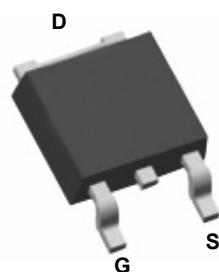
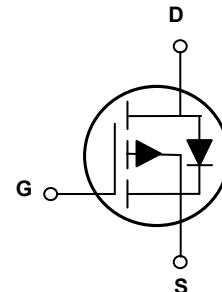


Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	9.2mΩ
I_D	-70A



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 GSFD0671 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 supply 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_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^\circ\text{C}$)	I_D	-70	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-44.3	
Drain Current-Pulsed ¹	I_{DM}	-280	A
Single Pulse Avalanche Energy ²	E_{AS}	320	mJ
Single Pulse Avalanche Current ²	I_{AS}	80	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	133	W
Power Dissipation-Derate above 25°C		1.06	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.94	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=-250\mu\text{A}$	-60	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	Reference to 25°C , $I_{\text{D}}=1\text{mA}$	-	0.036	-	$\text{V}/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=-60\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{\text{DS}}=-48\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=-10\text{V}, I_{\text{D}}=-20\text{A}$	-	7.6	9.2	$\text{m}\Omega$
		$V_{\text{GS}}=-4.5\text{V}, I_{\text{D}}=-10\text{A}$	-	9.2	12	
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=-250\mu\text{A}$	-1.2	-1.6	-2.5	V
$V_{\text{GS}(\text{th})}$ Temperature Coefficient	$\Delta V_{\text{GS}(\text{th})}$		-	-6.3	-	$\text{mV}/^\circ\text{C}$
Forward Transconductance	g_{fs}	$V_{\text{DS}}=-10\text{V}, I_{\text{D}}=-3\text{A}$	-	18	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{\text{DS}}=-48\text{V}, I_{\text{D}}=-5\text{A}$ $V_{\text{GS}}=-10\text{V}$	-	141	210	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	17	25.5	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	28.6	43	
Turn-On Delay Time ^{3,4}	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=-48\text{V}, R_{\text{G}}=6\Omega$ $V_{\text{GS}}=-10\text{V}, I_{\text{D}}=-1\text{A}$	-	70	140	nS
Rise Time ^{3,4}	t_r		-	205	410	
Turn-Off Delay Time ^{3,4}	$t_{\text{d}(\text{off})}$		-	402	804	
Fall Time ^{3,4}	t_f		-	197	394	
Input Capacitance	C_{iss}	$V_{\text{DS}}=-25\text{V}, V_{\text{GS}}=0\text{V}, F=1\text{MHz}$	-	8620	12930	pF
Output Capacitance	C_{oss}		-	486	730	
Reverse Transfer Capacitance	C_{rss}		-	288	430	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_s	$V_G=V_D=0\text{V},$ Force Current	-	-	-70	A
Pulsed Source Current	I_{SM}		-	-	-140	A
Diode Forward Voltage	V_{SD}	$V_{\text{GS}}=0\text{V}, I_s=-1\text{A}, T_J=25^\circ\text{C}$	-	-	-1	V

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. $V_{\text{DD}}=50\text{V}, V_{\text{GS}}=10\text{V}, L=0.1\text{mH}, I_{\text{AS}}=80\text{A}, R_{\text{G}}=25\Omega$, Starting $T_J=25^\circ\text{C}$.
3. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

