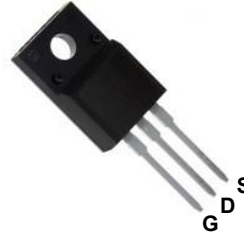
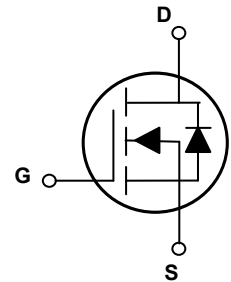


### Main Product Characteristics

$V_{(BR)DSS}$	800V
$R_{DS(ON)}$	0.42Ω (Max.)
$I_D$	12A



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 GSJU8012 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V <sub>DS</sub>	800	V
Gate-Source Voltage	V <sub>GS</sub>	±30	V
Drain Current-Continuous, at Steady-State, (T <sub>C</sub> =25°C)	I <sub>D</sub>	12	A
Drain Current-Continuous, at Steady-State, (T <sub>C</sub> =100°C)		7.6	
Drain Current-Pulsed	I <sub>DM</sub>	48	A
Single Pulse Avalanche Energy <sup>1</sup>	E <sub>AS</sub>	510	mJ
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	36	W
Power Dissipation – Derate above 25°C (T <sub>C</sub> =25°C)		0.29	
Body Diode Reverse Voltage Slope <sup>2</sup>	dv/dt	50	V/ns
MOS dv/dt Ruggedness <sup>3</sup>	dv/dt	100	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	R <sub>θJA</sub>	62.5	°C/W
Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	3.5	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	-55 To +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 To +150	°C

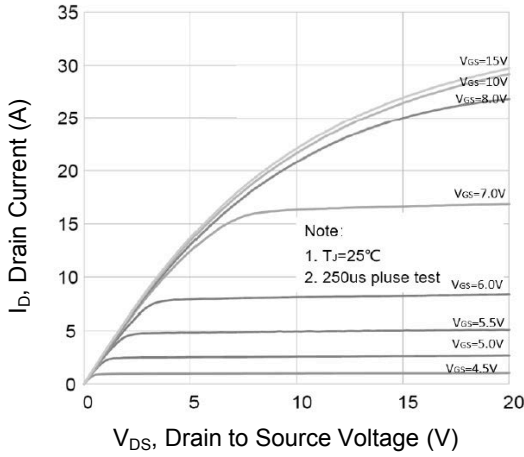
**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	800	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=800V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=6.0A$	-	0.36	0.42	$\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.4	-	4.6	V
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>4,5</sup>	$Q_g$	$V_{DD}=640V, I_D=12A, V_{GS}=10V$	-	30	-	nC
Gate-Source Charge <sup>4,5</sup>	$Q_{gs}$		-	9.5	-	
Gate-Drain ("Miller") Charge <sup>4,5</sup>	$Q_{gd}$		-	12	-	
Turn-On Delay Time <sup>4,5</sup>	$t_{d(on)}$	$V_{DD}=400V, R_G=25\Omega, V_{GS}=10V, I_D=12A$	-	24	-	nS
Rise Time <sup>4,5</sup>	$t_r$		-	57	-	
Turn-Off Delay Time <sup>4,5</sup>	$t_{d(off)}$		-	80	-	
Fall Time <sup>4,5</sup>	$t_f$		-	36	-	
Input Capacitance	$C_{iss}$	$V_{DS}=100V, V_{GS}=0V, F=1MHz$	-	1130	-	pF
Output Capacitance	$C_{oss}$		-	36	-	
Reverse Transfer Capacitance	$C_{rss}$		-	1.9	-	
Gate Resistance	$R_g$	$F=1MHz$	-	6.4	-	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current (Body Diode)	$I_S$	$T_C=25^\circ\text{C}$ , MOSFET symbol showing the integral reverse p-n junction diode.	-	-	12	A
Pulsed Source Current	$I_{SM}$		-	-	48	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=12A$	-	1.1	1.4	V
Reverse Recovery Time <sup>2</sup>	$t_{rr}$	$V_{GS}=0V, I_F=12A, di_F/dt=100A/\mu s$	-	391	-	nS
Reverse Recovery Charge <sup>2</sup>	$Q_{rr}$		-	4.5	-	$\mu C$

