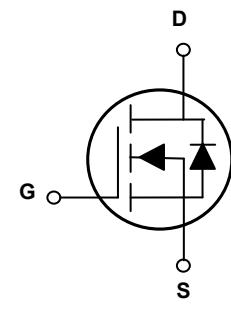
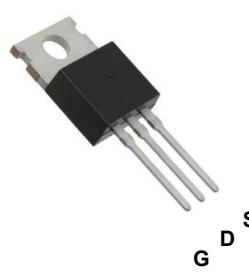


### Main Product Characteristics

BV <sub>DSS</sub>	100V
R <sub>DS(ON)</sub>	55mΩ
I <sub>D</sub>	25A



### 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 GSFH1026 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current-Continuous (T <sub>C</sub> =25°C)	I <sub>D</sub>	25	A
Drain Current-Continuous (T <sub>C</sub> =100°C)		15	
Drain Current-Pulsed <sup>1</sup>	I <sub>DM</sub>	100	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	125	W
Power Dissipation-Derate above 25°C		1	W/°C
Thermal Resistance, Junction-to-Ambient	R <sub>θJA</sub>	62	°C/W
Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	1	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	-50 To +150	°C
Storage Temperature Range	T <sub>STG</sub>	-50 To +150	°C

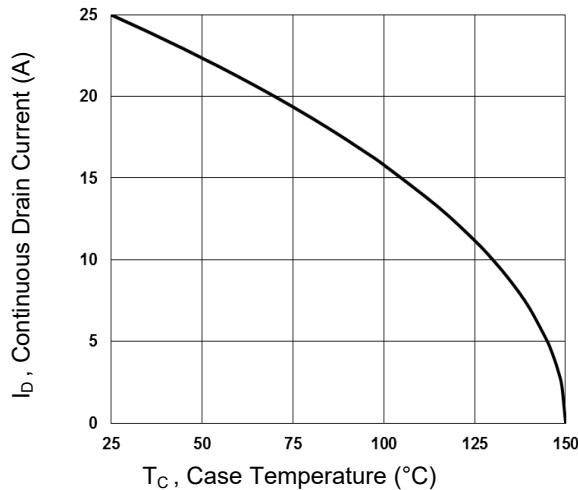
**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On/Off Characteristics</b>						
Drain-Source Breakdown Voltage	$\text{BV}_{\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	100	-	-	V
$\text{BV}_{\text{DSS}}$ Temperature Coefficient	$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	Reference to $25^\circ\text{C}$ , $I_{\text{D}}=1\text{mA}$	-	0.05	-	$\text{V}/^\circ\text{C}$
Drain-Source Leakage Current	$I_{\text{DS}(\text{SS})}$	$V_{\text{DS}}=100\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	1	$\mu\text{A}$
		$V_{\text{DS}}=80\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	-	10	$\mu\text{A}$
Gate-Source Leakage Current	$I_{\text{GSS}}$	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=10\text{A}$	-	45	55	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=5\text{A}$	-	50	60	
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	$\Delta V_{\text{GS}(\text{th})}$		-	-5	-	$\text{mV}/^\circ\text{C}$
Forward Transconductance	$g_{\text{fs}}$	$V_{\text{DS}}=10\text{V}, I_{\text{D}}=3\text{A}$	-	8.7	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	$Q_g$	$V_{\text{DS}}=50\text{V}, I_{\text{D}}=5\text{A}$ $V_{\text{GS}}=10\text{V}$	-	46	80	nC
Gate-Source Charge <sup>2,3</sup>	$Q_{\text{gs}}$		-	4.5	9	
Gate-Drain Charge <sup>2,3</sup>	$Q_{\text{gd}}$		-	12	20	
Turn-On Delay Time <sup>2,3</sup>	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=30\text{V}, R_{\text{G}}=3.3\Omega$ $V_{\text{GS}}=10\text{V}, I_{\text{D}}=1\text{A}$	-	6.8	12	nS
Rise Time <sup>2,3</sup>	$t_r$		-	21	40	
Turn-Off Delay Time <sup>2,3</sup>	$t_{\text{d}(\text{off})}$		-	32	60	
Fall Time <sup>2,3</sup>	$t_f$		-	8.2	16	
Input Capacitance	$C_{\text{iss}}$	$V_{\text{DS}}=25\text{V}, V_{\text{GS}}=0\text{V}, F=1\text{MHz}$	-	2860	4200	pF
Output Capacitance	$C_{\text{oss}}$		-	120	180	
Reverse Transfer Capacitance	$C_{\text{rss}}$		-	70	105	
Gate Resistance	$R_g$	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=0\text{V}, F=1\text{MHz}$	-	1.2	2.4	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_s$	$V_G=V_D=0\text{V},$ Force Current	-	-	25	A
Pulsed Source Current <sup>2</sup>	$I_{\text{SM}}$		-	-	50	A
Diode Forward Voltage <sup>2</sup>	$V_{\text{SD}}$	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=1\text{A}, T_J=25^\circ\text{C}$	-	-	1	V

