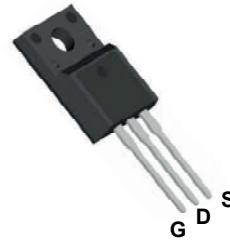
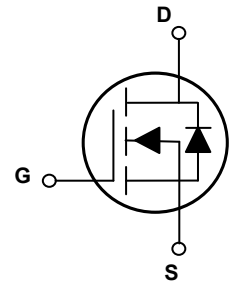


Main Product Characteristics

$V_{(BR)DSS}$	800V
$R_{DS(ON)}$	0.90 Ω (max.)
I_D	6A



TO-220F



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 GSFU80R900 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}	800	V
Gate-to-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	6	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		3.8	A
Pulsed Drain Current	I_{DM}	24	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	28	W
		0.23	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ¹	E_{AS}	214	mJ
Body Diode Reverse Voltage Slope ²	dv/dt	50	V/ns
MOS dv/dt Ruggedness ³	dv/dt	100	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.0	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.46	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to + 150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	800	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V$	-	-	1	μA
Gate-to-Source Forward Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
		$V_{DS}=0V, V_{GS}=-30V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3.0A$	-	0.75	0.90	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=100V, f=1MHz$	-	568	-	pF
Output Capacitance	C_{oss}		-	22	-	
Reverse Transfer Capacitance	C_{rss}		-	0.95	-	
Total Gate Charge ^{4,5}	Q_g	$I_D=6A, V_{DD}=640V, V_{GS}=10V$	-	17	-	nC
Gate-to-Source Charge ^{4,5}	Q_{gs}		-	5.0	-	
Gate-to-Drain ("Miller") Charge ^{4,5}	Q_{gd}		-	7.6	-	
Turn-On Delay Time ^{4,5}	$t_{d(on)}$	$V_{DD}=400V, V_{GS}=10V, R_g=25\Omega, I_D=6A$	-	14	-	nS
Rise Time ^{4,5}	t_r		-	34	-	
Turn-Off Delay Time ^{4,5}	$t_{d(off)}$		-	44	-	
Fall Time ^{4,5}	t_f		-	26	-	
Gate Resistance	R_g	$f=1MHz$	-	7.6	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	$T_C=25^\circ\text{C}$, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	6	A
Source Pulse Current	I_{SM}		-	-	24	A
Diode Forward Voltage	V_{SD}	$I_S=6A, V_{GS}=0V$	-	1.1	1.4	V
Reverse Recovery Time ²	T_{rr}	$I_F=6A, V_{DD}=50V, di_F/dt=100A/\mu s$	-	348	-	nS
Reverse Recovery Charge ²	Q_{rr}		-	2.7	-	μC

Note:

- $L=79mH, I_{AS}=2.2A, V_{DD}=100V, R_g=25\Omega$, starting temperature $T_J=25^\circ\text{C}$.
- $V_{DS}=0-400V, I_{SD}\leq I_S, T_J=25^\circ\text{C}$.
- $V_{DS}=0-480V$.
- Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

