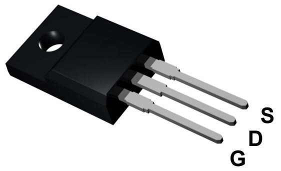
GOOD-ARK
SEMICONDUCTOR

GSFU2016

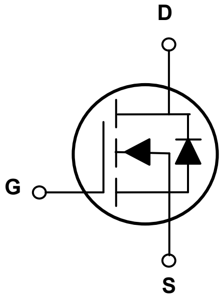
200V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	200V
$R_{DS(ON)}$	0.16Ω (Max.)
I_D	18A



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 GSFU2016 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_{DS}	200	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current @ Steady-State, T_C=25°C[1]	I_D	18	A
Continuous Drain Current @ Steady-State, T_C=100°C		11	A
Pulsed Drain Current[2]	I_{DM}	72	A
Single Pulsed Avalanche Energy[3]	E_{AS}	635	mJ
Power Dissipation, T_C=25°C	P_D	50	W
Linear Derating Factor, T_C=25°C		0.4	W/°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	°C/W
Junction to Ambient (PCB Mounted, Steady-State)[4]	$R_{\theta JA}$	62	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
On / Off Characteristic						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	200	-	-	V
Drain- Source Leakage Current	I_{DSS}	V_{DS}=200V, V_{GS}=0V	-	-	1	μA
		T_J=125°C	-	-	50	
Gate to Source Forward Leakage	I_{GSS}	V_{GS}=±20V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.1	3	3.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=9A	-	0.12	0.16	Ω
Gate Resistance	R_g	f=1.0MHz	-	6.6	-	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	1108	-	pF
Output Capacitance	C_{oss}		-	160	-	pF
Reverse Transfer Capacitance	C_{rss}		-	34	-	pF
Total Gate Charge	Q_g	V_{DS}=160V, I_D=11A, V_{GS}=10V	-	41	-	nC
Gate-Source Charge	Q_{gs}		-	6	-	nC
Gate-Drain ("Miller") Charge	Q_{gd}		-	20	-	nC
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=100V, I_D=11A, R_G=2.5Ω, V_{GS}=10V	-	15	-	nS
Rise Time	t_r		-	47	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	110	-	nS
Fall Time	t_f		-	36	-	nS
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	18	A
Source Pulse Current (Body Diode)	I_{SM}		-	-	72	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=11A	-	-	1.4	V
Reverse Recovery Time	t_{rr}	T_J=25°C, I_F=11A, di/dt=100A/μS	-	160	-	nS
Reverse Recovery Charge	Q_{rr}		-	0.98	-	μC

Notes:

1. Pulse test: Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. L=30mH, V_{DD}=100V, T_J=25°C.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

