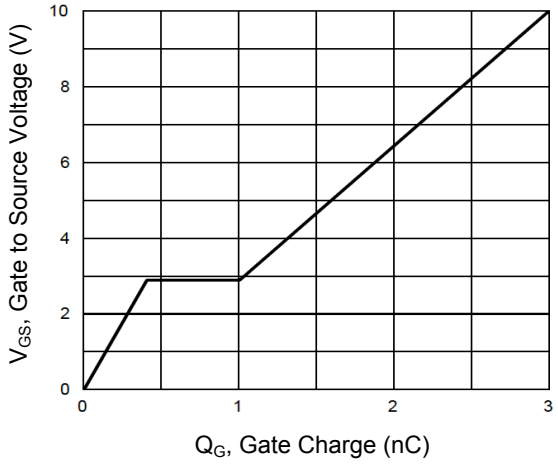
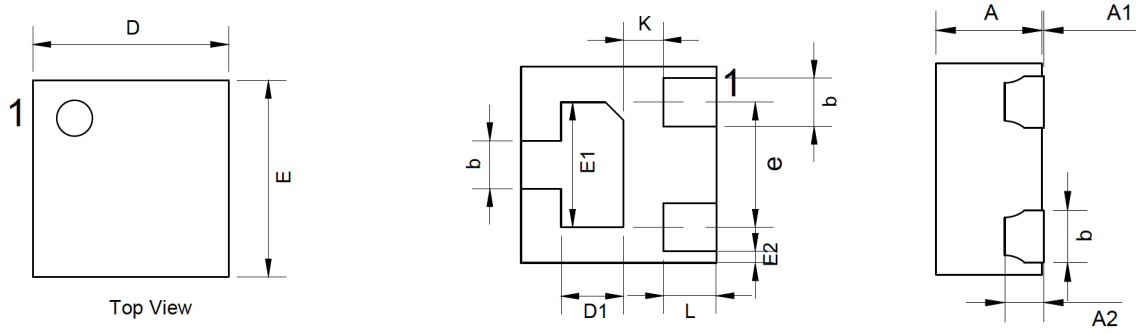


Figure 6. Gate Charge Waveform

Package Outline Dimensions (DFN1010)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.500	0.600	0.020	0.024
A1	0.000	0.050	0.000	0.002
A2	0.203 TYP		0.008 TYP	
b	0.220	0.320	0.009	0.013
D	1.050	1.150	0.041	0.045
D1	0.300	0.400	0.012	0.016
E	1.050	1.150	0.041	0.045
E1	0.650	0.750	0.026	0.030
E2	0.065 REF		0.003 REF	
e	0.700 BSC		0.028 BSC	
K	0.220 REF		0.009 REF	
L	0.250	0.350	0.010	0.014

Order Information

Device	Package	Marking	Carrier	Quantity
GSFNP39110	DFN1010	Y391	Tape & Reel	10,000 pcs / Reel