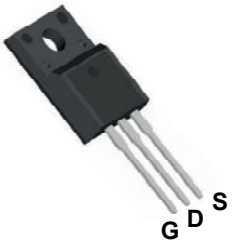
GSJU60R880

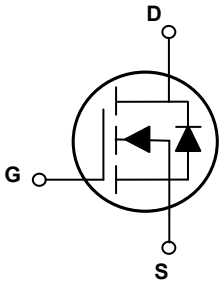
600V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	600V
$R_{DS(ON)}$	0.88Ω (max.)
I_D	5A



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 GSJU60R880 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°C unless otherwise specified)

Parameter	Symbol	Parameter	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-to-Source Voltage	V_{GS}	±30	V
Continuous Drain Current, @ Steady-State (T_C=25°C)	I_D	5	A
Continuous Drain Current, @ Steady-State (T_C=100°C)		3.3	A
Pulsed Drain Current	I_{DM}	20	A
Power Dissipation (T_C=25°C)	P_D	28	W
		0.22	W/°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	°C/W
Junction-to-Case	$R_{\theta Jc}$	4.46	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to + 150	°C

Electrical Characteristics (T_C=25°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=250μA	600	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V	-	-	200	nA
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=2.5A, T_J=25°C	-	0.7	0.88	Ω
		V_{GS}=10V, I_D=2.5A, T_J=125°C	-	1.4	-	Ω
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	-	4.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=100V, f=1MHz	-	304	-	pF
Output Capacitance	C_{oss}		-	20	-	
Reverse Transfer Capacitance	C_{rss}		-	1.8	-	
Total Gate Charge[4,5]	Q_g	I_D=5A, V_{DD}=480V, V_{GS}=10V	-	12	-	nC
Gate-to-Source Charge[4,5]	Q_{gs}		-	2.7	-	
Gate-to-Drain ("Miller") Charge[4,5]	Q_{gd}		-	6.3	-	
Turn-On Delay Time[4,5]	$t_{d(on)}$	V_{DD}=300V, V_{GS}=10V, R_G=25Ω, I_D=5A	-	9	-	nS
Rise Time[4,5]	t_r		-	16	-	
Turn-Off Delay Time[4,5]	$t_{d(off)}$		-	32	-	
Fall Time[4,5]	t_f		-	24	-	
Gate Resistance	R_g	f=1MHz	-	3.6	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	T_C=25°C, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	5	A
Source Pulse Current	I_{SM}		-	-	20	A
Diode Forward Voltage	V_{SD}	I_S=5A, V_{GS}=0V	-	-	1.4	V
Reverse Recovery Time[3]	T_{rr}	I_F=5A, V_{GS}=0V, dI_F/dt=100A/us	-	320	-	nS
Reverse Recovery Charge[3]	Q_{rr}		-	1.9	-	μC

Note:

1. L=79mH, I_{AS}=2.2A, V_{DD}=100V, starting temperature T_J=25°C.
2. V_{DS}=0-400V, I_{SD}<=20A, T_J=25°C .
3. V_{DS}=0-480V.
4. Pulse test: pulse width ≤300μs, duty cycle ≤2%.
5. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

