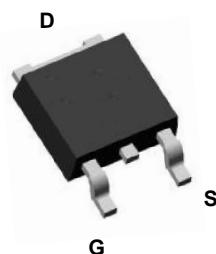
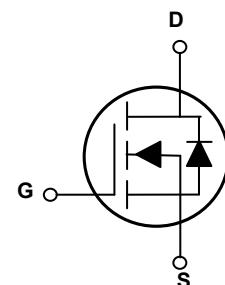


### Main Product Characteristics

BV <sub>DSS</sub>	600V
R <sub>DS(ON)</sub>	0.57Ω (Max.)
I <sub>D</sub>	7A



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 GSFD6008 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 ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V <sub>(BR)DSS</sub>	600	V
Gate-Source Voltage	V <sub>GS</sub>	±30	V
Drain Current-Continuous, @ Steady-State ( $T_C=25^\circ\text{C}$ )	I <sub>D</sub>	7	A
Drain Current-Continuous, @ Steady-State ( $T_C=100^\circ\text{C}$ )		4.4	
Drain Current-Pulsed	I <sub>DM</sub>	28	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	P <sub>D</sub>	60	W
		0.48	W/°C
Single Pulse Avalanche Energy <sup>1</sup>	E <sub>AS</sub>	248	mJ
Body Diode Reverse Voltage Slope <sup>2</sup>	dv/dt	50	V/ns
MOS dv/dt Reggedness <sup>3</sup>	dv/dt	100	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	R <sub>θJA</sub>	62.0	°C/W
Junction-to-Case	R <sub>θJC</sub>	2.08	°C/W
Maximum Junction Temperature	T <sub>J</sub>	-55 To +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 To +150	°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	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_D=250\mu\text{A}$	600	-	-	V
Drain-Source Leakage Current	$I_{\text{DSS}}$	$V_{\text{DS}}=600\text{V}, V_{\text{GS}}=0\text{V}$	-	-	200	nA
Gate-Source Leakage Current	$I_{\text{GSS}}$	$V_{\text{GS}}=\pm 30\text{V}, V_{\text{GS}}=0\text{V}$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_D=3.5\text{A}$ $T_J=25^\circ\text{C}$	-	0.48	0.57	$\Omega$
		$V_{\text{GS}}=10\text{V}, I_D=3.5\text{A}$ $T_J=125^\circ\text{C}$	-	0.95	-	$\Omega$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{GS}}=V_{\text{DS}}, I_D=250\mu\text{A}$	2	-	4	V
Gate Resistance	$R_G$	$f=1\text{MHz}$	-	5	-	$\Omega$
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>4,5</sup>	$Q_g$	$V_{\text{DD}}=480\text{V}, I_D=7\text{A},$ $V_{\text{GS}}=10\text{V}$	-	19	-	nC
Gate-Source Charge <sup>4,5</sup>	$Q_{gs}$		-	5.1	-	
Gate-to-Drain ("Miller") Charge <sup>4,5</sup>	$Q_{gd}$		-	8.6	-	
Turn-On Delay Time <sup>4,5</sup>	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=300\text{V}, R_G=25\Omega,$ $V_{\text{GS}}=10\text{V}, I_D=7\text{A}$	-	20	-	nS
Rise Time <sup>4,5</sup>	$t_r$		-	40	-	
Turn-Off Delay Time <sup>4,5</sup>	$t_{\text{d}(\text{off})}$		-	91	-	
Fall Time <sup>4,5</sup>	$t_f$		-	38	-	
Input Capacitance	$C_{\text{iss}}$	$V_{\text{DS}}=100\text{V}, V_{\text{GS}}=0\text{V},$ $f=1\text{MHz}$	-	602	-	pF
Output Capacitance	$C_{\text{oss}}$		-	25	-	
Reverse Transfer Capacitance	$C_{\text{rss}}$		-	0.8	-	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current (Body Diode)	$I_s$	$T_c=25^\circ\text{C}$ , MOSFET symbol showing the integral reverse p-n junction diode.	-	-	7	A
Pulsed Source Current	$I_{\text{SM}}$		-	-	28	A
Diode Forward Voltage	$V_{\text{SD}}$	$V_{\text{GS}}=0\text{V}, I_s=7\text{A}$	-	-	1.4	V
Reverse Recovery Time <sup>3</sup>	$T_{\text{rr}}$	$I_F=7\text{A}, V_{\text{GS}}=0\text{V},$ $di/dt=100\text{A}/\mu\text{s}$	-	240	-	nS
Reverse Recovery Charge <sup>3</sup>	$Q_{\text{rr}}$		-	2.4	-	$\mu\text{C}$

Note:

1.  $L=79\text{mH}, I_{AS}=2.3\text{A}, V_{DD}=100\text{V}$ , starting temperature  $T_J=25^\circ\text{C}$ .
2.  $V_{\text{DS}}=0-400\text{V}, I_{SD}\leq 20\text{A}, T_J=25^\circ\text{C}$ .
3.  $V_{\text{DS}}=0-480\text{V}$ .
4. Pulse test: pulse width  $\leq 300\text{us}$ , duty cycle  $\leq 2\%$ .
5. Essentially independent of operating temperature.

