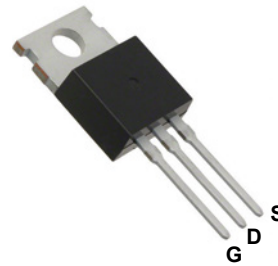
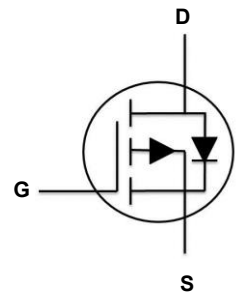


Main Product Characteristics

BV_{DSS}	-60V
$R_{DS(ON)}$	22m Ω
I_D	-61A



TO-220



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 GSFH0661 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	-61	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-38.6	A
Drain Current-Pulsed ¹	I_{DM}	-244	A
Single Pulse Avalanche Energy ²	E_{AS}	245	mJ
Single Pulse Avalanche Current ²	I_{AS}	-70	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	171	W
Power Dissipation – Derate above 25 $^\circ\text{C}$		1.37	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.73	$^\circ\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-60	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =-1mA	-	-0.04	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V, T _J =25°C	-	-	-1	μA
		V _{DS} =-48V, V _{GS} =0V, T _J =85°C	-	-	-10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-15A	-	18	22	mΩ
		V _{GS} =-6V, I _D =-8A	-	30	40	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-2	-3	-4	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	7	-	mV/°C
Forward Transconductance	g _{FS}	V _{DS} =-10V, I _D =-5A	-	10	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q _g	V _{DS} =-48V, I _D =-10A, V _{GS} =-10V	-	37.2	55	nC
Gate-Source Charge ^{3,4}	Q _{gs}		-	10.4	15	
Gate-Drain Charge ^{3,4}	Q _{gd}		-	10.5	16	
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =-48V, R _G =25Ω V _{GS} =-10V, I _D =-5A	-	23.1	46	nS
Rise Time ^{3,4}	t _r		-	76.2	150	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	113.5	220	
Fall Time ^{3,4}	t _f		-	28.6	56	
Input Capacitance	C _{iss}	V _{DS} =-25V, V _{GS} =0V, F=1MHz	-	2165	3200	pF
Output Capacitance	C _{oss}		-	318	480	
Reverse Transfer Capacitance	C _{rss}		-	102	150	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	-61	A
Pulsed Source Current	I _{SM}		-	-	-122	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25°C	-	-	-1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=-30V, V_{GS}=-10V, L=0.1mH, I_{AS}=-70A, Starting T_J=25°C.
3. Pulse test: pulse width ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

