



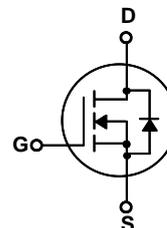
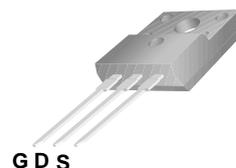
Technologies Int'l

## WFF8N60

600V N-Channel MOSFET

### Features

- Low Intrinsic Capacitances
- Excellent Switching Characteristics
- Extended Safe Operating Area
- Unrivalled Gate Charge :Qg= 40nC (Typ.)
- BVDSS=600V, ID=7.5A
- $R_{DS(on)}$  :1.32  $\Omega$  (Max) @VG=10V
- 100% Avalanche Tested



TO-220F

G-Gate,D-Drain,S-Source

### Absolute Maximum Ratings $T_c=25^\circ\text{C}$ unless other wise noted

Symbol	Parameter	WFF8 N60	Units
$V_{DSS}$	Drain-Source Voltage	600	V
$I_D$	Drain Current -continuous ( $T_c=25^\circ\text{C}$ )	7.5*	A
	-continuous ( $T_c=100^\circ\text{C}$ )	4.7*	A
$V_{GS}$	Gate-Source Voltage	$\pm 30$	V
$E_{AS}$	Single Plused Avanche Energy (Note1)	420	mJ
$I_{AR}$	Avalanche Current (Note2)	7.5	A
$P_D$	Power Dissipation ( $T_c=25^\circ\text{C}$ )	48	W
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 ~ +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	--	2.6	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	--	62.5	$^\circ\text{C}/\text{W}$

\* Drain current limited by maximum junction temperature.

Electrical Characteristics Tc=25°C unless other wise noted						
Symbol	Parameter	Test Condition	Min.	Typ.	Max	Units
<b>Off Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	ID=250 μ A, VGS=0	600	--	--	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	ID=250 μ A, Reference to 25°C	--	0.67	--	V/°C
IDSS	Zero Gate Voltage Drain Current	Vds=600V, Vgs=0V	--	--	10	μ A
		Vds=480V, Tc=125°C			100	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
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	Id=250uA, Vds=Vgs	2	--	4	V
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance	Id=3.7A, Vgs=10V	--	--	1.32	Ω
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=25V, VGS=0, f=1.0MHz	--	1100	1430	pF
Coss	Output Capacitance		--	135	175	pF
Crss	Reverse Transfer Capacitance		--	16	21	pF
<b>Switching Characteristics</b>						
Td(on)	Turn-On Delay Time	VDD=300V, ID=7A RG=25 Ω (Note 3,4)	--	30	70	nS
Tr	Turn-On Rise Time		--	80	170	nS
Td(off)	Turn-Off Delay Time		--	65	140	nS
Tf	Turn-Off Fall Time		--	60	130	nS
Qg	Total Gate Charge	VDS=480, VGS=10V, ID=7A (Note 3,4)	--	29	38	nC
Qgs	Gate-Source Charge		--	7	--	nC
Qgd	Gate-Drain Charge		14.5	--	--	nC
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
IS	Maximum Continuous Drain-Source Diode Forward Current		--	--	7.5	A
ISM	Maximum Pulsed Drain-Source Diode Forward Current		--	--	28	A
VSD	Drain-Source Diode Forward Voltage	Id=7A	--	--	1.5	V
trr	Reverse Recovery Time	IS=7A, VGS=0V	--	320	--	nS
Qrr	Reverse Recovery Charge	diF/dt=100A/ μ s (Note3)	--	2.4	--	μ C
*Notes	1, L=15.7mH, IAS=7.5A, VDD=50V, RG=25Ω, Starting TJ =25°C 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

