

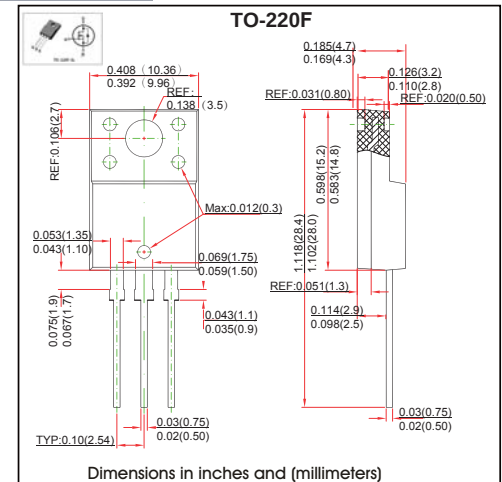
TO-220F Plastic-Encapsulate MOSFETS

Features

- Low Intrinsic Capacitances
- Excellent Switching Characteristics
- Extended Safe Operating Area
- Unrivalled Gate Charge : 16 nC (Typ.)
- BVDSS=600V, ID=5.5A
- Lower RDS(on) : 2.0Ω (Max) @VG=10V
- 100% Avalanche Tested
- 600V N-Channel MOSFET

MECHANICAL DATA

- Case style: TO-220F molded plastic
- Mounting position: any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Symbol	Parameter	6N60	Units
V_{DS}	Drain-Source Voltage	600	V
I_D	Drain Current -continuous ($T_c=25^\circ\text{C}$)	5.5*	A
	-continuous ($T_c=100^\circ\text{C}$)	2.2*	A
V_{GS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Plused Avanche Energy (Note1)	300	mJ
I_{AR}	Avalanche Current (Note2)	5.5	A
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	40	W
T_J, T_{STG}	Operating and Storage Temperature Range	$-55 \sim +150$	$^\circ\text{C}$
TL	Maximum lead temperature for soldering purpose, 1/8" from case for 5 seconds	300	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	--	3.2	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	--	62.5	$^\circ\text{C/W}$

* Drain current limited by maximum junction temperature.

MOSFET ELECTRICAL CHARACTERISTICS $T_A=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	ID=250 μ A, VGS=0	600	--	--	V
ΔBV _{DSS} / ΔT _J	Breakdown Voltage Temperature Concipient	I _D =250 μ A,Reference to 25℃	--	0.6	--	V/℃
IDSS	Zero Gate Voltage Drain Current	Vds=600V, Vgs=0V	--	--	1	μ A
		Vds=480V, Tc=125℃			10	μ A
IGSSF	Gate-body leakage Current, Forward	Vgs=+30V, Vds=0V	--	--	100	nA
IGSSR	Gate-body leakage Current, Reverse	Vgs=-30V, Vds=0V	--	--	-100	nA
On Characteristics						
V _{GS(th)}	Date Threshold Voltage	Id=250uA,Vds=Vgs	2	--	4	V
R _{DS(on)}	Static Drain-Source On-Resistance	Id=2.75A,Vgs=10V	--	--	2.0	Ω
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=25V, VGS=0, f=1.0MHz	--	620	810	pF
Coss	Output Capacitance		--	65	85	pF
Crss	Reverse Transfer Capacitance		--	7	10	pF
Switching Characteristics						
Td(on)	Turn-On Delay Time	VDD=300V, ID=5.5A RG=25 Ω (Note 3,4)	--	15	40	nS
Tr	Turn-On Rise Time		--	45	100	nS
Td(off)	Turn-Off Delay Time		--	45	100	nS
Tf	Turn-Off Fall Time		--	45	100	nS
Qg	Total Gate Charge	VDS=480,VGS=10V, ID=5.5A (Note 3,4)	--	16	20	nC
Qgs	Gate-Source Charge		--	3.5	--	nC
Qgd	Gate-Drain Charge			6.5	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximun Continuous Drain-Source Diode Forward Current		--	--	5.5	A
I _{SM}	Maximun Plused Drain-Source DiodeForwad Current		--	--	22	A
V _{SD}	Drain-Source Diode Forward Voltage	Id=5.5A	--	--	1. 4	V
trr	Reverse Recovery Time	I _S =5.5A,V _{GS} =0V	--	310	--	nS
Qrr	Reverse Recovery Charge	di _F /dt=100A/ μ S (Note3)	--	2.1	--	μ C
*Notes	1, L=18.2mH, IAS=5.5A, VDD=50V, RG=25Ω, Starting TJ =25℃ 2, Repetitive Rating : Pulse width limited by maximum junction temperature 3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2% 4, Essentially Independent of Operating Temperature					