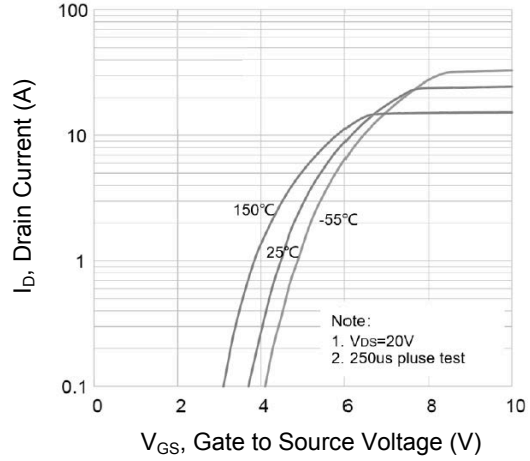
Note:

1.  $L=79mH, I_{AS}=3.4A, V_{DD}=100V, R_g=25\Omega$ , starting temperature  $T_J=25^\circ\text{C}$ .
2.  $V_{DS}=0-400V, I_{SD} \leq I_S, T_J=25^\circ\text{C}$ .
3.  $V_{DS}=0-480V$ .
4. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
5. Essentially independent of operating temperature.

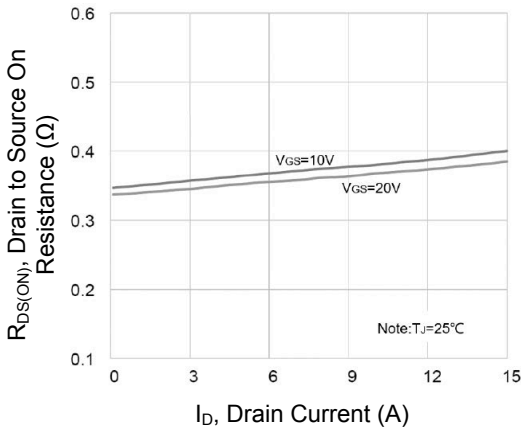
**Typical Electrical and Thermal Characteristic Curves**



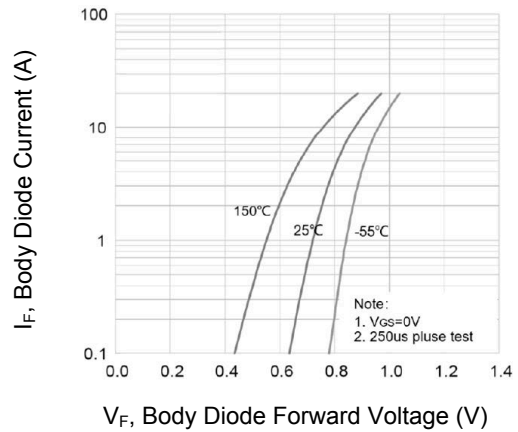
**Figure 1. Typical Output Characteristics**



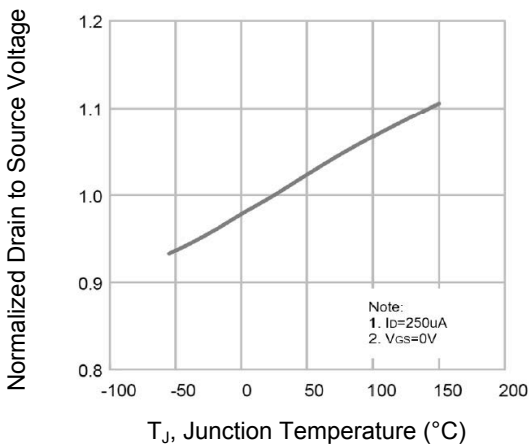
**Figure 2. Transfer Characteristics**



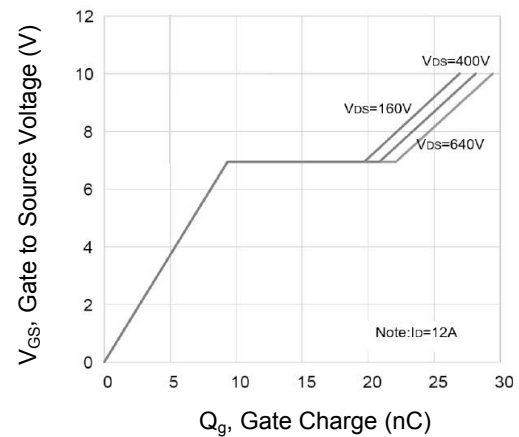
**Figure 3.  $R_{DS(ON)}$  vs. Drain Current**