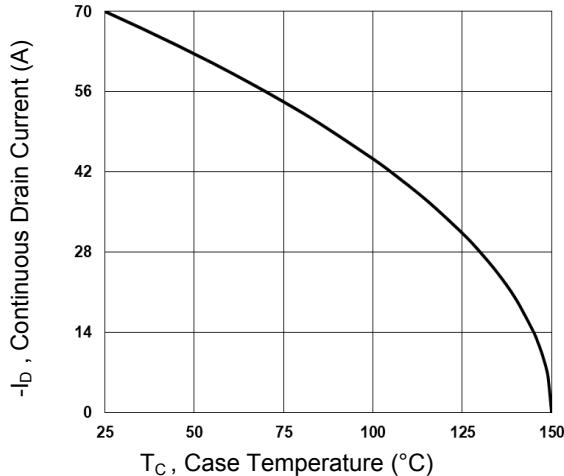


Figure 1. Continuous Drain Current vs. T_c

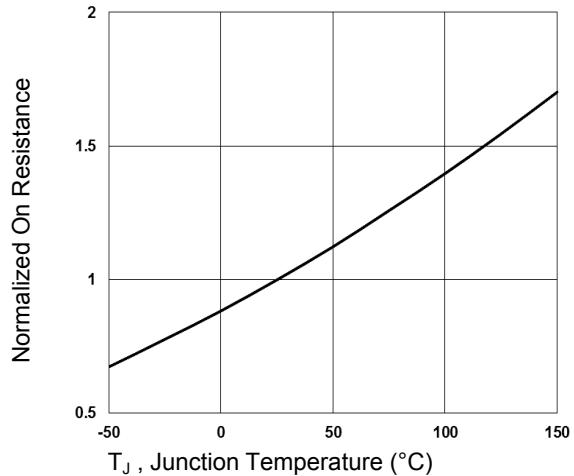


Figure 2. Normalized R_{DSON} vs. T_j

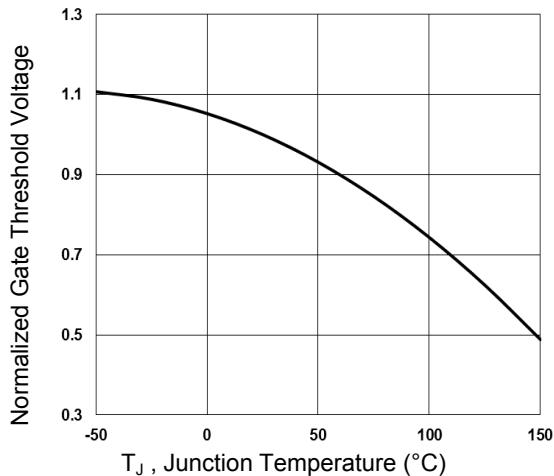


Figure 3. Normalized V_{th} vs. T_j

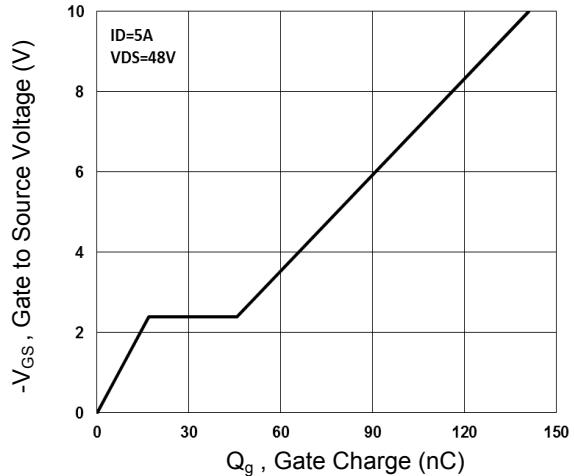


Figure 4. Gate Charge Waveform

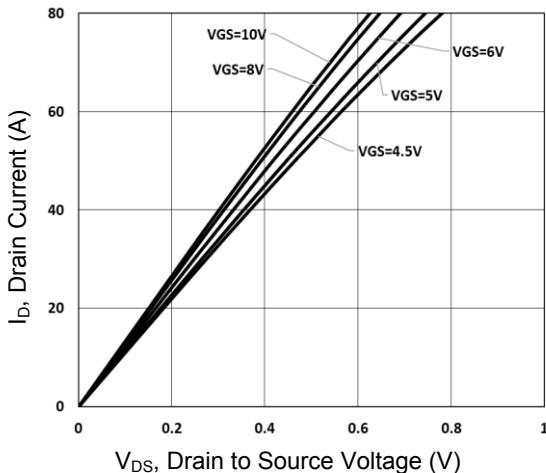


Figure 5. Typical Output Characteristics

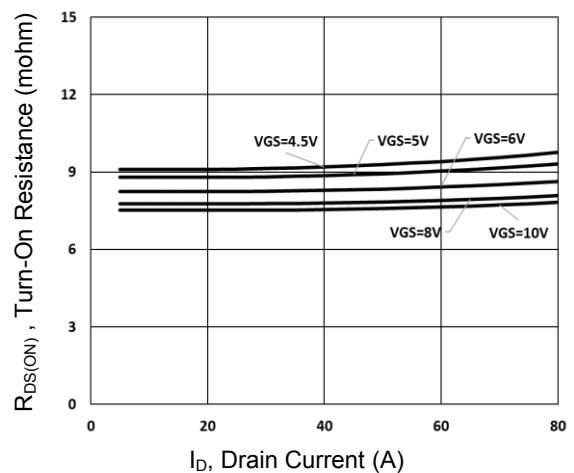