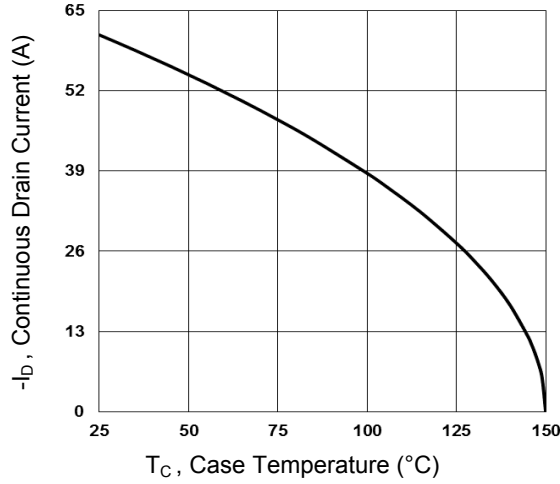


Figure 1. Continuous Drain Current vs. T_C

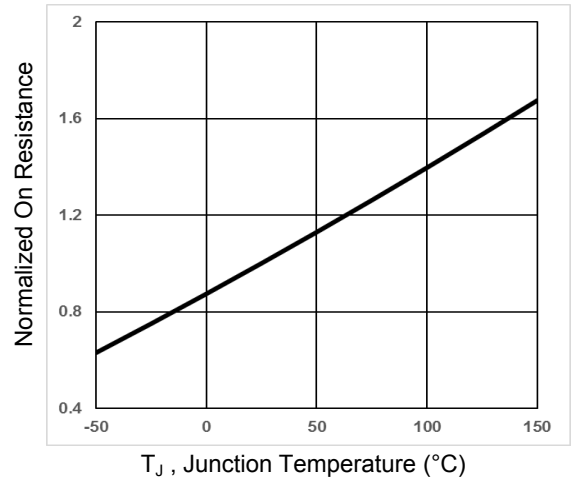


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

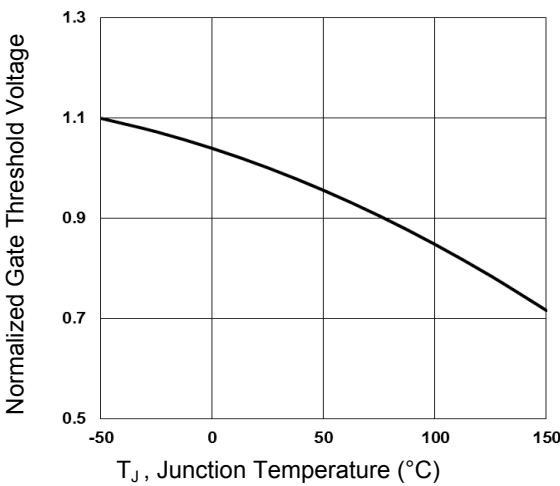


Figure 3. Normalized V_{TH} vs. T_J

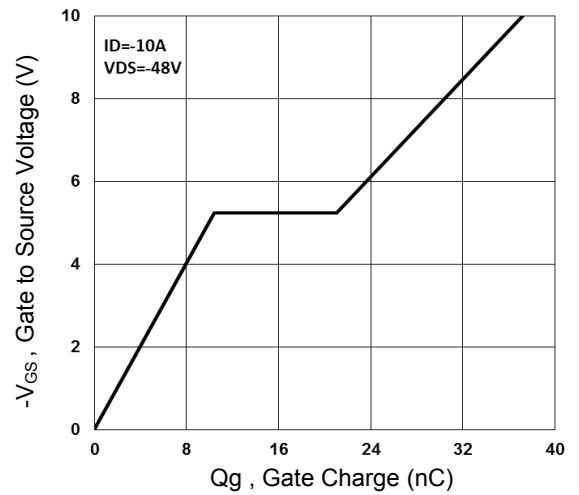


Figure 4. Gate Charge Characteristics

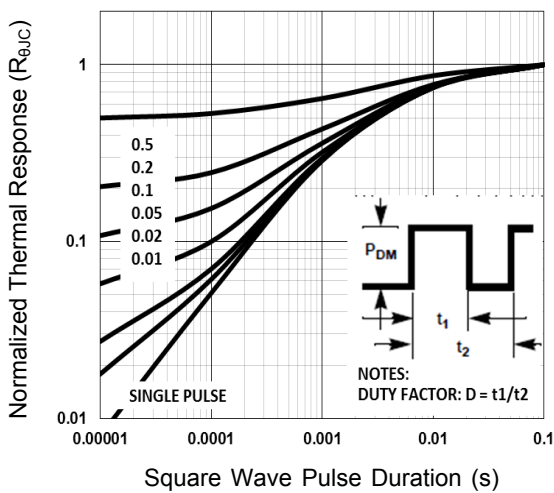


Figure 5. Normalized Transient Impedance

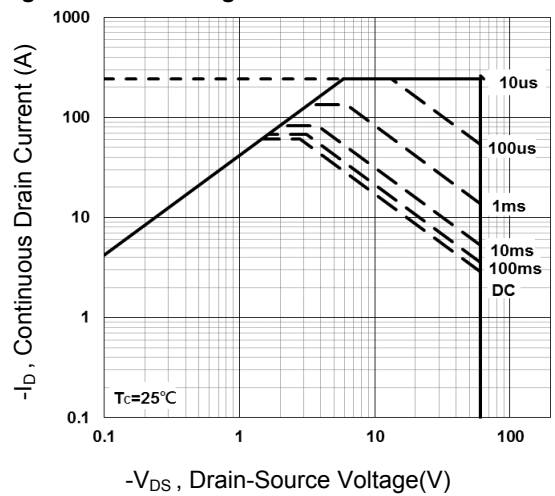


Figure 6. Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

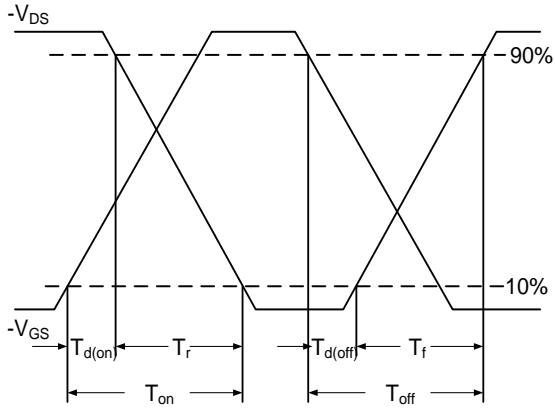


Figure 7. Switching Time Waveform

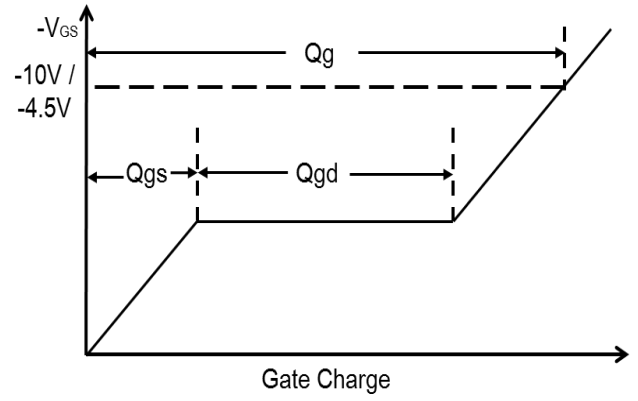