## Typical Electrical and Thermal Characteristic Curves

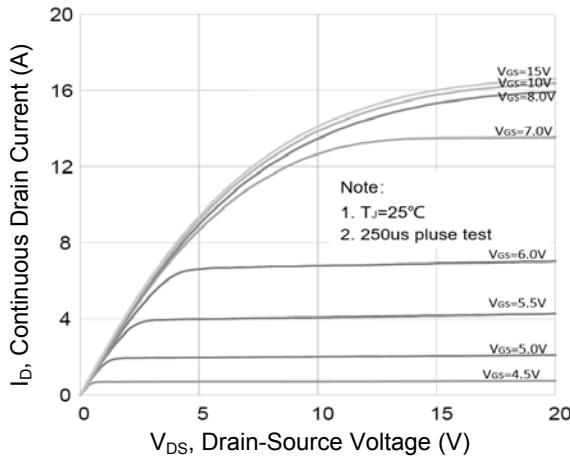


Figure 1. Output Characteristics

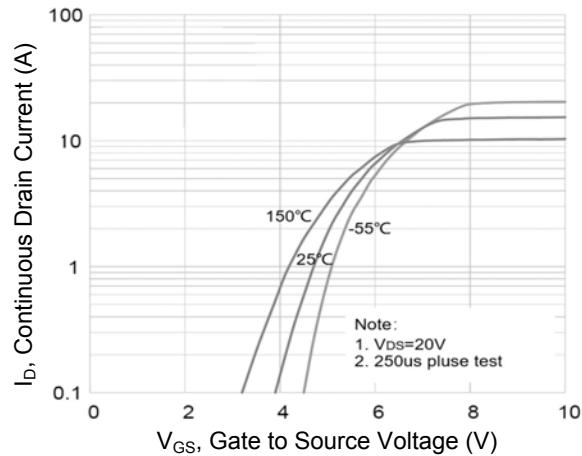


Figure 2. Transfer Characteristics

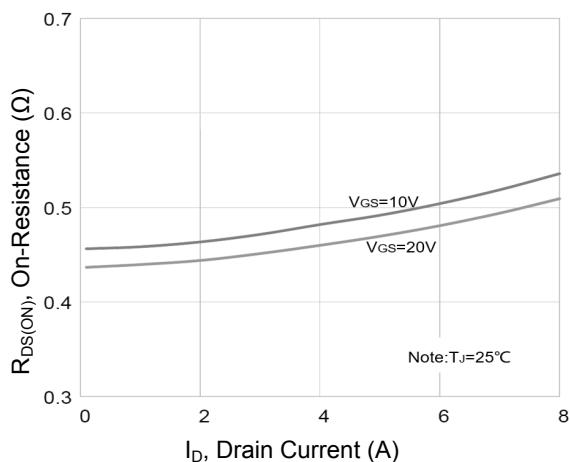


Figure 3.  $R_{DS(ON)}$  vs. Drain Current

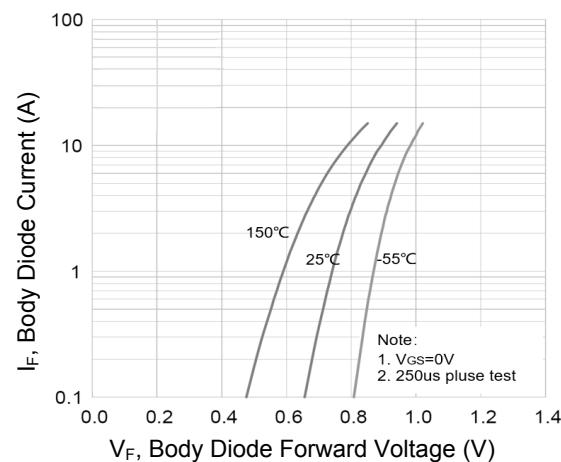


Figure 4. Body Diode Characteristic

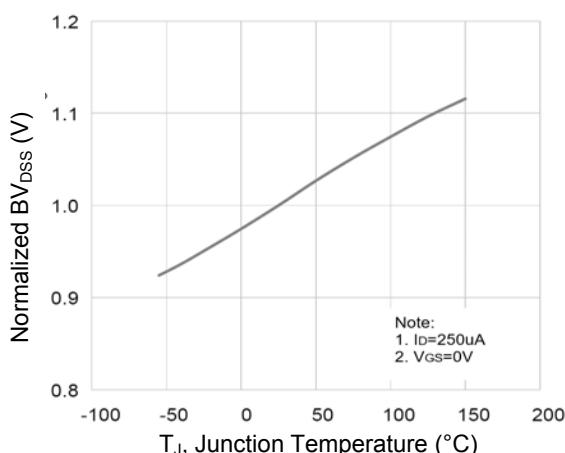


Figure 5. Normalized  $BV_{DS}$  vs.  $T_J$

