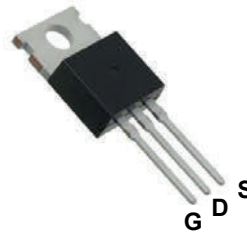
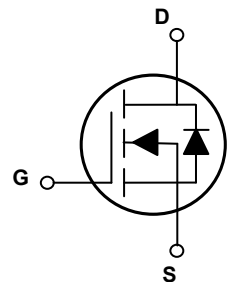


Main Product Characteristics

$V_{(BR)DSS}$	150V
$R_{DS(ON)}$	7.3m Ω (Typ.)
I_D	100A



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 GSFH9R015 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-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}\text{C}$) ¹	I_D	100	A
Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}\text{C}$)		63	A
Pulsed Drain Current ²	I_{DM}	400	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	178	W
Linear Derating Factor ($T_C=25^{\circ}\text{C}$)		1.4	W/ $^{\circ}\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	784	mJ
Junction-to-Case	$R_{\theta JC}$	0.7	$^{\circ}\text{C/W}$
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	50	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	150	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^{\circ}\text{C}$	-	-	50	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	7.3	9	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.1	3	3.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=75V$ $F=1\text{MHz}$	-	5870	-	pF
Output Capacitance	C_{oss}		-	404	-	
Reverse Transfer Capacitance	C_{rss}		-	9.3	-	
Total Gate Charge	Q_g	$I_D=20A, V_{DS}=75V,$ $V_{GS}=10V$	-	100	-	nC
Gate-to-Source Charge	Q_{gs}		-	24.9	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	30.8	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=30V,$ $I_D=1A, R_{GEN}=3.3\Omega$	-	32	-	nS
Rise Time	t_r		-	25	-	
Turn-Off Delay Time	$t_{d(off)}$		-	97	-	
Fall Time	t_f		-	89	-	
Gate Resistance	R_g	$F=1\text{MHz}$	-	1.9	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	100	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	400	A
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	1	1.2	V

Note:

1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5\text{mH}$, $R_G=25\Omega$, $V_{DD}=50V$, $I_{AS}=56A$, $T_J=25^{\circ}\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

