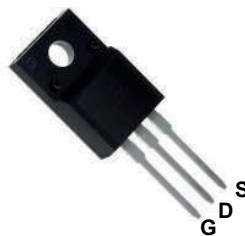
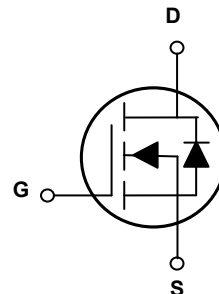


### Main Product Characteristics

$V_{(BR)DSS}$	60V
$R_{DS(ON)}$	28mΩ (Max.)
$I_D$	64A



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 GSFU250N06 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 ( $T_C=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-to-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current, @ Steady-State ( $T_C=25^{\circ}C$ ) <sup>1</sup>	$I_D$	64	A
Continuous Drain Current, @ Steady-State ( $T_C=100^{\circ}C$ )		45	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	256	A
Power Dissipation ( $T_C=25^{\circ}C$ )	$P_D$	140	W
Linear Derating Factor ( $T_C=25^{\circ}C$ )		0.94	W/°C
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	256	mJ
Junction-to-Case	$R_{\theta JC}$	1.07	°C/W
Junction-to-Ambient (PCB Mounted, Steady-State) <sup>4</sup>	$R_{\theta JA}$	62.0	°C/W
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +175	°C

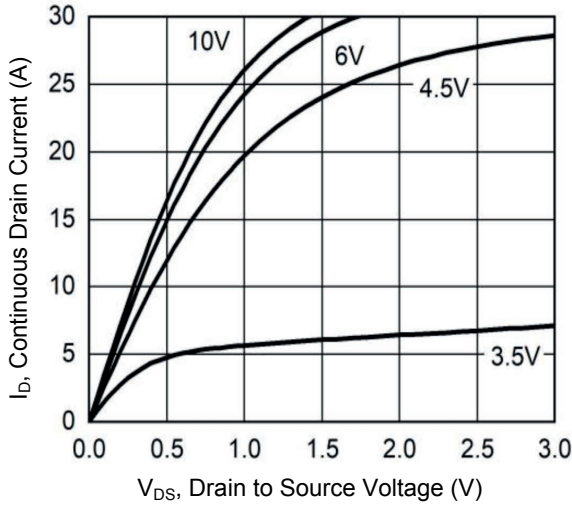
**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1.0	$\mu A$
		$V_{DS}=60V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	1.2	-	
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{DS}=0V, V_{GS}=20V$	-	-	100	nA
		$V_{DS}=0V, V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=15A$	-	23	28	m $\Omega$
		$V_{GS}=4.5V, I_D=8A$	-	26	34	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.1	-	2.7	V
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=30V, f=1\text{MHz}$	-	1051	-	pF
Output Capacitance	$C_{oss}$		-	108	-	
Reverse Transfer Capacitance	$C_{rss}$		-	100	-	
Total Gate Charge	$Q_g$	$I_D=10A, V_{DD}=30V, V_{GS}=10V$	-	32	-	nC
Gate-to-Source Charge	$Q_{gs}$		-	3.4	-	
Gate-to-Drain ("Miller") Charge	$Q_{gd}$		-	6.4	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, V_{GS}=10V, R_G=3\Omega, I_D=10A$	-	13	-	nS
Rise Time	$t_r$		-	2.6	-	
Turn-Off Delay Time	$t_{d(off)}$		-	27	-	
Fall Time	$t_f$		-	3.3	-	
Gate Resistance	$R_g$	$f=1\text{MHz}$	-	1.3	-	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	64	A
Diode Pulse Current	$I_{S,pulse}$		-	-	256	A
Diode Forward Voltage	$V_{SD}$	$I_S=5A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time	$T_{rr}$	$I_S=10A, V_{GS}=0V, V_R=30V, di_F/dt=100A/\mu s$	-	19	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	15	-	nC

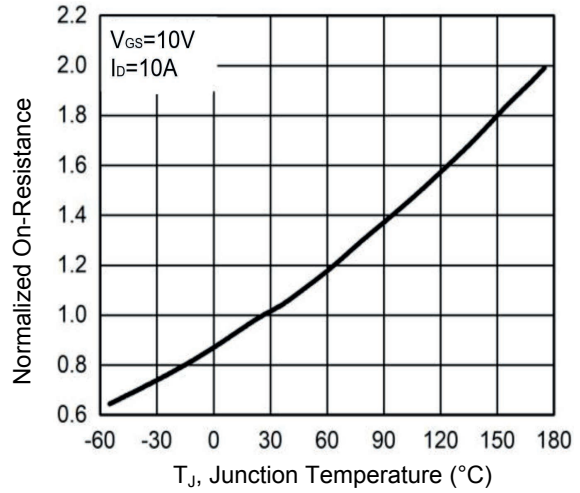
Notes

1. Pulse test: Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $L=0.5\text{mH}, V_{DD}=30V, R_G=25\Omega, T_J=25^\circ\text{C}$ .
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