Figure 6. Turn-on Resistance vs. I_d

Typical Electrical and Thermal Characteristic Curves

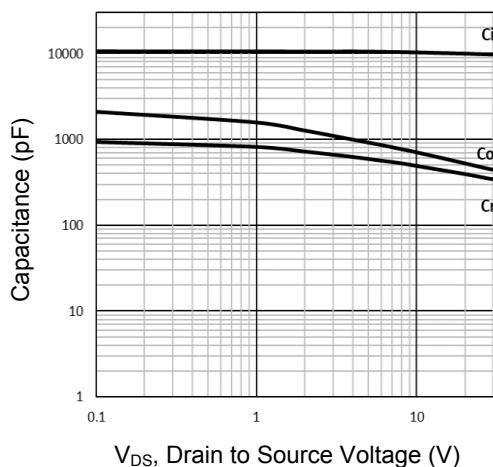


Figure 7. Capacitance Characteristics

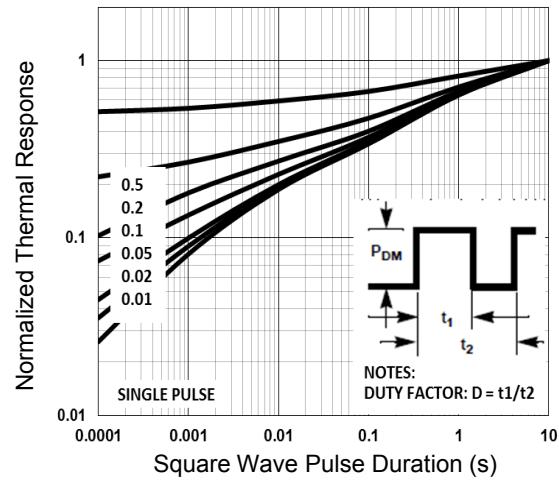


Figure 8. Normalized Transient Impedance

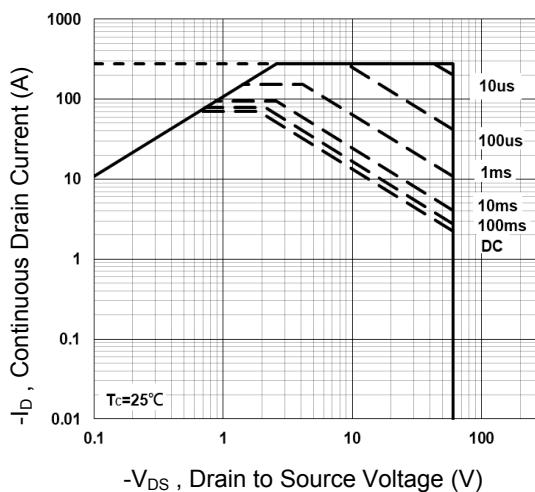


Figure 9. Maximum Safe Operation Area

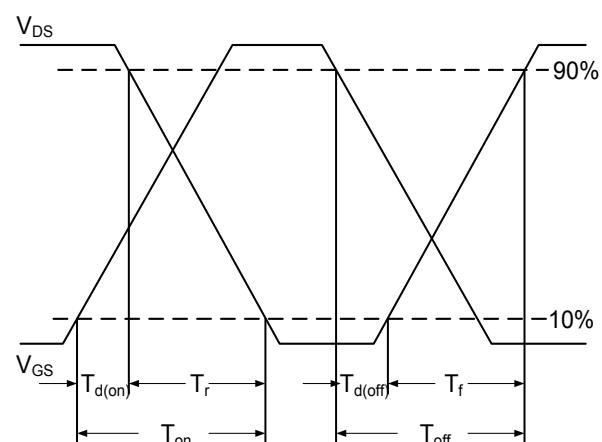


Figure 10. Switching Time Waveform

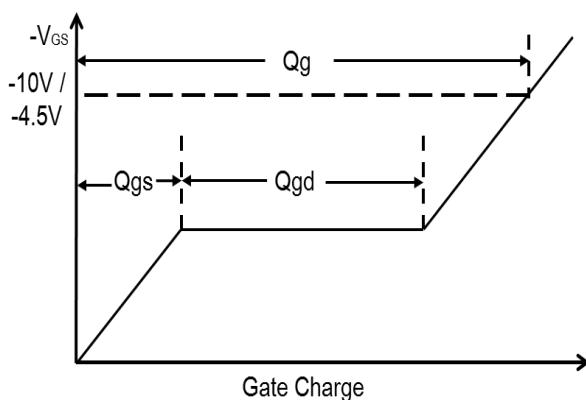
