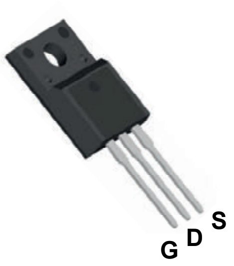
GOOD-ARK
SEMICONDUCTOR

GSFU6008

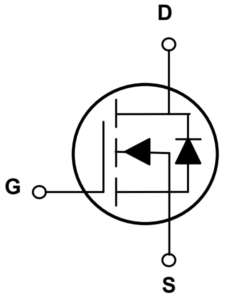
600V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	600V
$R_{DS(ON)}$	0.57Ω (Max.)
I_D	7A



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 GSFU6008 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	Max.	Unit
Drain-Source Voltage	V_{DSS}	600	V
Gate-Source Voltage	V_{GSS}	±30	V
Continuous Drain Current @ Steady-State, T_C=25°C	I_D	7	A
Continuous Drain Current @ Steady-State, T_C=100°C		4.4	A
Pulsed Drain Current	I_{DM}	28	A
Single Pulsed Avalanche Energy[1]	E_{AS}	221	mJ
Power Dissipation, T_C=25°C	P_D	28	W
		0.22	W/°C
Body Diode Reverse Voltage Slope[2]	dv/dt	50	V/ns
MOS dv/dt Ruggedness[3]	dv/dt	100	V/ns
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.4	°C/W
Junction to Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.5	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (T_C=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	600	-	-	V
Drain- Source Leakage Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V	-	-	200	nA
Gate-Source Forward Leakage	I_{GSS}	V_{GS}=±30V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	-	4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=3.5A, T_J=25°C	-	0.47	0.57	Ω
		V_{GS}=10V, I_D=3.5A, T_J=125°C	-	0.95	-	
Gate Resistance	R_g	f=1.0MHz	-	4.7	-	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=100V, V_{GS}=0V, f=1.0MHz	-	602	-	pF
Output Capacitance	C_{oss}		-	25	-	pF
Reverse Transfer Capacitance	C_{rss}		-	0.8	-	pF
Total Gate Charge[4,5]	Q_g	V_{DD}=480V, I_D=7A, V_{GS}=10V	-	19	-	nC
Gate-Source Charge[4,5]	Q_{gs}		-	5.1	-	nC
Gate-Drain ("Miller") Charge[4,5]	Q_{gd}		-	8.6	-	nC
Switching Characteristics						
Turn-On Delay Time[4,5]	$t_{d(on)}$	V_{DD}=300V, I_D=7A, R_G=25Ω,V_{GS}=10V	-	20	-	nS
Turn-On Rise Time[4,5]	t_r		-	40	-	nS
Turn-Off Delay Time [4,5]	$t_{d(off)}$		-	91	-	nS
Turn-Off Fall Time [4,5]	t_f		-	38	-	nS
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I_S	T_C=25°C, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	7	A
Source Pulse Current	I_{SM}		-	-	28	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=7A	-	-	1.4	V
Reverse Recovery Time[3]	t_{rr}	V_{GS}=0V, I_F=7A, di/dt= 100A/μS	-	240	-	nS
Reverse Recovery Charge[3]	Q_{rr}		-	2.4	-	μC

Notes:

