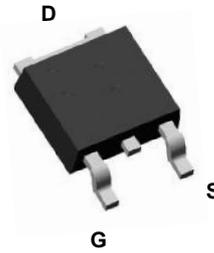
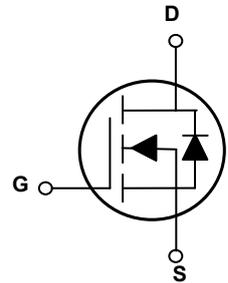


## Main Product Characteristics

$BV_{DSS}$	100V
$R_{DS(ON)}$	105m $\Omega$ (Max.)
$I_D$	17A



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 GSFD3410 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{(BR)DSS}$	100	V
Gate-Source Voltage	$V_{GS}$	±16	V
Drain Current-Continuous, @ Steady-State (T <sub>C</sub> =25°C)	$I_D$	17	A
Drain Current-Continuous, @ Steady-State (T <sub>C</sub> =100°C)		12	
Drain Current-Pulsed	$I_{DM}$	60	A
Power Dissipation (T <sub>C</sub> =25°C)	$P_D$	83	W
		0.55	W/°C
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	150	mJ
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.5	°C/W
Junction-to-Case	$R_{\theta JC}$	1.81	°C/W
Maximum Junction Temperature	$T_J$	-55 To +175	°C
Storage Temperature Range	$T_{STG}$	-55 To +175	°C

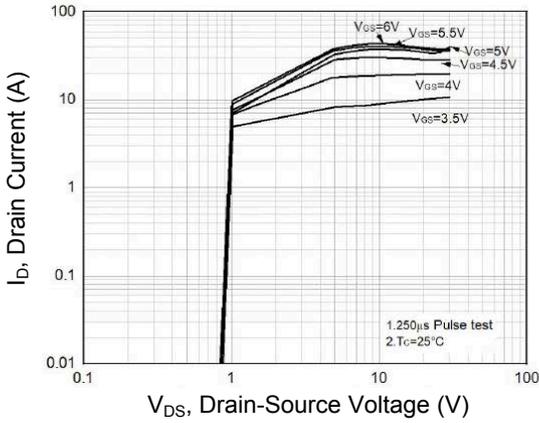
**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 16V$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$	-	68	105	m $\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	-	2	V
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	$Q_g$	$V_{DS}=80V, I_D=9A, V_{GS}=5V$	-	17.52	-	nC
Gate-Source Charge <sup>2,3</sup>	$Q_{gs}$		-	2.42	-	
Gate-to-Drain ("Miller") Charge <sup>2,3</sup>	$Q_{gd}$		-	10.32	-	
Turn-On Delay Time <sup>2,3</sup>	$t_{d(on)}$	$V_{DD}=50V, R_G=6\Omega, V_{GS}=5V, I_D=9A$	-	8.0	-	nS
Rise Time <sup>2,3</sup>	$t_r$		-	47	-	
Turn-Off Delay Time <sup>2,3</sup>	$t_{d(off)}$		-	40.67	-	
Fall Time <sup>2,3</sup>	$t_f$		-	20.2	-	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, F=1MHz$	-	772	-	pF
Output Capacitance	$C_{oss}$		-	161	-	
Reverse Transfer Capacitance	$C_{rss}$		-	40.3	-	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current (Body Diode)	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	17	A
Diode Pulse Current	$I_{SM}$		-	-	60	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=17A$	-	-	1.3	V
Reverse Recovery Time <sup>2</sup>	$T_{rr}$	$I_S=9A, V_{DD}=50V, di/dt=100A/\mu s$	-	85.5	-	nS
Reverse Recovery Charge <sup>2</sup>	$Q_{rr}$		-	0.24	-	$\mu C$

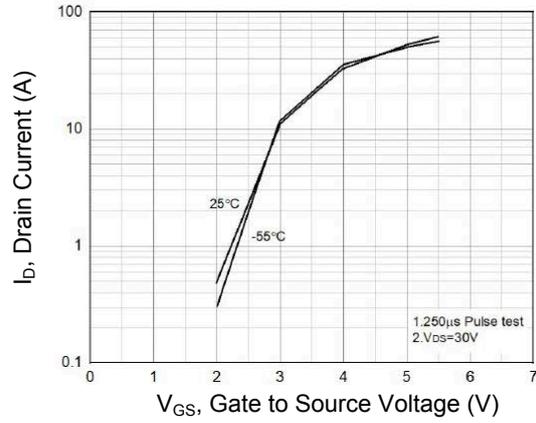
Note:

1.  $L=3.1mH, I_{AS}=9.0A, R_G=25\Omega$ , starting temperature  $T_J=25^\circ\text{C}$ .
2. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature.