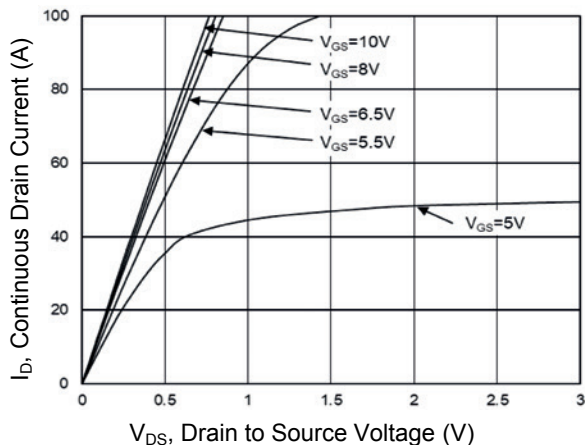


Figure 1. Typical Output Characteristics

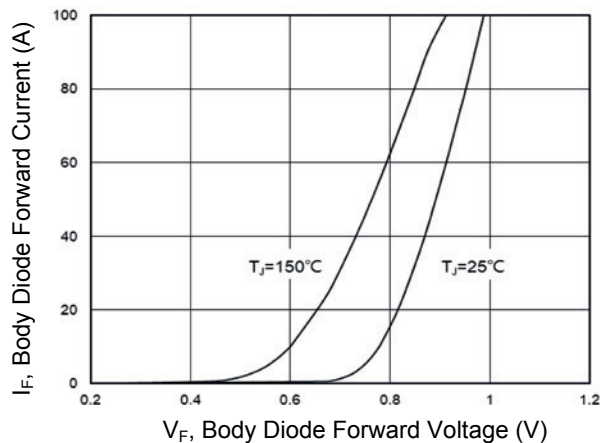


Figure 2. Body Diode Characteristics

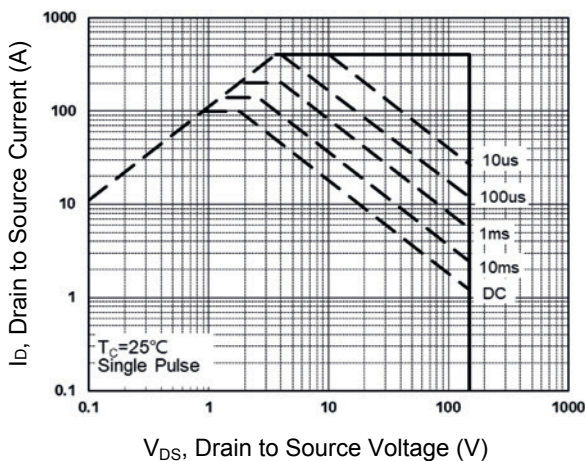


Figure 3. Safe Operation Area

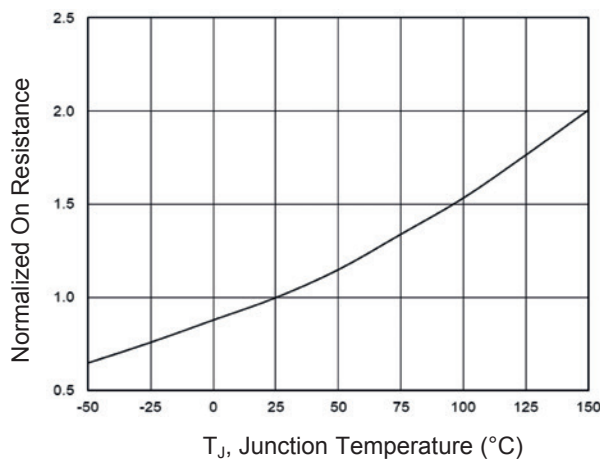


Figure 4. Normalized On-Resistance vs. T_J

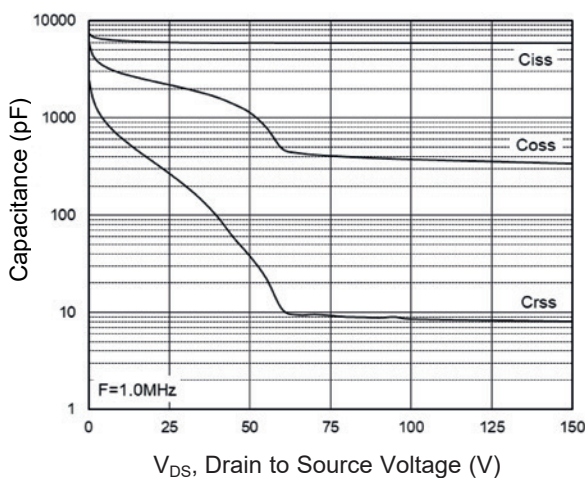


Figure 5. Capacitance Characteristics

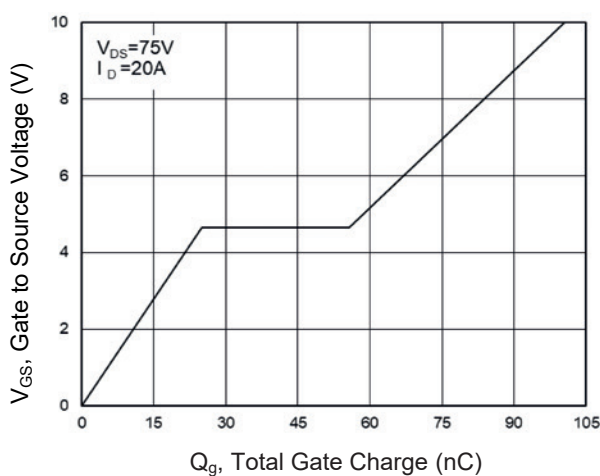
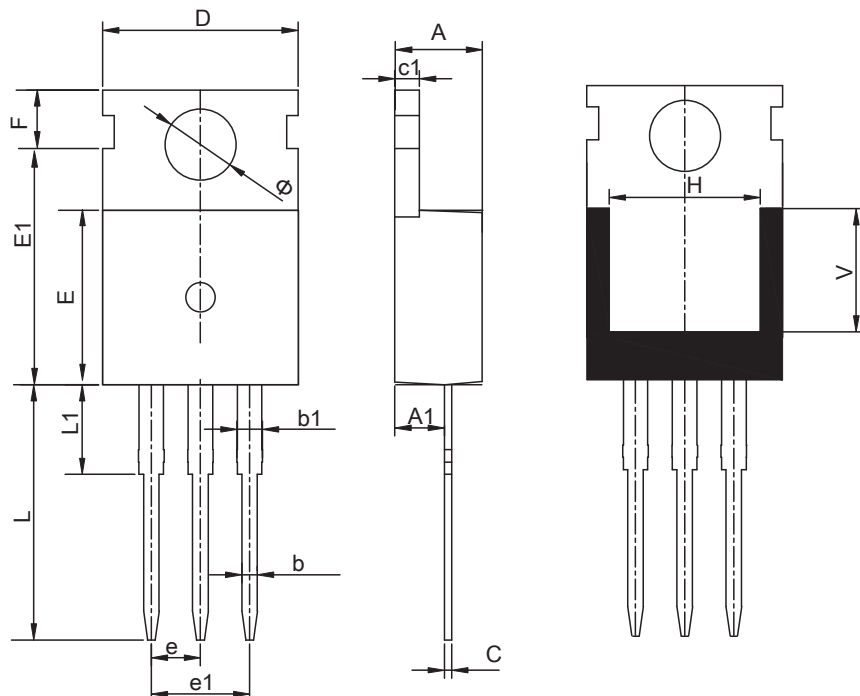


Figure 6. Gate Charge Characteristics

Package Outline Dimensions (TO-220)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.25	2.70	0.089	0.106
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
C	0.33	0.65	0.013	0.026
c1	1.20	1.40	0.047	0.055
D	9.91	10.25	0.390	0.404
E	8.95	9.75	0.352	0.384
E1	12.65	13.00	0.498	0.512
e	2.54 TYP		0.100 TYP	
e1	4.98	5.18	0.196	0.204
F	2.65	2.95	0.104	0.116
H	7.90	8.10	0.311	0.319
L	12.90	13.40	0.508	0.528
L1	2.68	3.25	0.106	0.128
V	6.90 REF		0.272 REF	
Φ	3.40	3.80	0.134	0.150

Order Information

Device	Package	Marking	Carrier	Quantity
GSFH9R015	TO-220	H9R015	Tube	50pcs / Tube

For more information, please contact us at: inquiry@goodarksemi.com