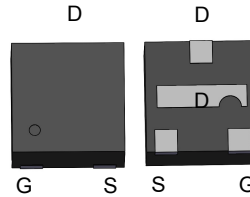
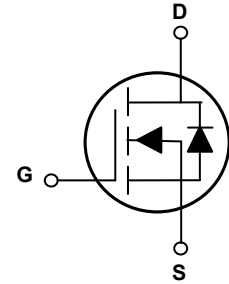


**Main Product Characteristics**

$V_{(BR)DSS}$	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 GSFNP39110H 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** ( $T_J=25^{\circ}C$  unless otherwise specified)

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

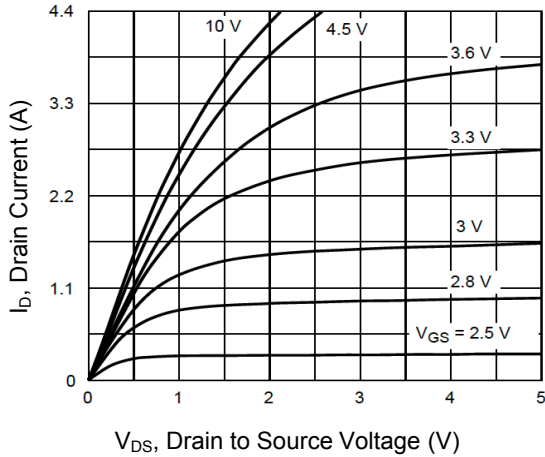
**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D=1mA$	-	0.1	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	$\mu A$
		$V_{DS}=80V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1A$	-	320	390	m $\Omega$
		$V_{GS}=4.5V, I_D=1A$	-	400	540	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.8	2.6	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-4	-	$mV/^\circ\text{C}$
Forward Transconductance	gfs	$V_{DS}=10V, I_D=1A$	-	2.9	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	$Q_g$	$V_{DS}=50V, I_D=1A, V_{GS}=10V$	-	3.2	-	nC
Gate-Source Charge <sup>2,3</sup>	$Q_{gs}$		-	0.45	-	
Gate-Drain Charge <sup>2,3</sup>	$Q_{gd}$		-	0.62	-	
Turn-On Delay Time <sup>2,3</sup>	$t_{d(on)}$	$V_{DD}=50V, R_G=3.3\Omega, V_{GS}=10V, I_D=1A$	-	1.6	-	nS
Rise Time <sup>2,3</sup>	$t_r$		-	4.2	-	
Turn-Off Delay Time <sup>2,3</sup>	$t_{d(off)}$		-	11.5	-	
Fall Time <sup>2,3</sup>	$t_f$		-	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	-	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V,$ Force Current	-	-	2	A
Pulsed Source Current	$I_{SM}$		-	-	8	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	-	-	1.3	V

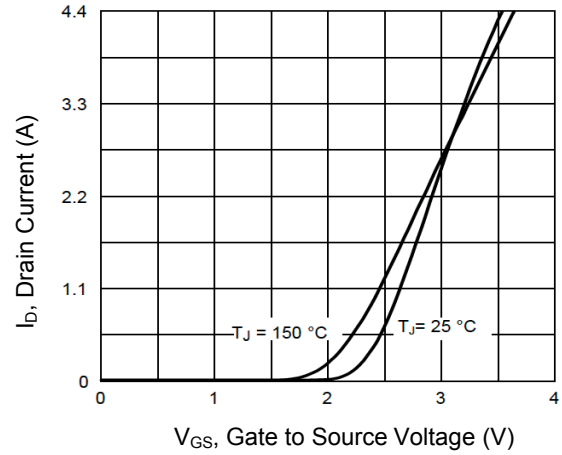
Notes:

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

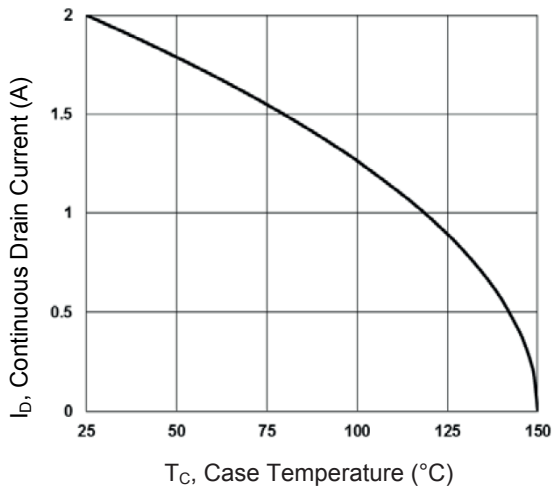
**Typical Electrical and Thermal Characteristic Curves**