**Figure 4. Body Diode Characteristics**

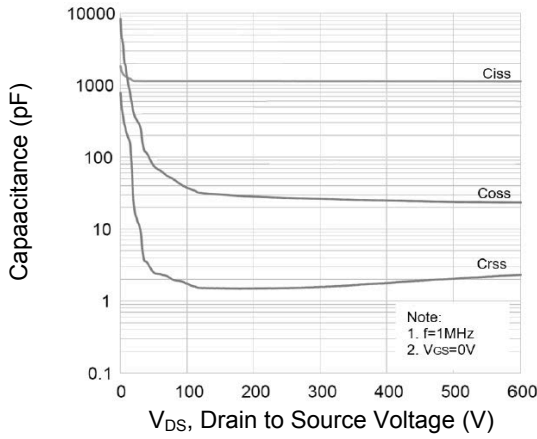


**Figure 5. Normalized  $BV_{DSS}$  vs. Junction Temperature**

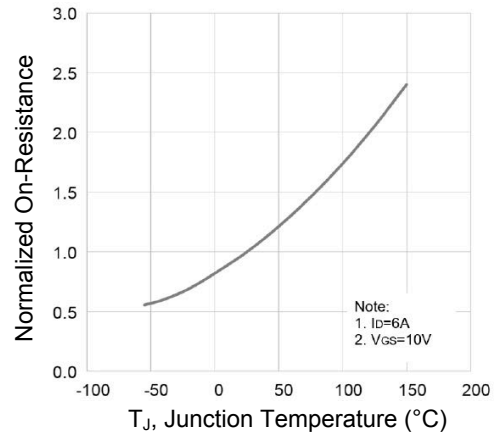


**Figure 6. Gate Charge Characteristics**

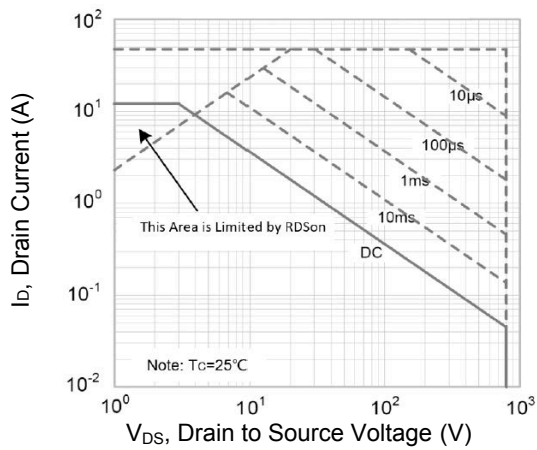
**Typical Electrical and Thermal Characteristic Curves**



**Figure 7. Capacitance Characteristics**

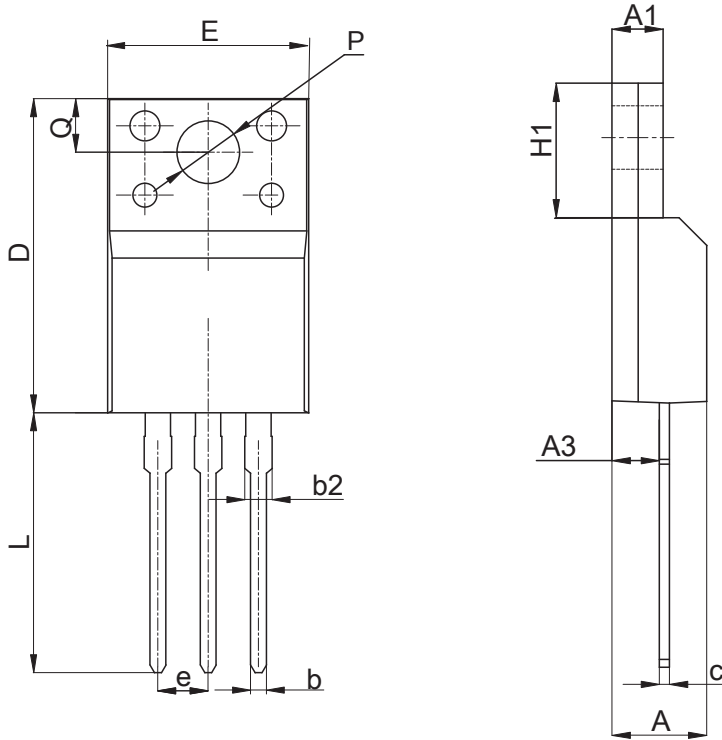


**Figure 8. Normalized  $R_{DS(ON)}$  vs.  $T_J$**



**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
GSJU8012	TO-220F	U80R420	Tape & Reel	50 pcs / Tube

For more information, please contact us at: [inquiry@goodarksemi.com](mailto:inquiry@goodarksemi.com)