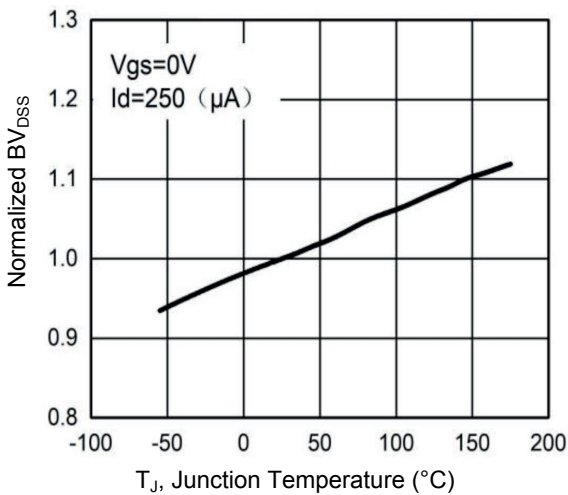
**Typical Electrical and Thermal Characteristic Curves**



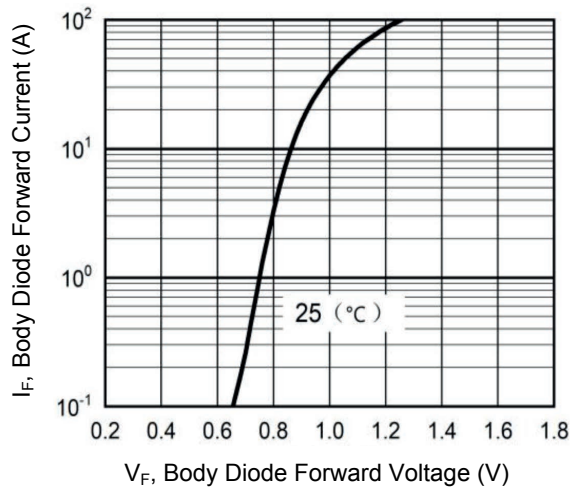
**Figure 1. Output Characteristics**



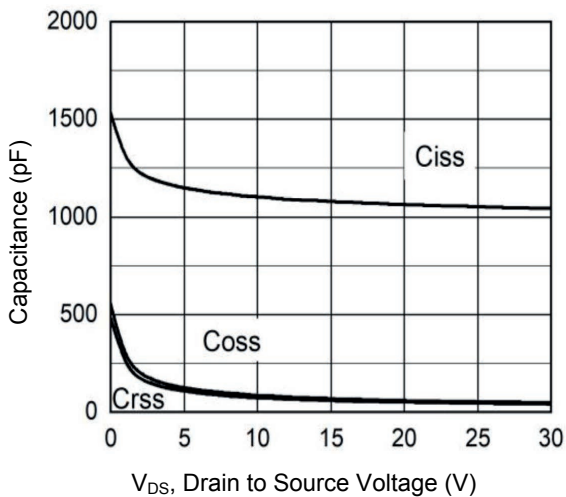
**Figure 2. Normalized  $R_{DS(on)}$  vs.  $T_J$**



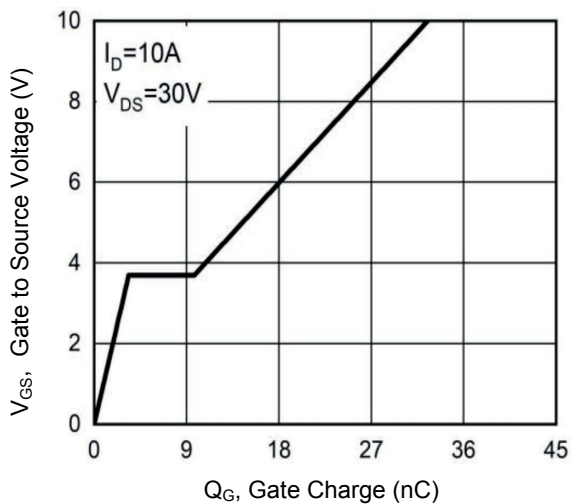
**Figure 3. Normalized  $BV_{DSS}$  vs.  $T_J$**



**Figure 4. Body Diode Characteristics**

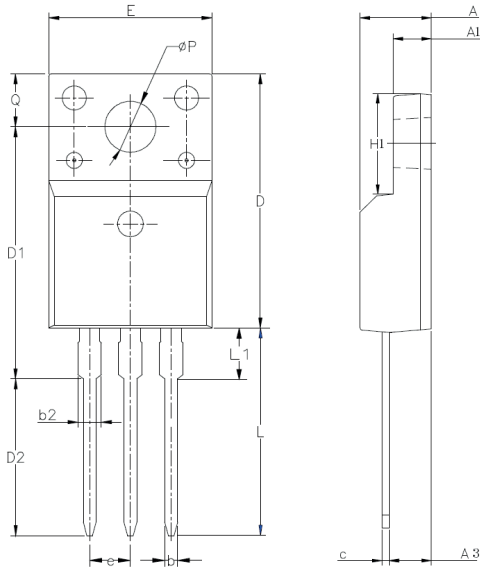


**Figure 5. Capacitance Characteristics**



**Figure 6. Gate Charge Characteristics**

**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	0.020	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 BCS		0.10 BCS	
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

**Order Information**

Device	Package	Marking	Carrier	Quantity
GSFU250N06	TO-220F	250N06	Tube	50 pcs / Tube

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