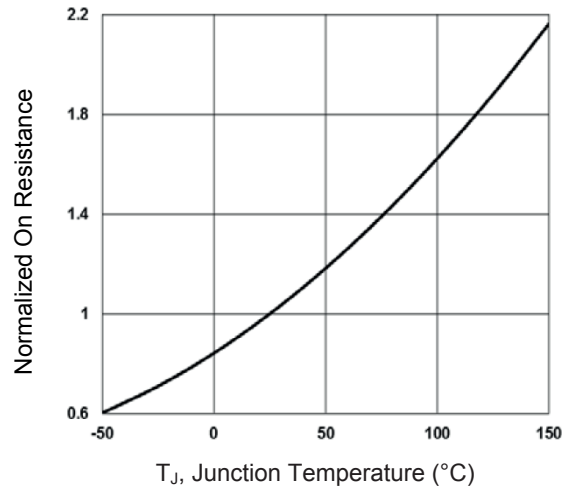
**Figure 1. Typical Output Characteristics**



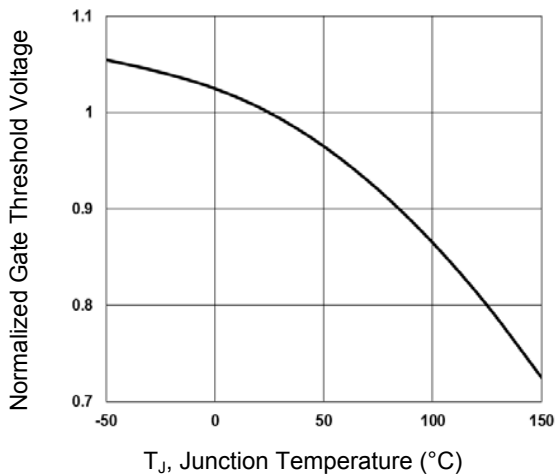
**Figure 2. Transfer Characteristics**



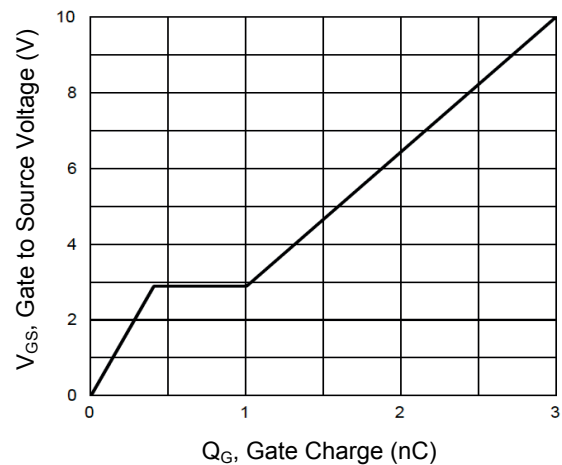
**Figure 3. Continuous Drain Current vs.  $T_C$**



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

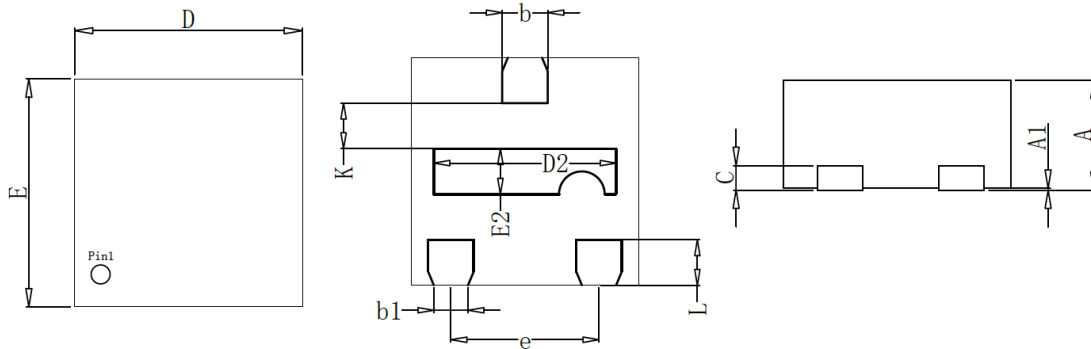


**Figure 5. Normalized  $V_{th}$  vs.  $T_J$**



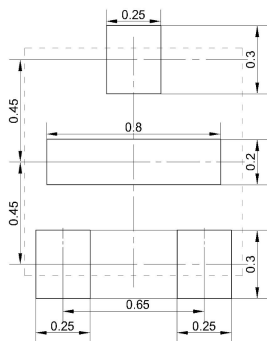
**Figure 6. Gate Charge Waveform**

**Package Outline Dimensions (DFN1010)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.45	0.55	0.018	0.022
A1	-	0.05	-	0.002
b	0.15	0.25	0.006	0.010
b1	0.15 REF		0.006 REF	
C	0.10 REF		0.004 REF	
D	0.95	1.05	0.037	0.041
D2	0.75	0.85	0.030	0.033
e	0.65 BSC		0.026 BSC	
E	0.95	1.05	0.037	0.041
E2	0.15	0.25	0.006	0.010
L	0.15	0.25	0.006	0.010
K	0.20 TYP		0.008 TYP	

**Recommended Pad Layout**



Unit: mm

**Order Information**

Device	Package	Marking	Carrier	Quantity
GSFNP39120	DFN1010	Y392	Tape & Reel	10,000 pcs / Reel

For more information, please contact us at: [inquiry@goodarksemi.com](mailto:inquiry@goodarksemi.com)