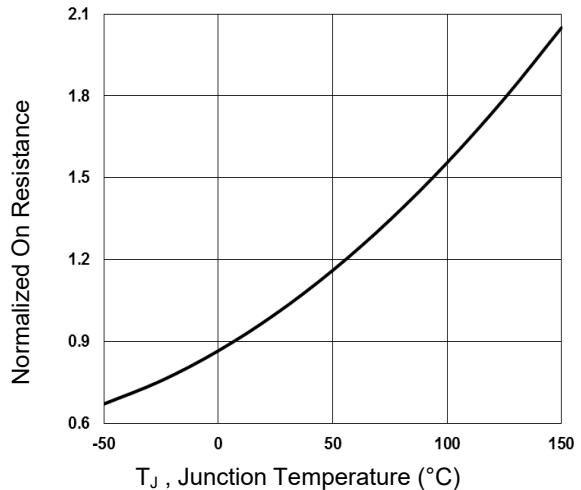
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
3. Pulse test: pulse width  $\leq 300\text{us}$ , duty cycle  $\leq 2\%$ .
4. Essentially independent of operating temperature.

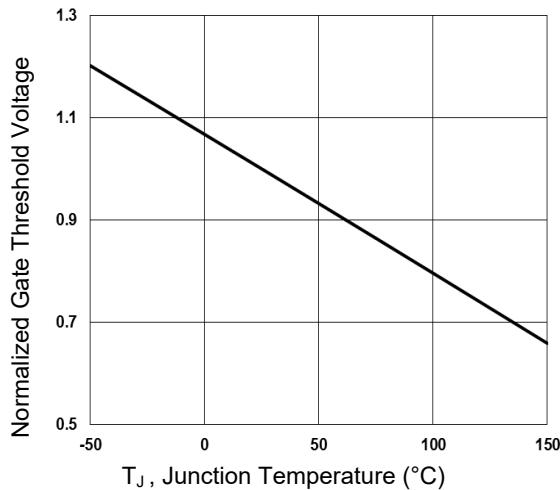
## Typical Electrical and Thermal Characteristic Curves



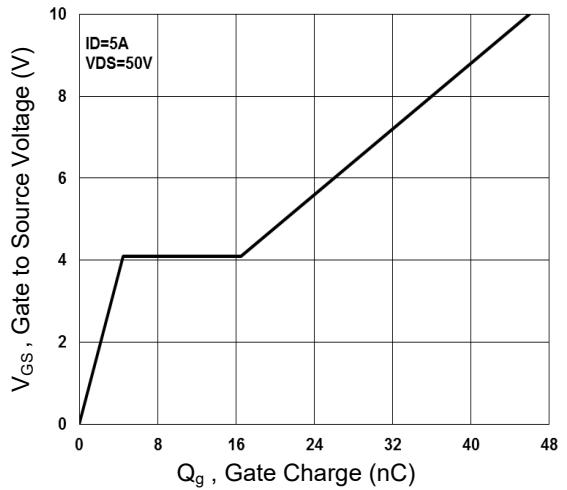
**Figure 1. Continuous Drain Current vs. T<sub>c</sub>**



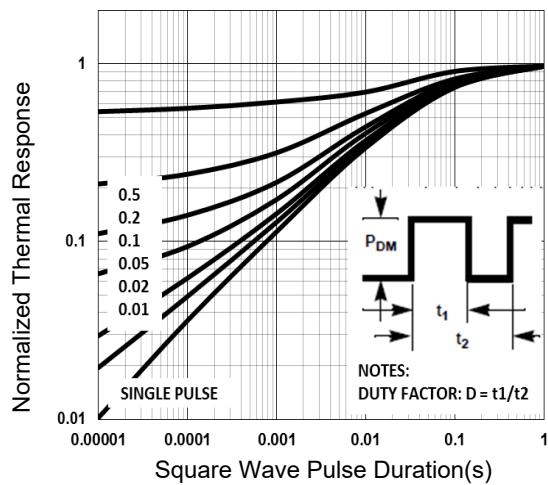
**Figure 2. Normalized R<sub>DS(on)</sub> vs. T<sub>j</sub>**



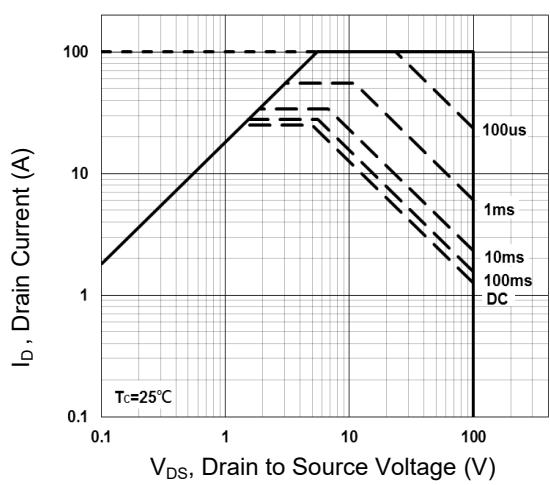
**Figure 3. Normalized V<sub>th</sub> vs. T<sub>j</sub>**