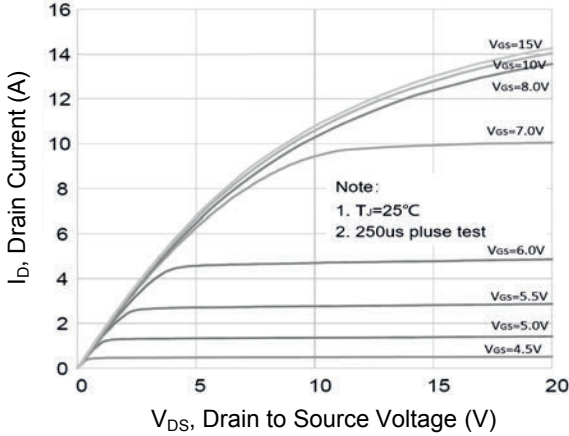


Figure 1. Typical Output Characteristics

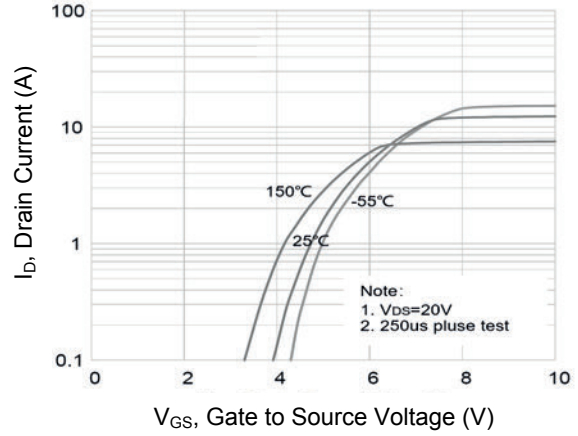


Figure 2. Transfer Characteristics

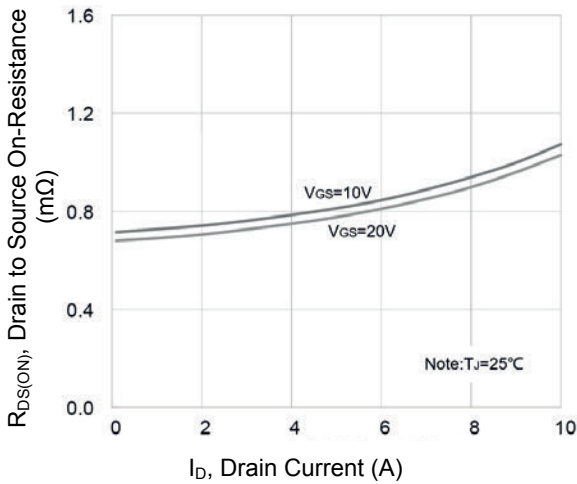


Figure 3. $R_{DS(ON)}$ vs. Drain Current

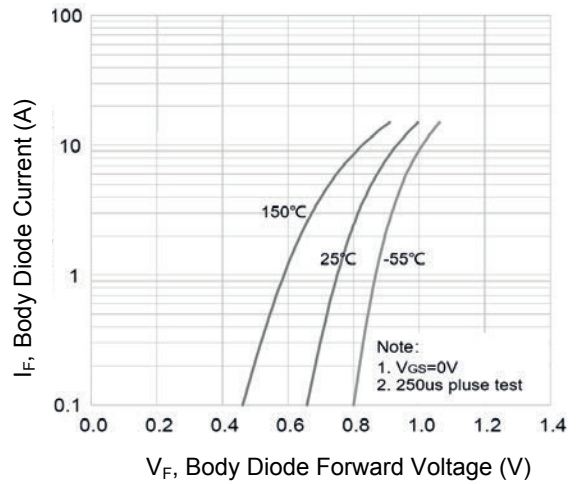


Figure 4. Body Diode Characteristics

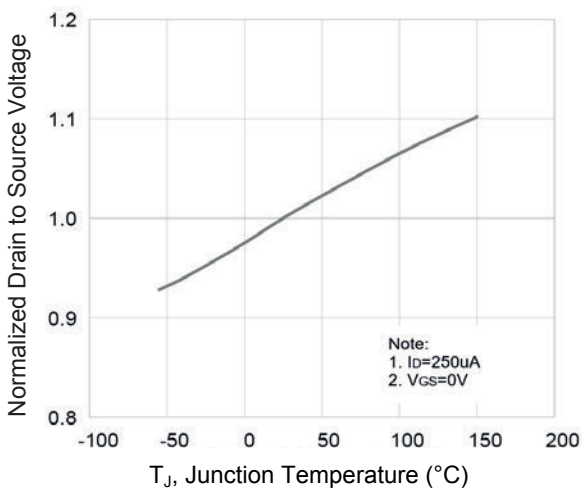


Figure 5. Normalized BV_{DSS} vs. T_J

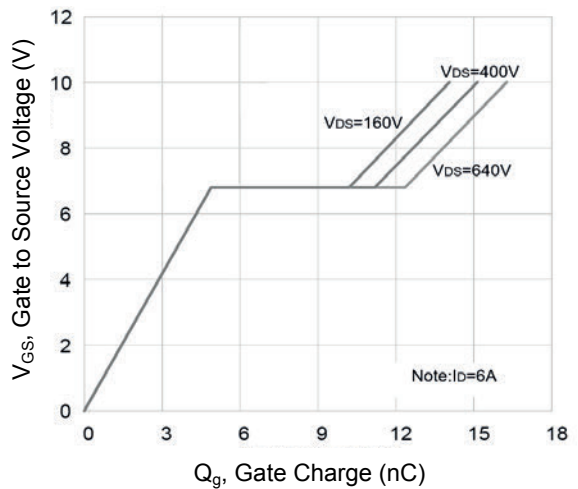


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

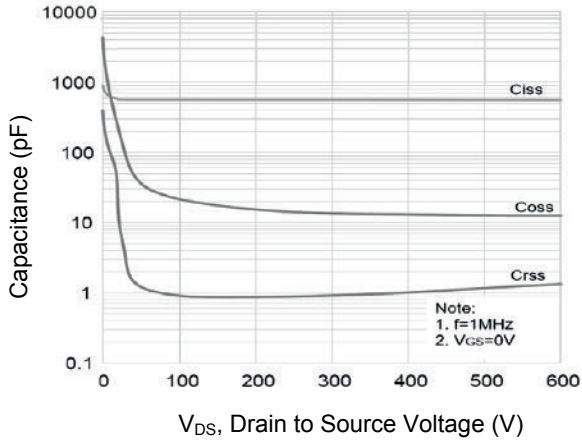


Figure 7. Capacitance Characteristics

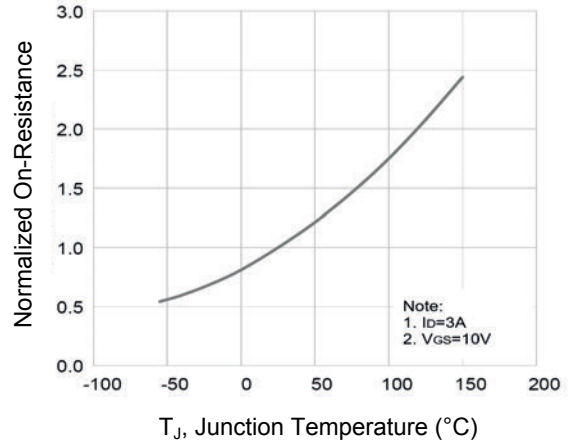


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

