Bruckewell Technology Corp., Ltd.

http://www.bruckewell-semi.com

Product Specification

N-Channel Enhancement Mode Power MOSFET

MSF6N60

●Description

The MSF6N60 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220F package is universally preferred for all commercial-industrial applications

●FEATURES:

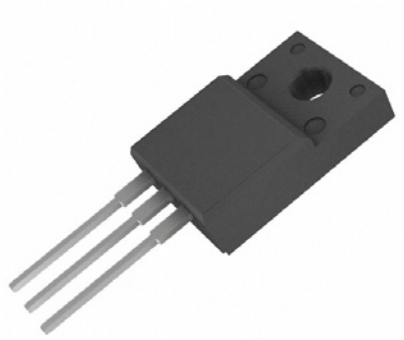
- BVDSS=650V typically @ Tj=150°C
- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

●APPLICATION:

- Open Framed Power Supply
- Adapter
- STB

ID=5.5A
VDS=600V
RDS(on)max = 2.0Ω
@VGS = 10 V

TO220F



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain to Source Voltage	600	V
V_{GS}	Gate to Source Voltage	±30	V
I_D	Continuous Drain Current(@T_C = 25 °C)	5.5	A
	Continuous Drain Current(@T_C = 100 °C)	3.3	A
I_{DM}	Drain Current Pulsed	22	A
E_{AS}	Single Pulsed Avalanche Energy	300	mJ
I_{AR}	Avalanche Current	5.5	A
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns
T_L	Maximum Temperature for Soldering @ Lead at 0.125 in(0.318mm) from case for 10 seconds	300	°C
T_{PKG}	Maximum Temperature for Soldering @ Package Body for 10 seconds	260	°C
P_D	Total Power Dissipation(@T_C = 25 °C)	40	W
	Derating Factor above 25 °C	0.31	W/°C
T_{STG}	Operating Junction Temperature	-55 ~ 150	°C
T_J	Storage Temperature	150	°C

Note:

1.Repetitive rating; pulse width limited by maximum junction temperature.

2. IAS=4A, VDD=50V, L=8mH, VG=10V, starting TJ=+25°C.

3. ISD≤4A, dI/dt≤100A/ μ s, VDD≤BVDSS, starting TJ=+25°C.

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min.	Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	-	-	3.7	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	-	62.5	°C/W

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 uA	600	-	-	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature coefficient	I_D = 250 uA, referenced to 25 °C	-	0.60	-	V/°C
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 uA	2.0	-	4.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS} = 600 V, V_{GS} = 0 V	-	-	1	uA
		V_{DS} = 480 V, T_C = 125 °C	-	-	10	nA
I_{GSS}	Gate-Source Leakage, Forward	V_{GS}=±30	-	-	100	nA
$R_{DS(ON)}$	Static Drain-Source On-state Resis-tance	V_{GS} = 10 V, I_D = 2.75 A	-	1.7	2.0	Ω
Dynamic Characteristics						
Q_g	Total Gate Charge	V_{DS} = 480 V, V_{GS} = 10 V, I_D = 5.5 A	-	16	20	nC
Q_{gs}	Gate-Source Charge		-	3.5	-	
Q_{gd}	Gate-Drain Charge(Miller Charge)		-	6.5	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=300V, I_D=5.5A, V_{GS}=10V, R_G=25Ω, R_D=75Ω	-	15	40	ns
t_r	Rise Time		-	45	100	
$t_{d(off)}$	Turn-off Delay Time		-	45	100	
t_f	Fall Time		-	45	100	
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	620	810	pF
C_{oss}	Output Capacitance		-	65	85	
C_{rss}	Reverse Transfer Capacitance		-	7	10	