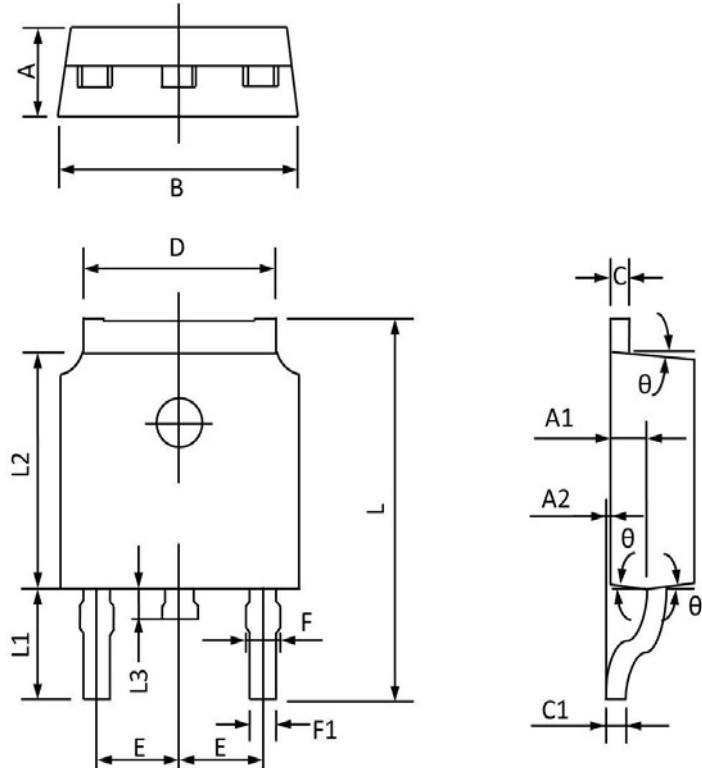


Figure 11. Gate Charge Waveform

Package Outline Dimensions

TO-252(DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.400	0.268	0.252
C	0.580	0.450	0.023	0.018
C1	0.580	0.460	0.023	0.018
D	5.500	5.100	0.217	0.201
E	2.386	2.186	0.094	0.086
F	0.940	0.600	0.037	0.024
F1	0.860	0.500	0.034	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.200	5.400	0.244	0.213
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°