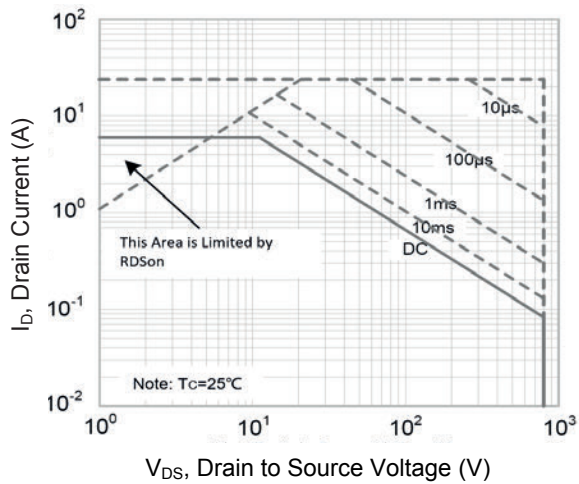
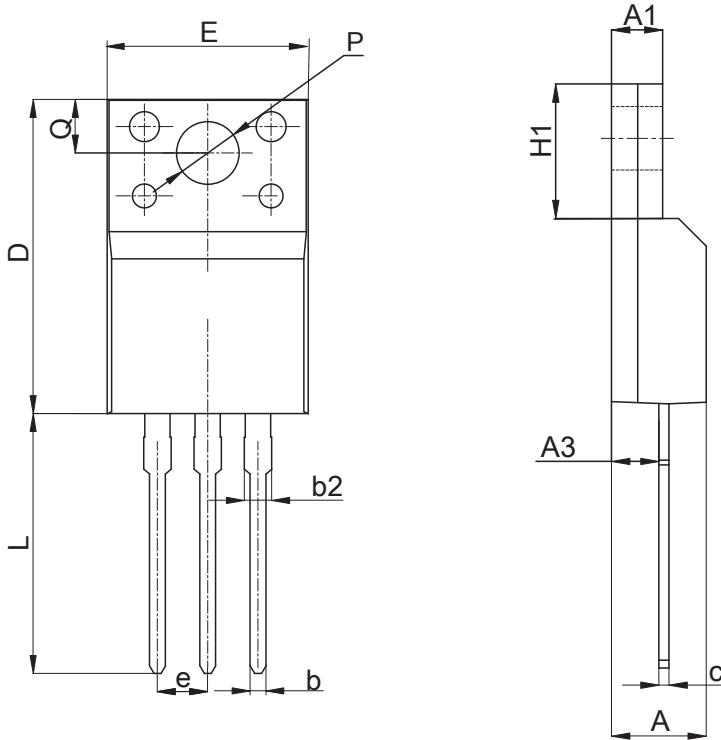


Figure 9. Safe Operation Area

Package Outline Dimensions (TO-220F)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.42	5.02	0.174	0.198
A1	2.30	2.83	0.091	0.111
A3	2.15	3.10	0.085	0.122
b	0.55	0.85	0.022	0.033
b2	0.96	1.46	0.038	0.057
c	0.35	0.65	0.014	0.026
D	15.25	16.25	0.600	0.640
E	9.73	10.50	0.383	0.413
e	2.50	2.60	0.098	0.102
H1	6.40	6.70	0.252	0.264
L	12.48	13.70	0.491	0.539
P	3.00	3.60	0.118	0.142
Q	3.05	3.60	0.120	0.142

Order Information

Device	Package	Marking	Carrier	Quantity
GSFU80R900	TO-220F	U80R900	Tube	50 pcs / Tube

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