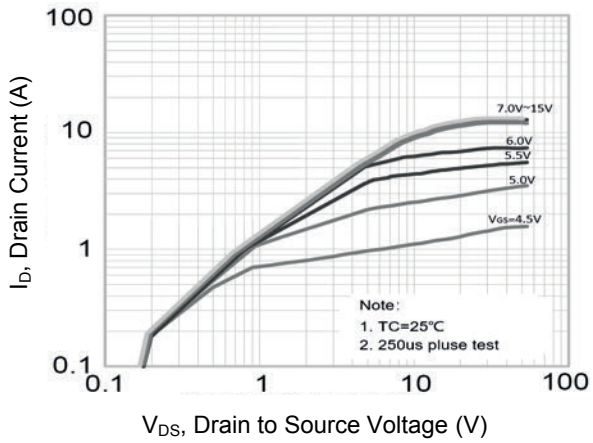


Figure 1. Typical Output Characteristics

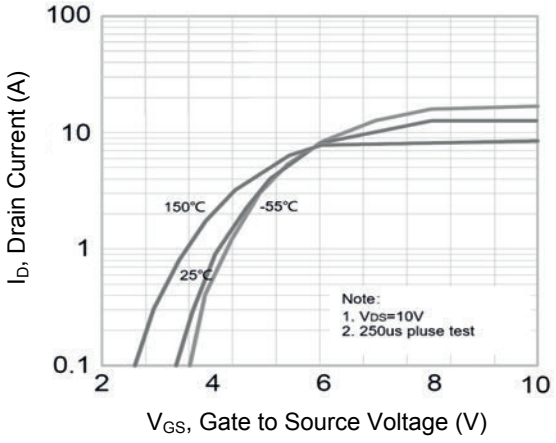


Figure 2. Transfer Characteristics

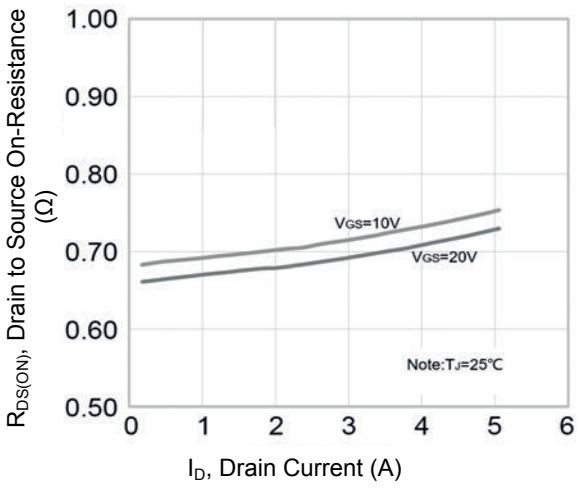


Figure 3. $R_{DS(ON)}$ Vs. Drain Current

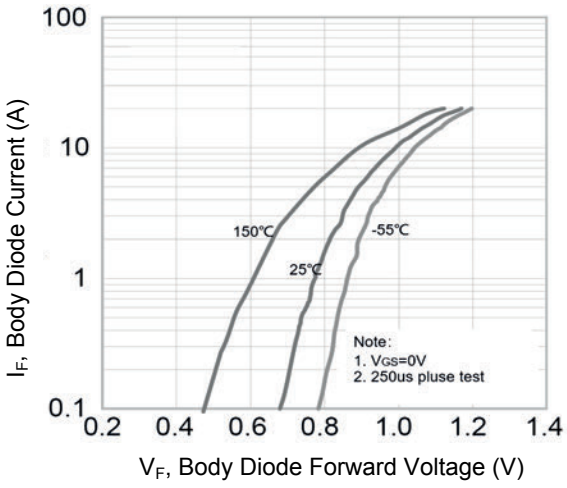


Figure 4. Body Diode Characteristics

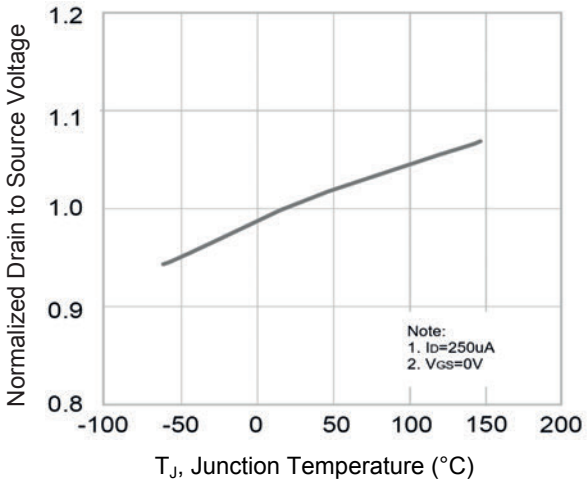


Figure 5. Normalized BV_{DSS} Vs. T_J

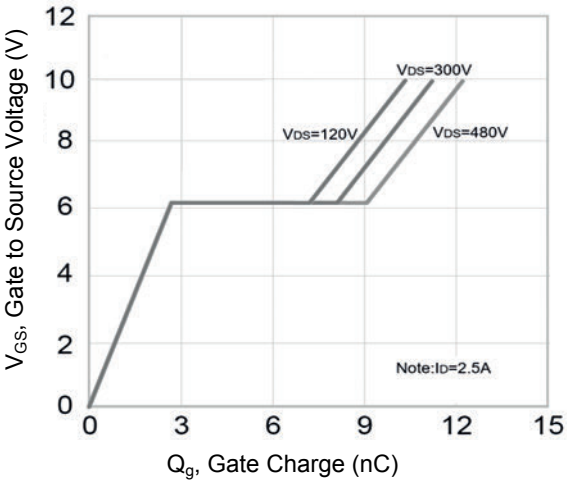


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

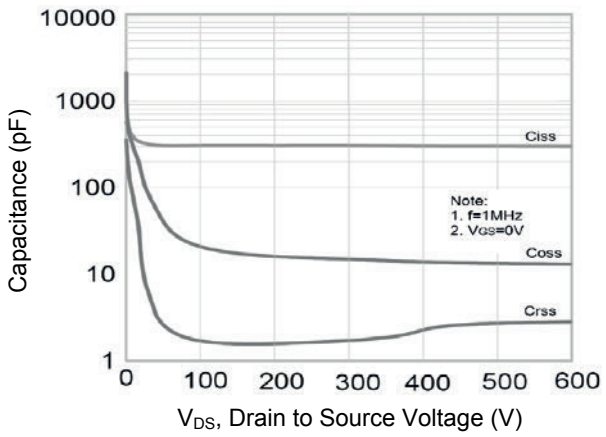


Figure 7. Capacitance Characteristics