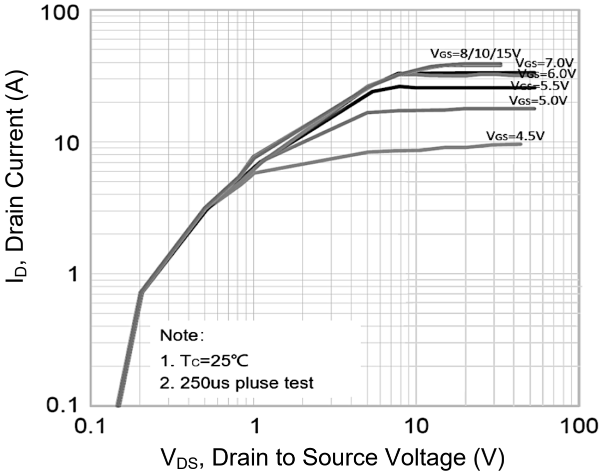


Figure 1. Typical Output Characteristics

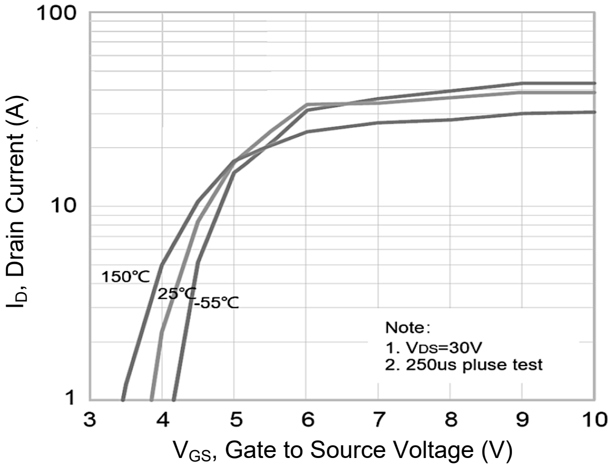


Figure 2. Transfer Characteristics

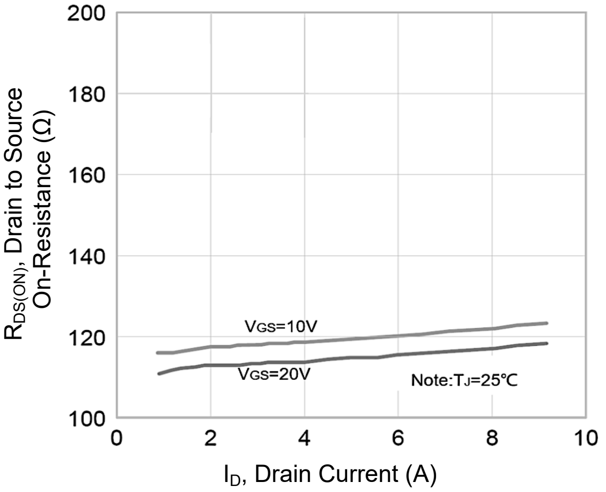


Figure 3. $R_{DS(ON)}$ vs. Drain Current

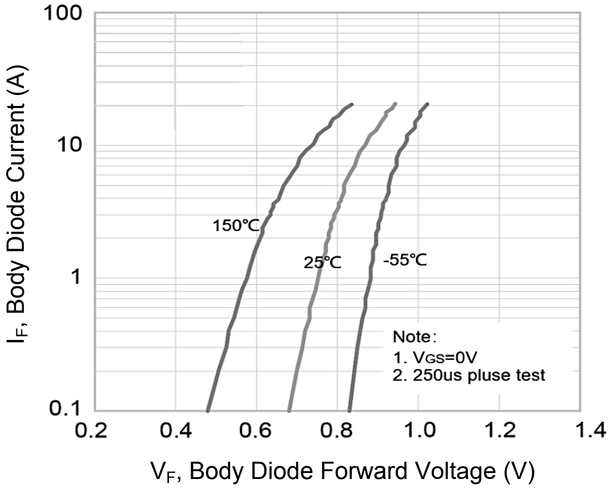


Figure 4. Body Diode Characteristics

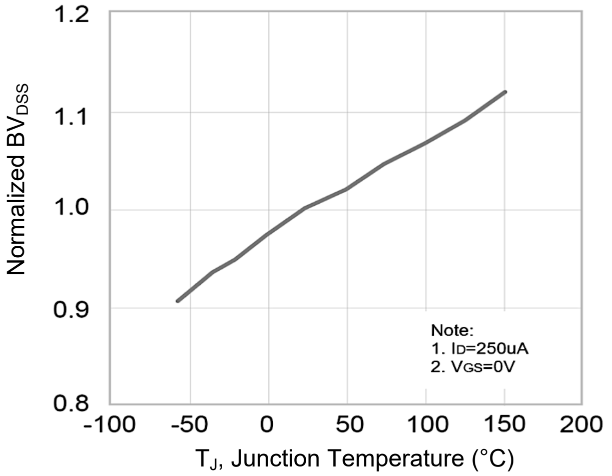


Figure 5. Normalized BV_{DSS} vs. T_J

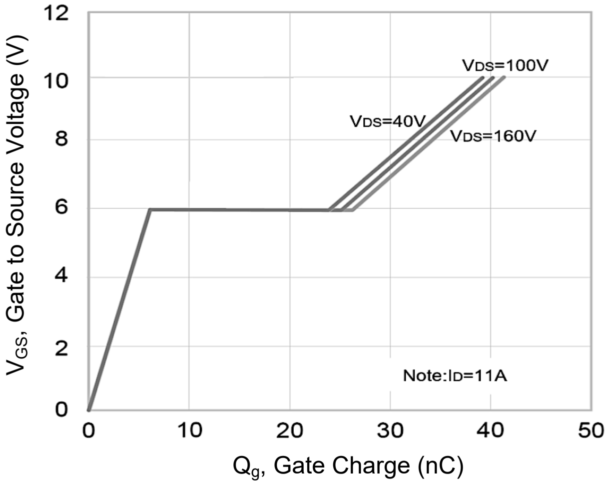


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