- **Characteristic Curves**

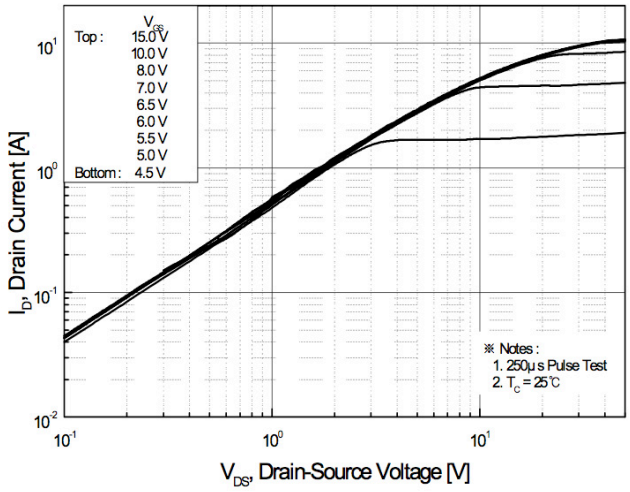


Figure 1. On Region Characteristics

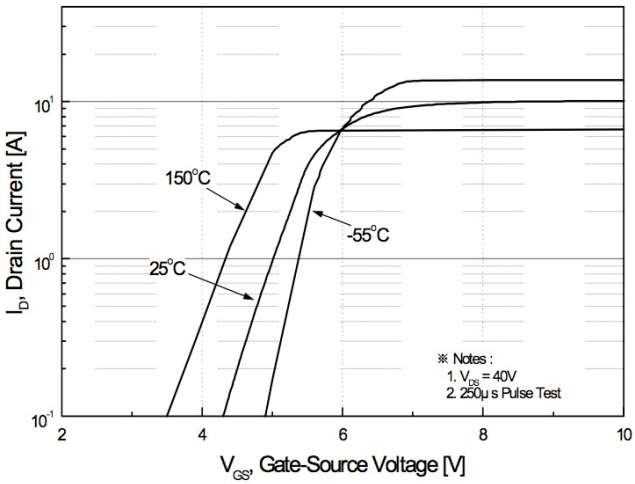


Figure 2. Transfer Characteristics

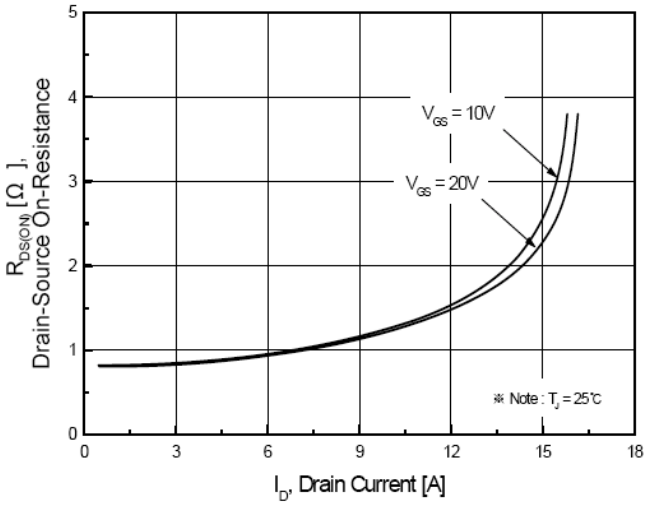


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

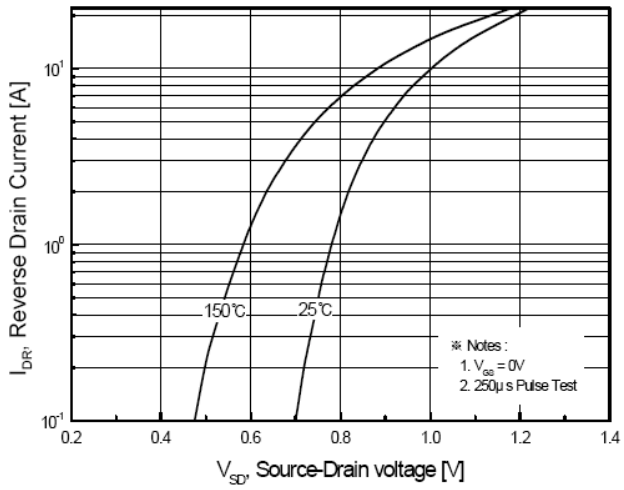