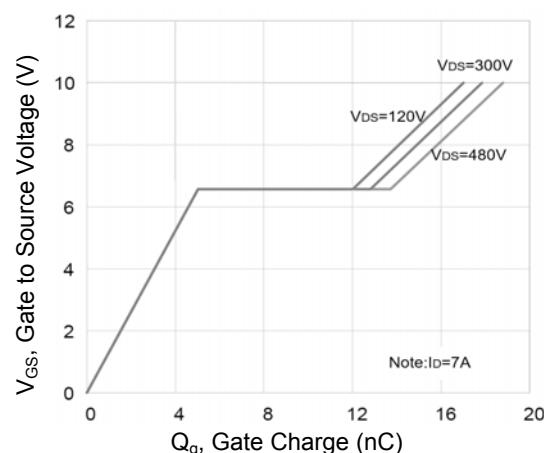


Figure 6. Gate Charge Characteristics

### Typical Electrical and Thermal Characteristic Curves

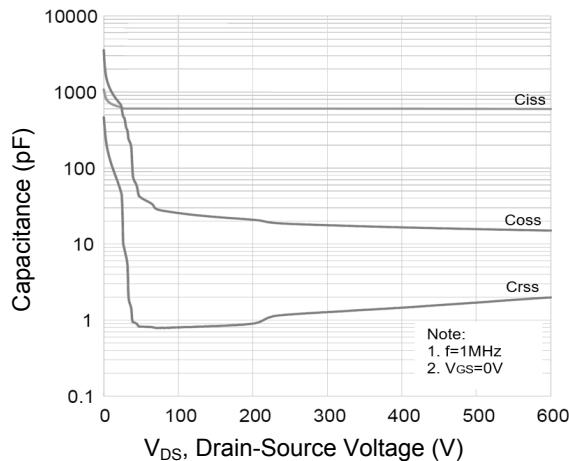


Figure 7. Capacitance Characteristic

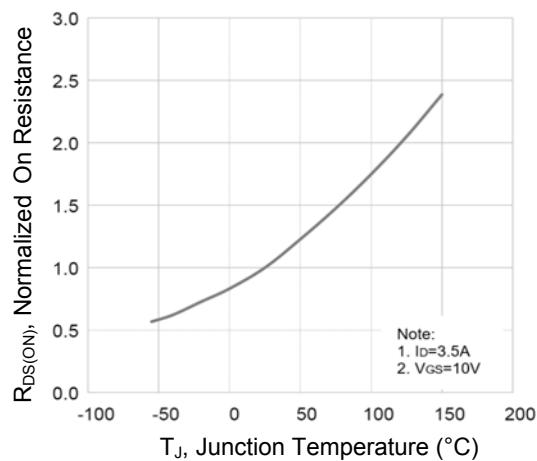


Figure 8. Normalized  $R_{DS(ON)}$  vs.  $T_J$

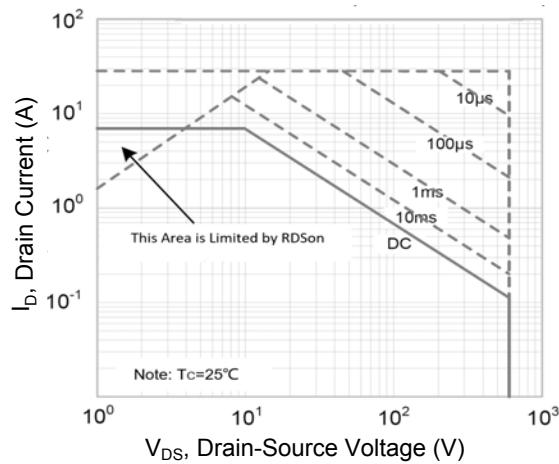
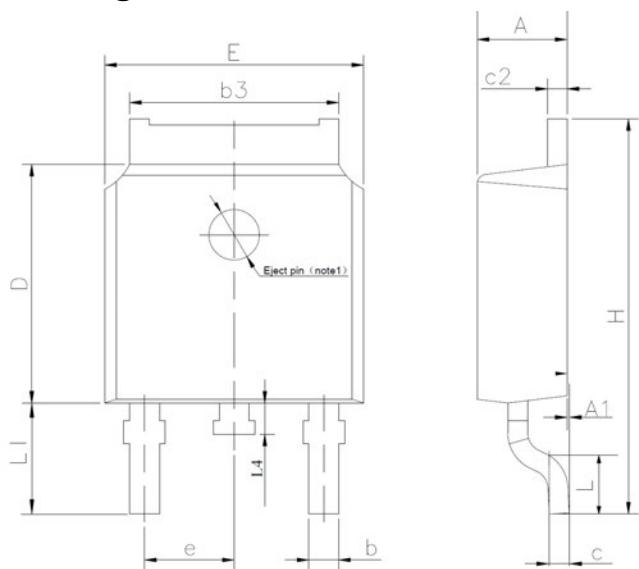


Figure 9. Safe Operation Area

### 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