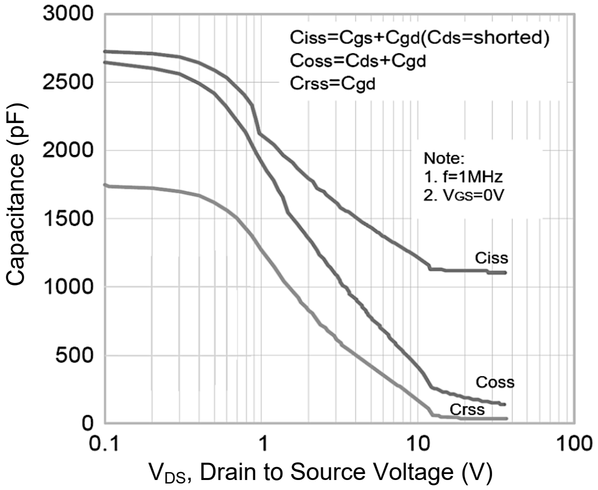


Figure 7. Capacitance Characteristics

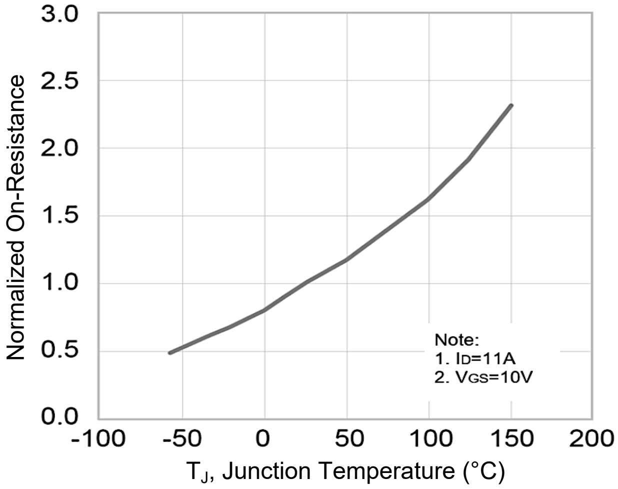


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

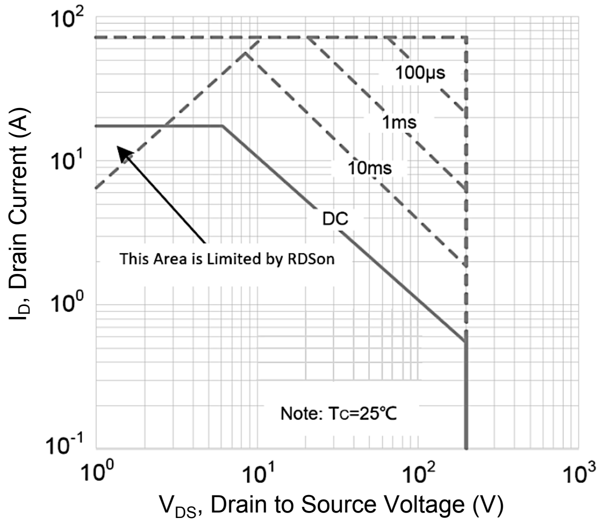
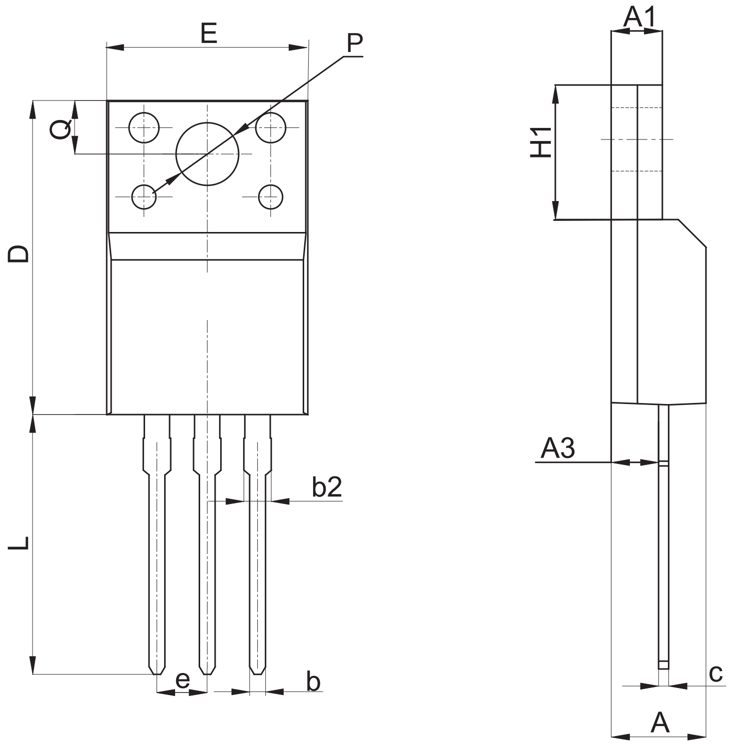


Figure 9. Safe Operation Area

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	Packaging	SPQ
GSFU2016	TO-220F	U2016	Tube	50 Pcs / Tube

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