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

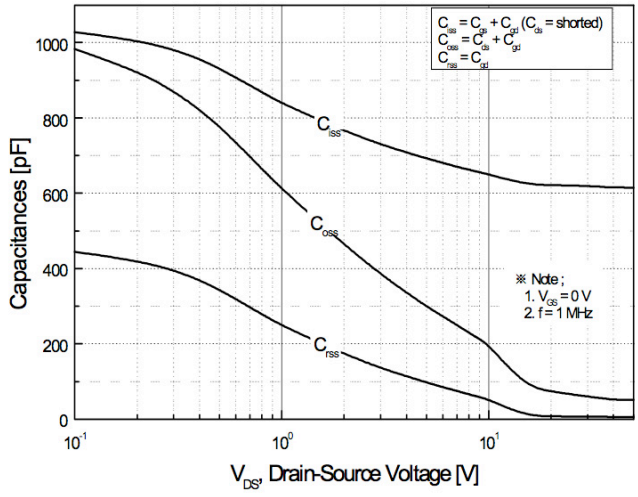


Figure 5. Capacitance Characteristics

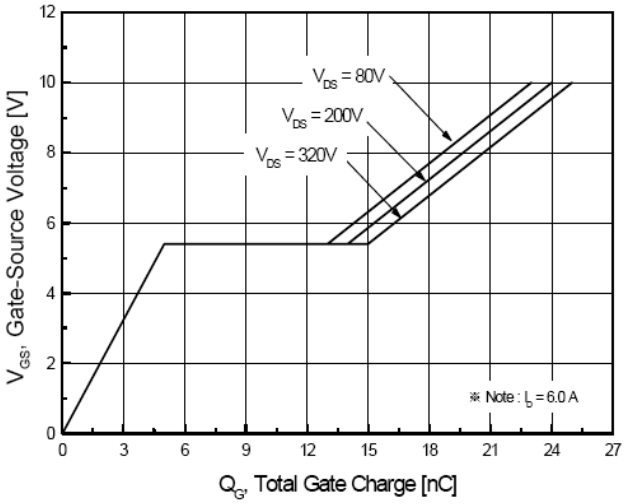


Figure 6. Gate Charge Characteristics

- **Characteristic Curves**

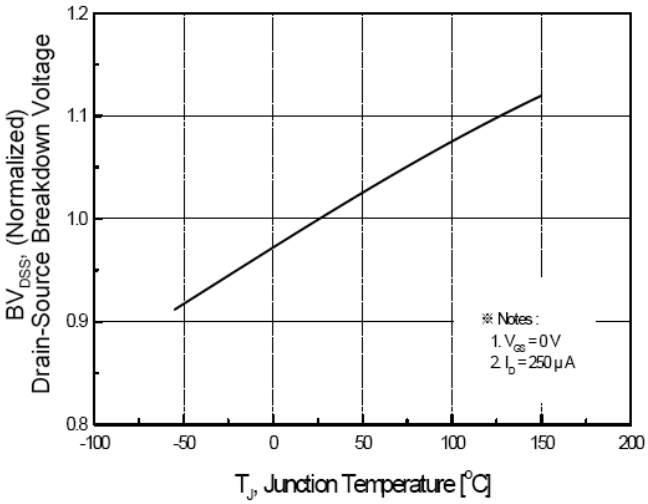


Figure 7. Breakdown Voltage Variation vs. Temperature