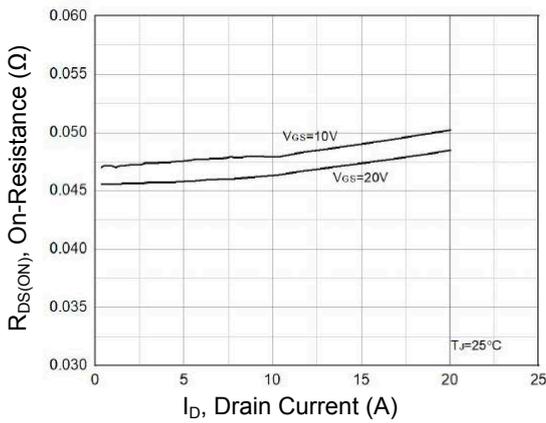
**Typical Electrical and Thermal Characteristic Curves**



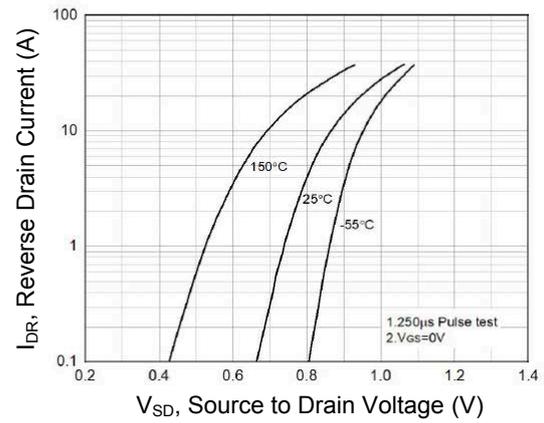
**Figure 1. Output Characteristics**



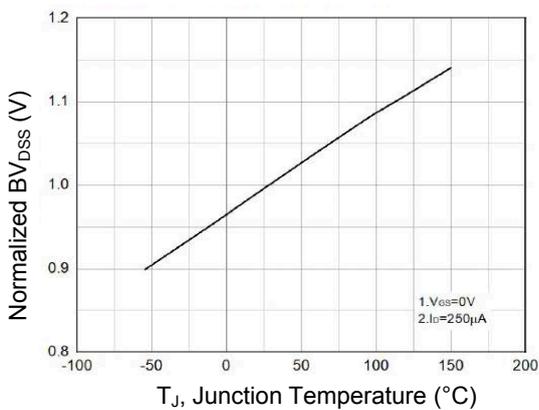
**Figure 2. Transfer Characteristics**



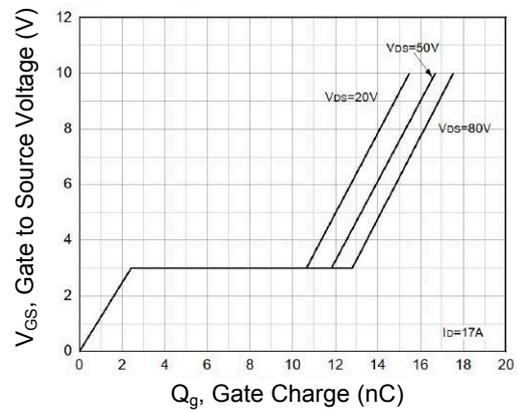
**Figure 3.  $R_{DS(ON)}$  vs. Drain Current**