■ Typical Characteristics

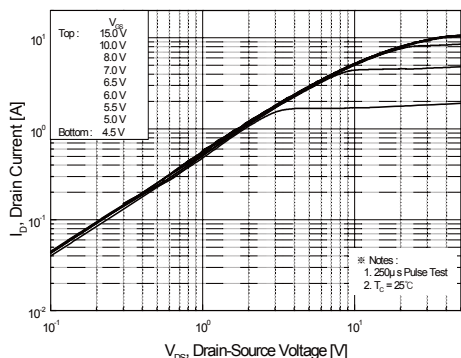


Figure 1. On-Region Characteristics

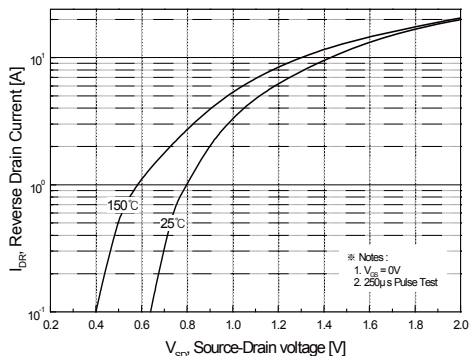


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

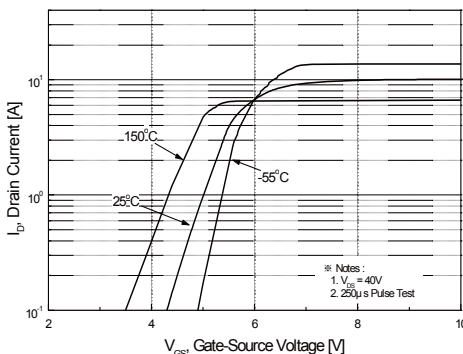


Figure 2. Transfer Characteristics

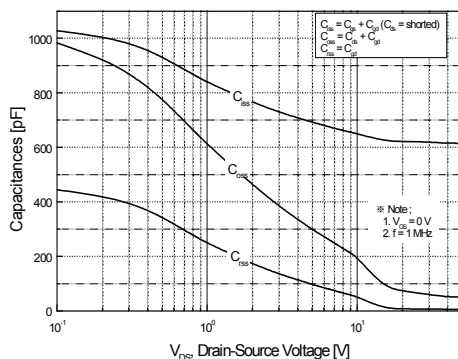


Figure 5. Capacitance Characteristics

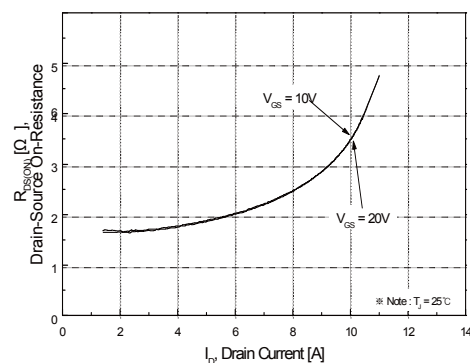


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

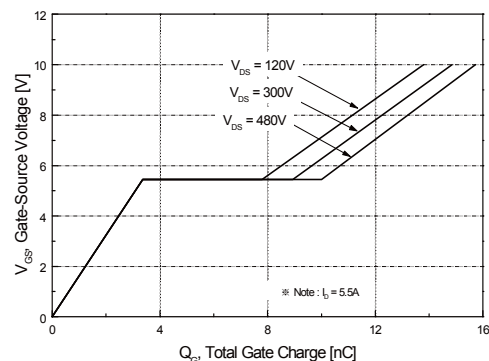


