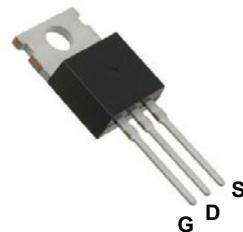
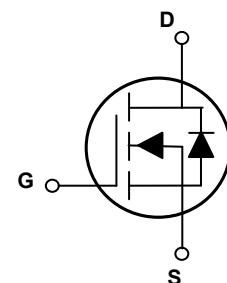


Main Product Characteristics

$V_{(BR)DSS}$	150V
$R_{DS(ON)}$	9.8mΩ (Typ.)
I_D	110A



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 GSFH11015 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_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous, at Steady-State, ($T_C=25^\circ\text{C}$) ¹	I_D	110	A
Drain Current-Continuous, at Steady-State, ($T_C=100^\circ\text{C}$)		81	
Drain Current-Pulsed ²	I_{DM}	440	A
Single Pulse Avalanche Energy ³	E_{AS}	1000	mJ
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	300	W
Linear Derating Factor ($T_A=25^\circ\text{C}$)		2.0	W/ $^\circ\text{C}$
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62.05	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.50	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	T_J	-55 To +175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +175	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_D=250\mu\text{A}$	150	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=150\text{V}, V_{\text{GS}}=0\text{V}$	-	-	1	μA
		$T_J=125^\circ\text{C}$	-	-	50	
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=20\text{V}$	-	-	100	nA
		$V_{\text{GS}}=-20\text{V}$	-	-	-100	
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_D=50\text{A}$	-	9.8	11	$\text{m}\Omega$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{GS}}=V_{\text{DS}}, I_D=250\mu\text{A}$	2.1	3	3.9	V
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	$V_{\text{DS}}=120\text{V}, I_D=50\text{A}, V_{\text{GS}}=10\text{V}$	-	71	-	nC
Gate-Source Charge	Q_{gs}		-	20	-	
Gate-Drain ("Miller") Charge	Q_{gd}		-	12	-	
Turn-On Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{DS}}=75\text{V}, R_{\text{GEN}}=2.5\Omega, V_{\text{GS}}=10\text{V}, I_D=50\text{A}$	-	33	-	nS
Rise Time	t_r		-	104	-	
Turn-Off Delay Time	$t_{\text{d}(\text{off})}$		-	73	-	
Fall Time	t_f		-	20	-	
Input Capacitance	C_{iss}	$V_{\text{DS}}=50\text{V}, V_{\text{GS}}=0\text{V}, F=1\text{MHz}$	-	5675	-	pF
Output Capacitance	C_{oss}		-	660	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Gate Resistance	R_g	$F=1\text{MHz}$	-	4.1	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	110	A
Pulsed Source Current (Body Diode)	I_{SM}	-	-	440	A	
Diode Forward Voltage	V_{SD}	$V_{\text{GS}}=0\text{V}, I_S=50\text{A}$	-	1	1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^\circ\text{C}, I_F=50\text{A}, \text{di/dt}=100\text{A}/\mu\text{s}$	-	90	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.26	-	μC

Note:

1. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. Repetitive rating: Pulsed width limited by maximum junction temperature.
3. $L=0.3\text{mH}, V_{\text{DD}}=50\text{V}, R_G=25\Omega, T_J=25^\circ\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