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

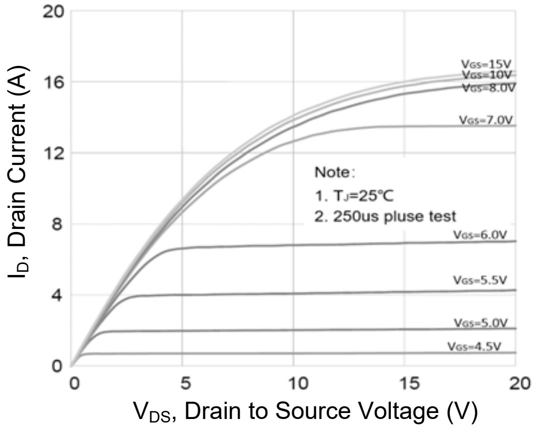


Figure 1. Typical Output Characteristics

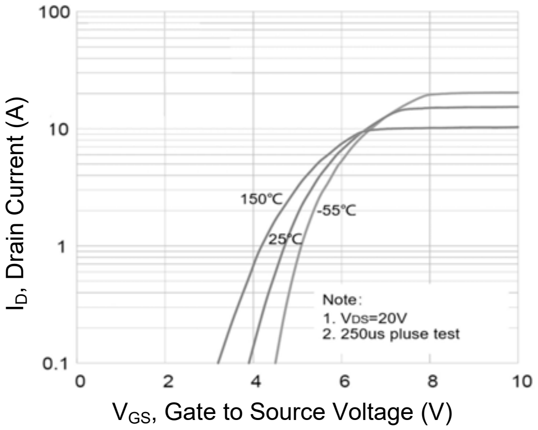


Figure 2. Transfer Characteristics

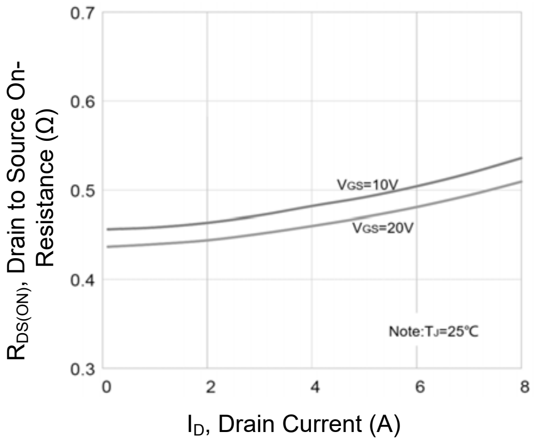


Figure 3. $R_{DS(ON)}$ vs. Drain Current

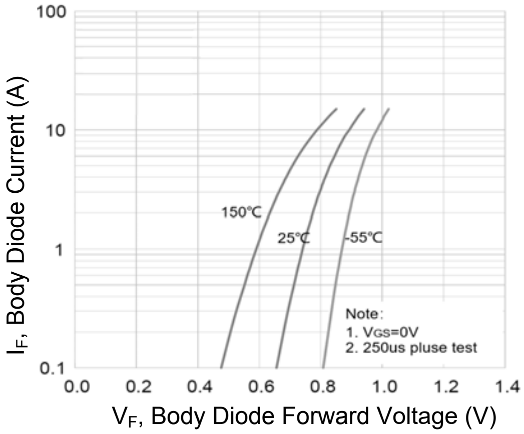


Figure 4. Body Diode Characteristics

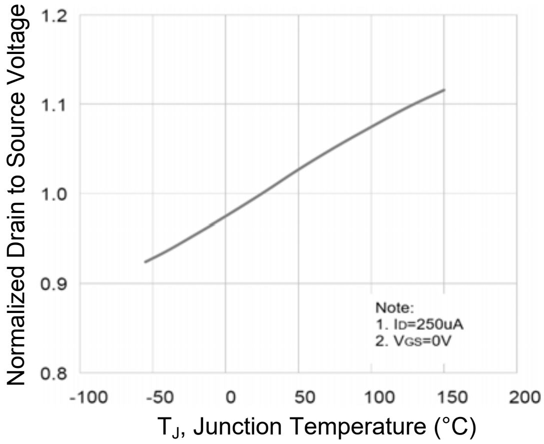


Figure 5. Normalized BV_{DSS} vs. Junction Temperature

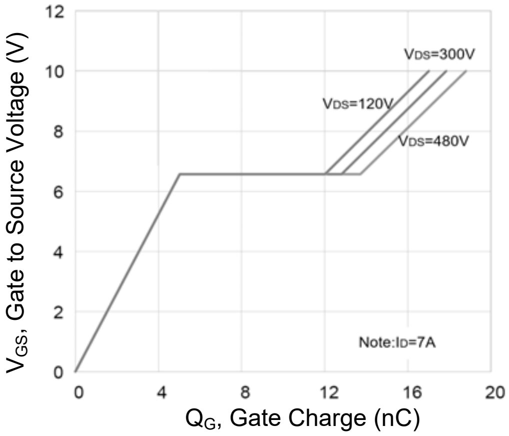