Figure 6. Gate Charge Characteristics

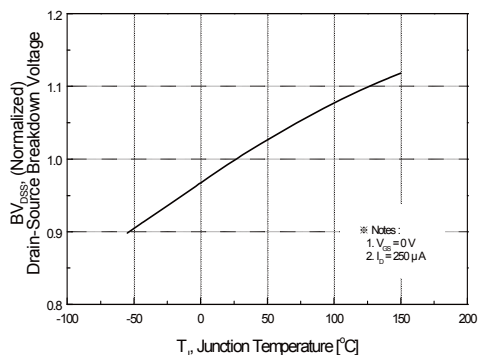


Figure 7. Breakdown Voltage Variation vs Temperature

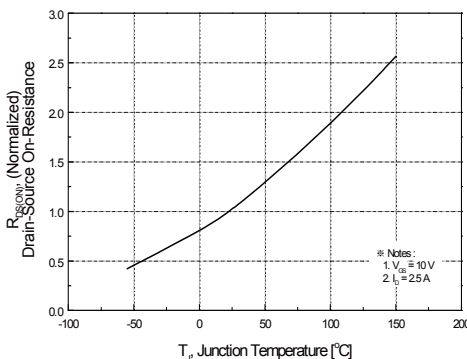


Figure 8. On-Resistance Variation vs Temperature

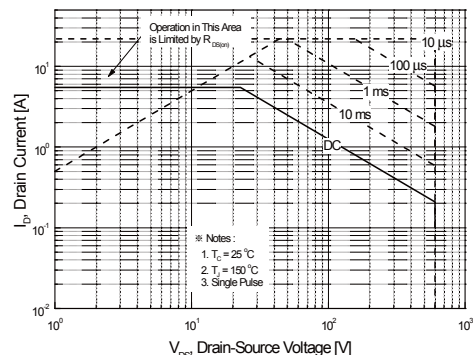


Figure 9-2. Maximum Safe Operating Area

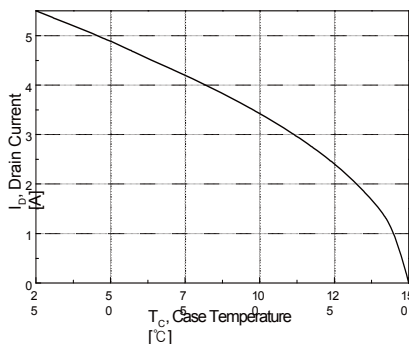


Figure 10. Maximum Drain Current vs Case Temperature

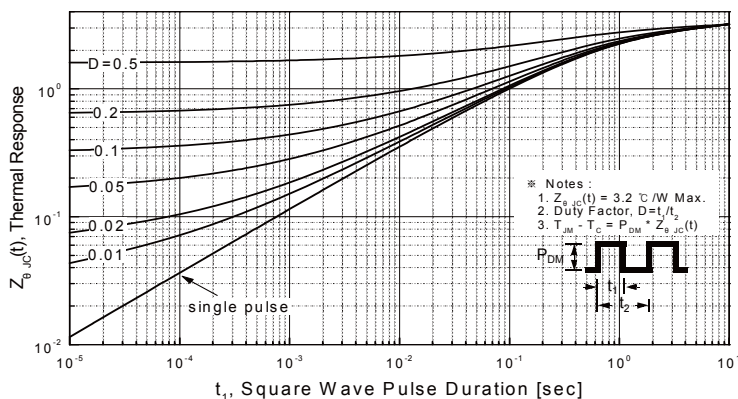


Figure 11-2. Transient Thermal Response Curve for WGF6N60