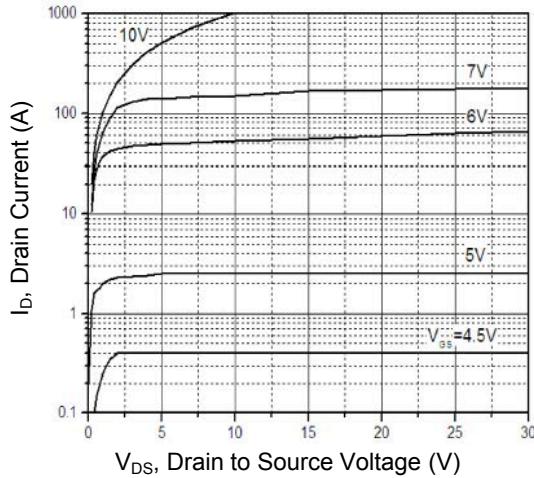


Figure 1. Typical Output Characteristics

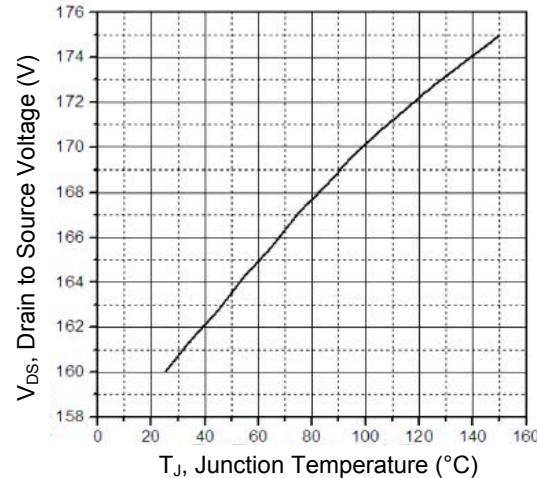


Figure 2. Drain to Source Voltage vs. T_J

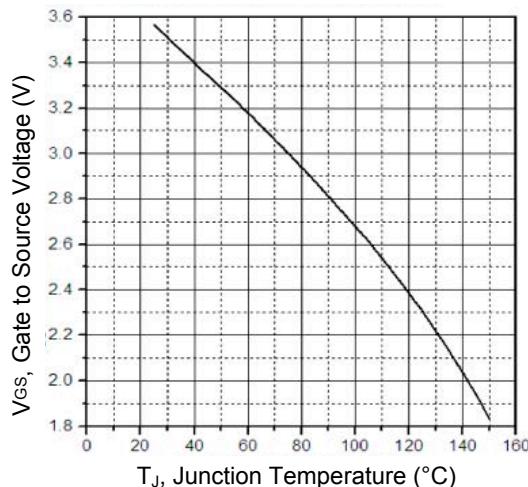


Figure 3. Gate to Source Voltage vs. T_J

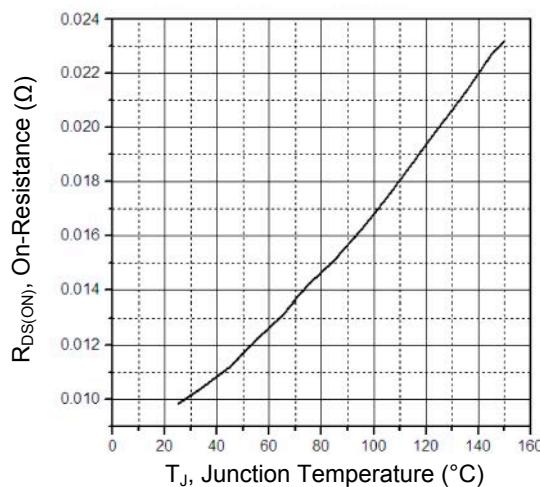


Figure 4. On-Resistance vs. Junction Temperature

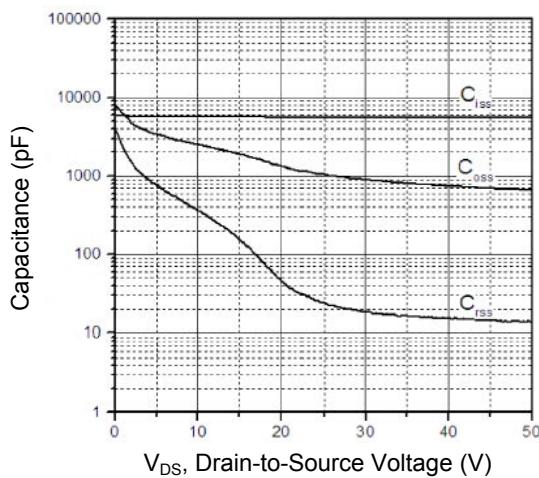
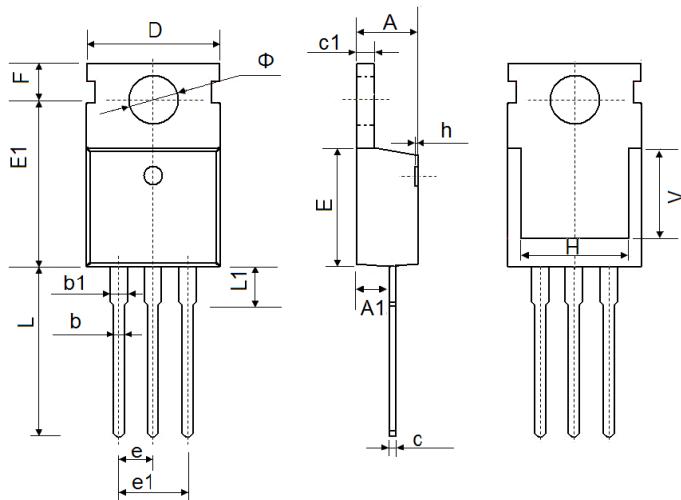


Figure 5. Capacitance Characteristics

Package Outline Dimensions (TO-220)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	12.950	0.498	0.510
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150

Order Information

Device	Package	Marking	Quantity	HSF Status
GSFH11015	TO-220	H11015	50pcs / Tube	RoHS Compliant