**Figure 4. Body Diode Characteristic**

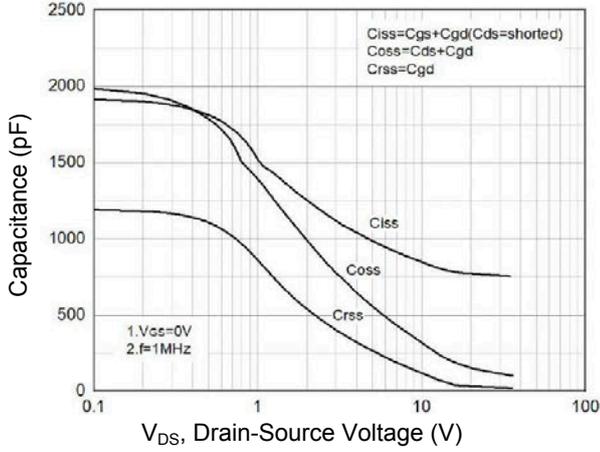


**Figure 5. Normalized  $BV_{DSS}$  vs.  $T_J$**

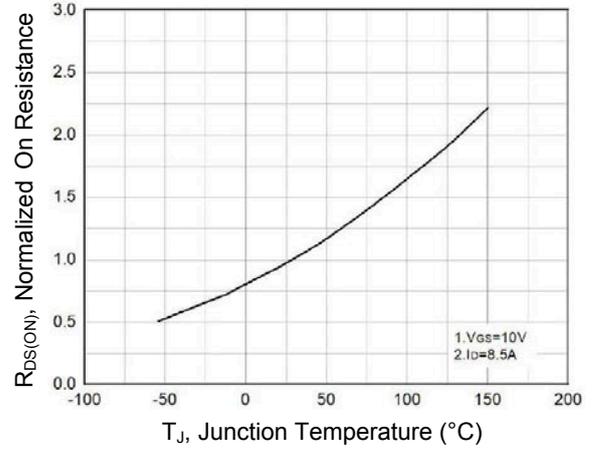


**Figure 6. Gate Charge Characteristics**

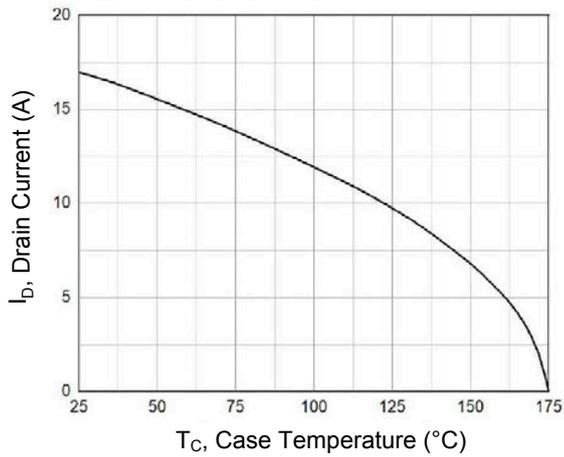
**Typical Electrical and Thermal Characteristic Curves**



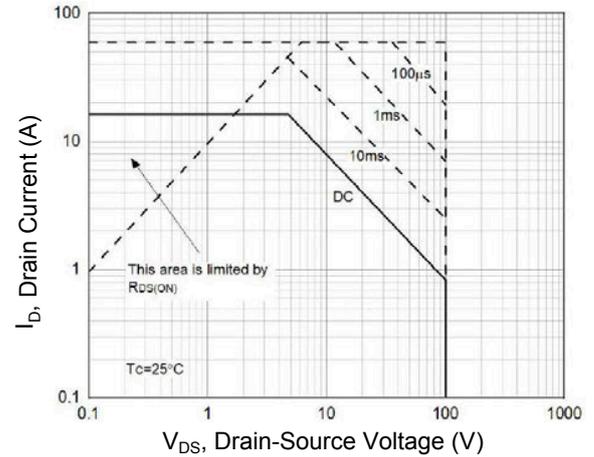
**Figure 7. Capacitance Characteristic**



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

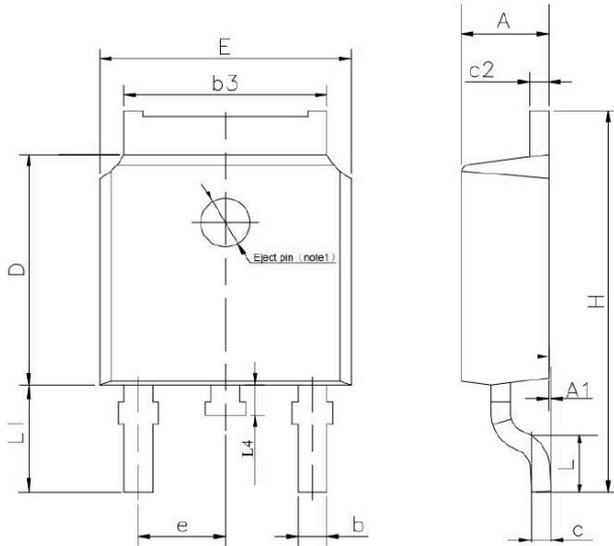


**Figure 9. Drain Current vs.  $T_C$**



**Figure 10. Safe Operation Area**

**Package Outline Dimensions TO-252 (DPAK)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.100	2.500	0.083	0.098
A1	0.000	0.127	0.000	0.005
b	0.660	0.890	0.026	0.035
b3	5.100	5.460	0.201	0.215
c	0.450	0.650	0.018	0.026
c2	0.450	0.650	0.018	0.026
D	5.800	6.400	0.228	0.252
E	6.300	6.900	0.248	0.272
e	2.300 TYP		0.091 TYP	
H	9.600	10.600	0.378	0.417
L	1.400	1.700	0.055	0.067
L1	2.900 REF		0.114 REF	
L4	0.600	1.000	0.024	0.039