**Figure 4. Gate Charge Characteristics**

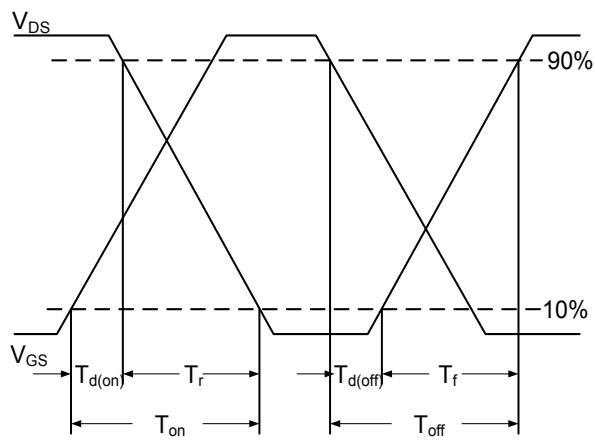


**Figure 5. Normalized Transient Impedance**

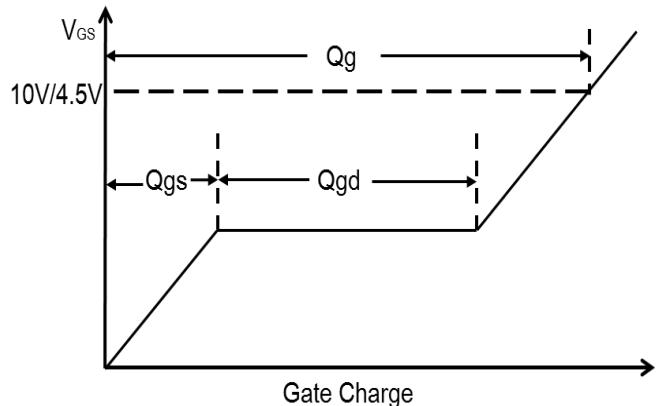


**Figure 6. Maximum Safe Operation Area**

### Typical Electrical and Thermal Characteristic Curves



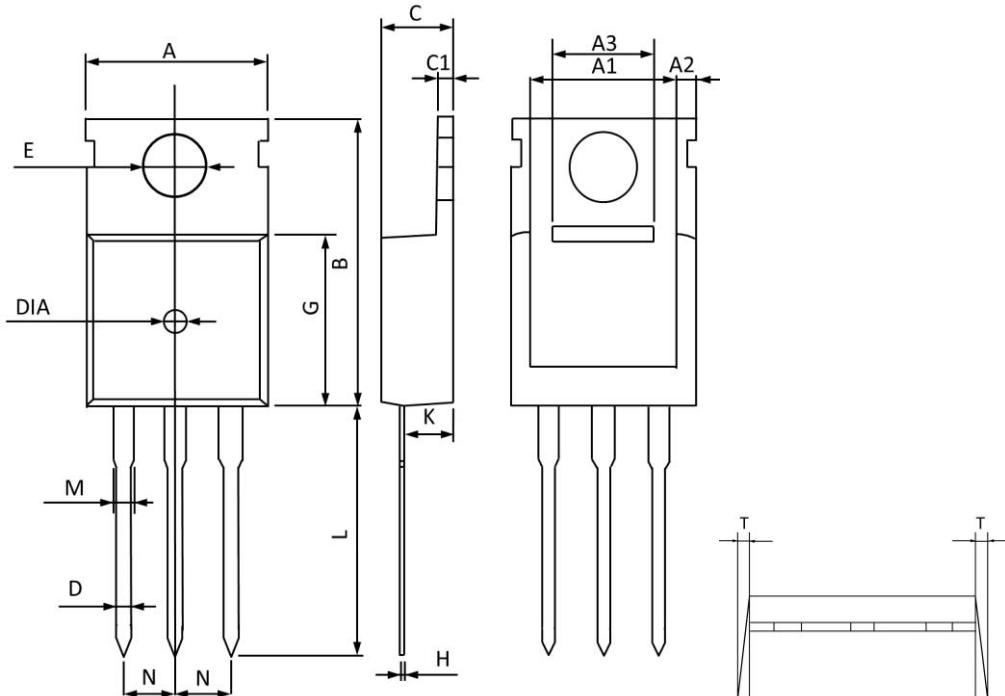
**Firgure 7. Switching Time Waveform**



**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.