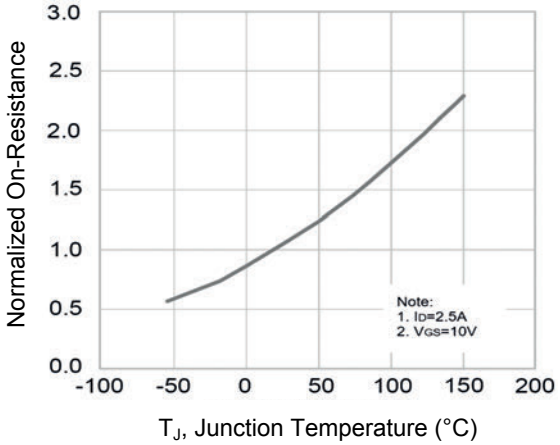


Figure 8. Normalized $R_{DS(ON)}$ Vs. T_J

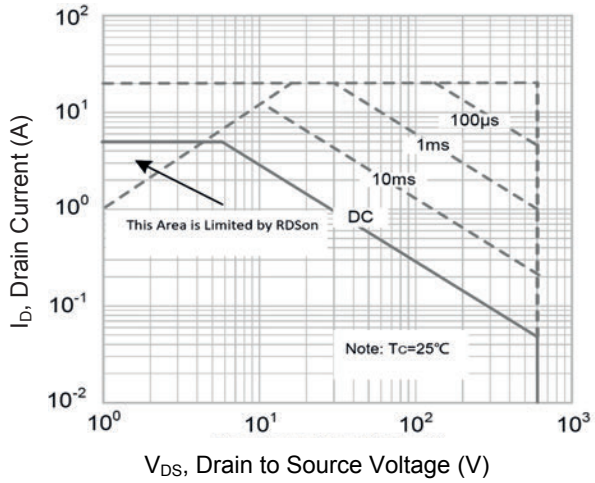
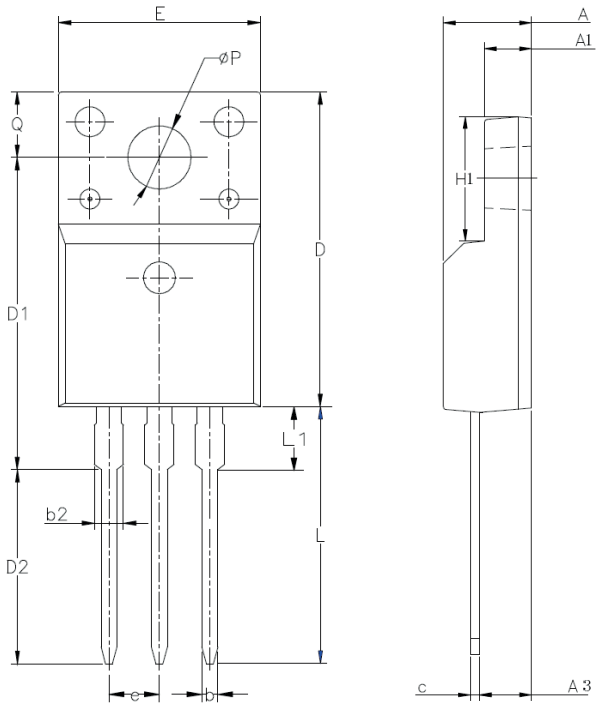


Figure 9. Safe Operation Area

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	2.80	0.091	0.110
A3	2.50	3.10	0.098	0.122
b	0.55	0.85	0.022	0.033
b2	-	1.29	-	0.051
c	0.35	0.65	0.014	0.026
D	15.25	16.25	0.600	0.640
D1	13.97	14.97	0.550	0.589
D2	10.58	11.58	0.417	0.456
E	9.73	10.36	0.383	0.408
e	2.54 BSC		0.10 BSC	
H1	6.40	7.00	0.252	0.276
L	12.48	13.48	0.491	0.531
L1	-	2.00	-	0.079
ΦP	3.00	3.40	0.118	0.134
Q	3.05	3.55	0.120	0.140