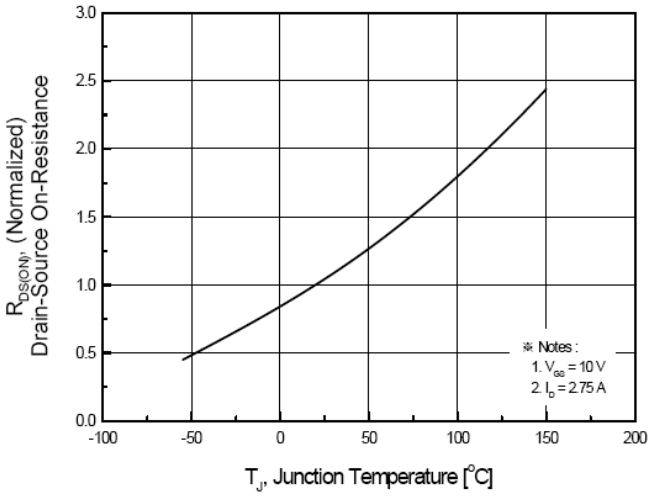


Figure 8. On-Resistance Variation vs. Temperature

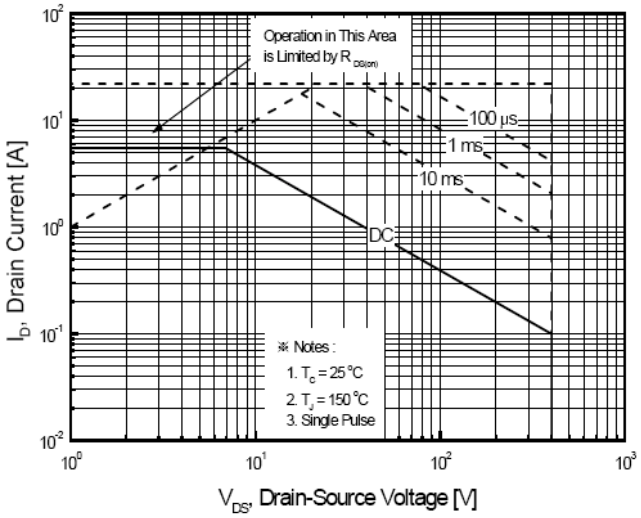


Figure 9. Maximum Safe Operating Area

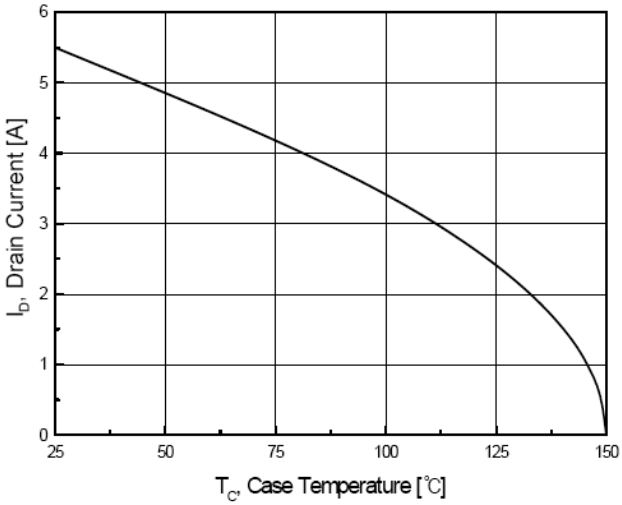


Figure 10. Maximum Drain Current vs. Case Temperature

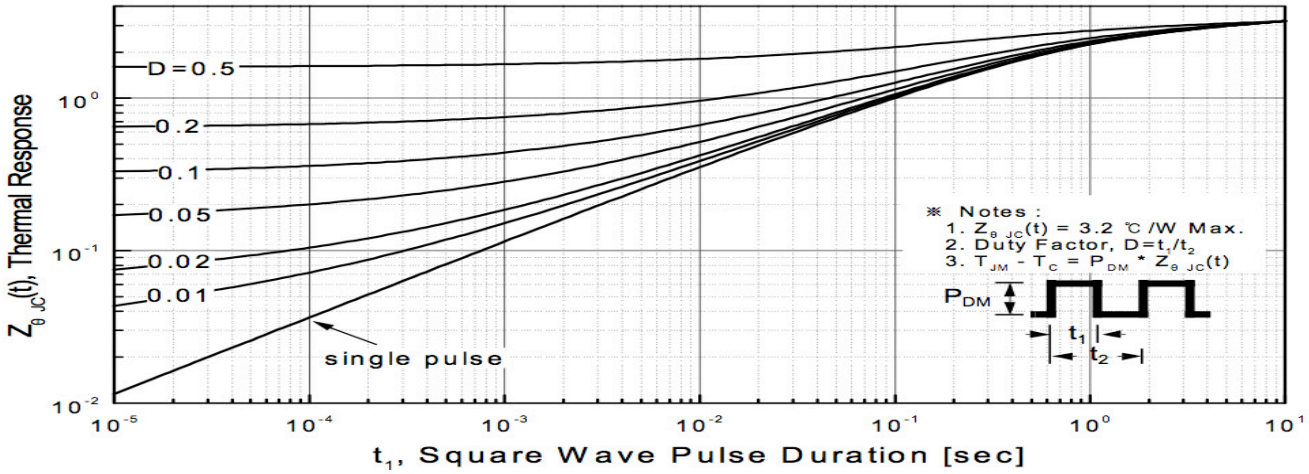


Figure 11. Transient Thermal Response Curve