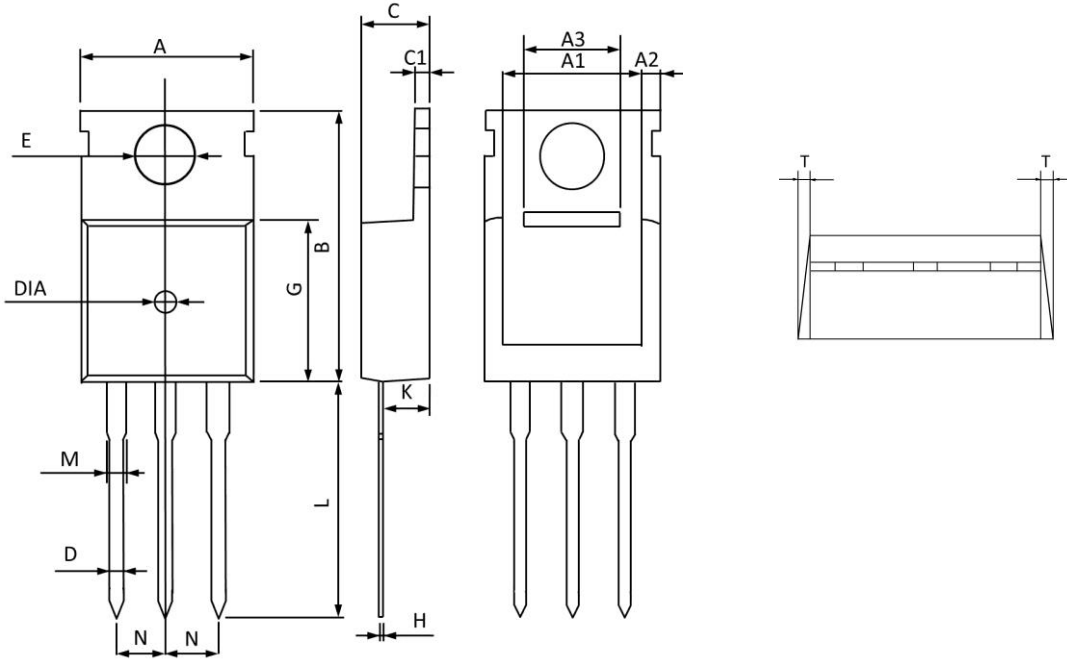


Figure 8. Gate Charge Waveform

Package Outline Dimensions (TO-220)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	10.300	9.700	0.406	0.382
A1	8.840	8.440	0.348	0.332
A2	1.250	1.050	0.049	0.041
A3	5.300	5.100	0.209	0.201
B	16.200	15.400	0.638	0.606
C	4.680	4.280	0.184	0.169
C1	1.500	1.100	0.059	0.043
D	1.000	0.600	0.039	0.024
E	3.800	3.400	0.150	0.134
G	9.300	8.700	0.366	0.343
H	0.600	0.400	0.024	0.016
K	2.700	2.100	0.106	0.083
L	13.600	12.800	0.535	0.504
M	1.500	1.100	0.059	0.043
N	2.590	2.490	0.102	0.098
T	W0.35		W0.014	
DIA	Φ1.5 TYP.	deep0.2 TYP.	Φ0.059 TYP.	deep0.008 TYP.