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

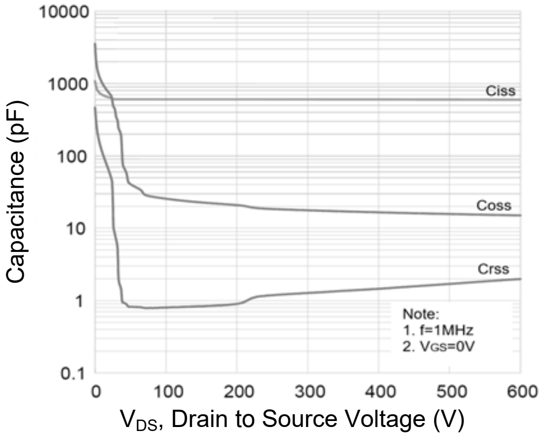


Figure 7. Capacitance Characteristics

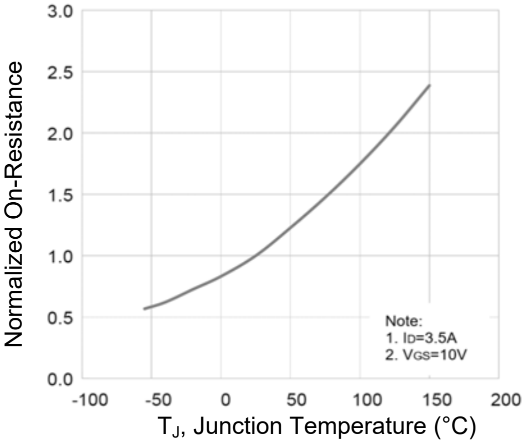


Figure 8. Normalized $R_{DS(ON)}$ vs. Junction Temperature

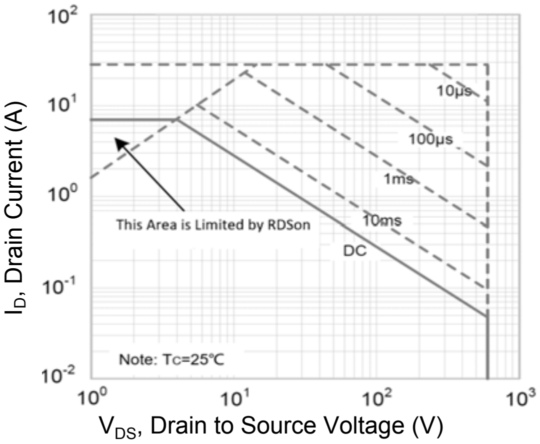
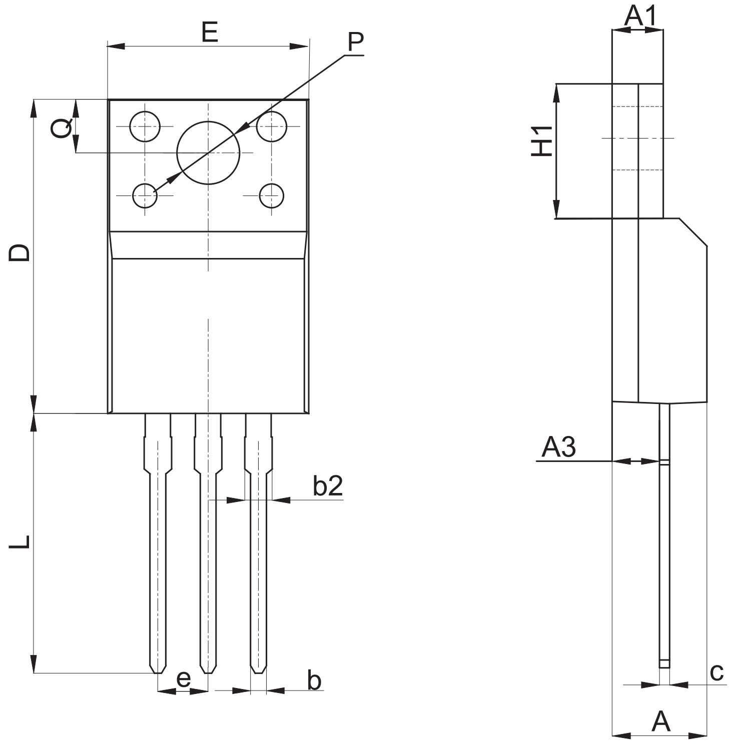


Figure 9. Safe Operation Area

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
GSFU6008	TO-220F	U60R570	Tube	50 pcs / Tube

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