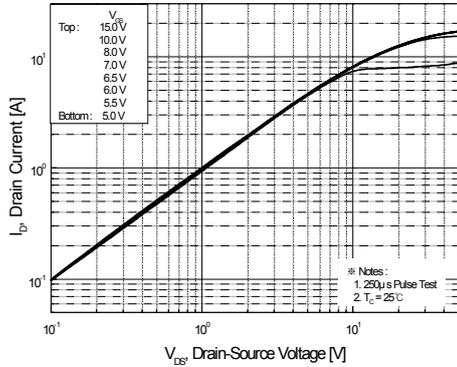


Figure 1. On-Region Characteristics

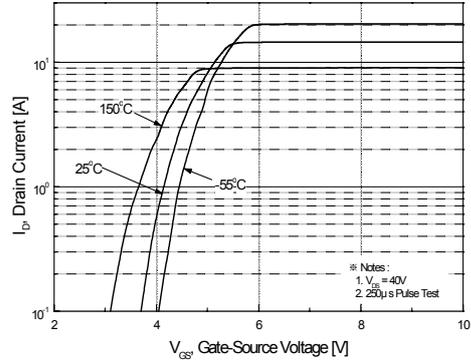


Figure 2. Transfer Characteristics

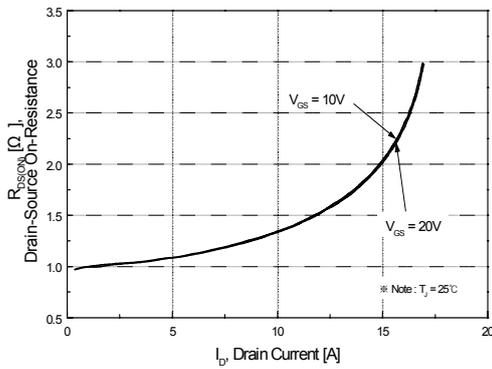


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

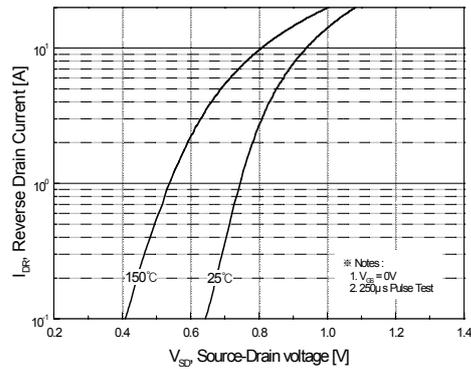


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

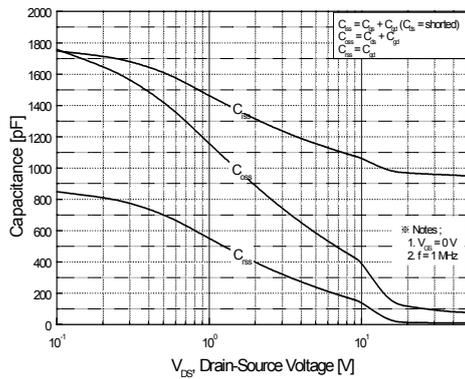


Figure 5. Capacitance Characteristics

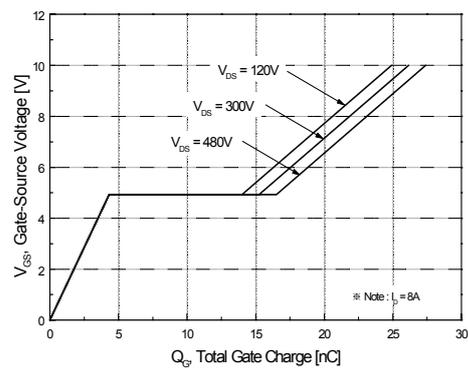
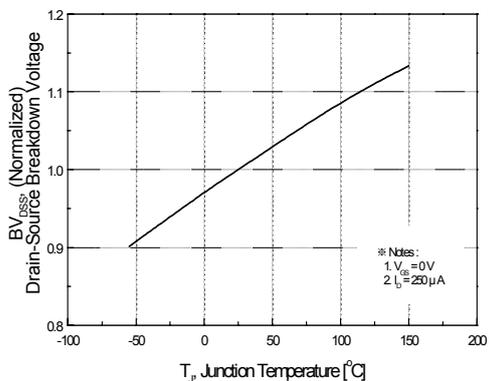
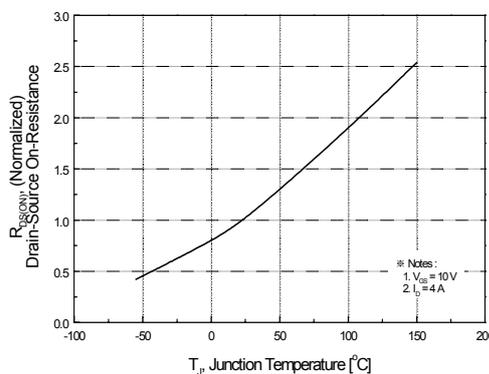


Figure 6. Gate Charge Characteristics

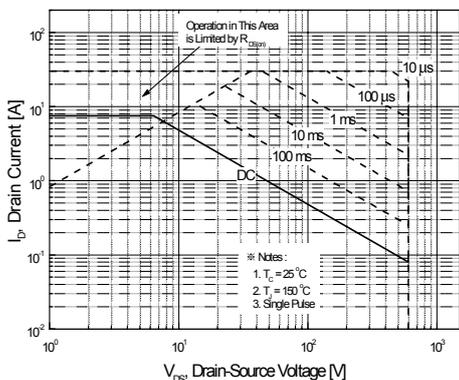
# Typical Characteristics (Continued)



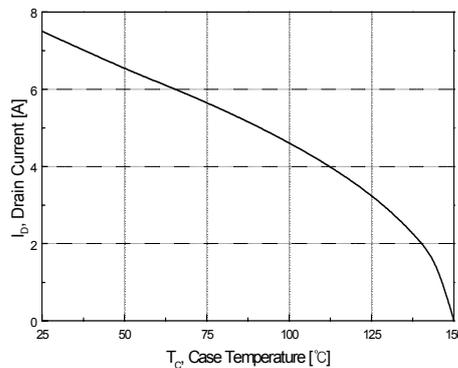
**Figure 7. Breakdown Voltage Variation vs Temperature**



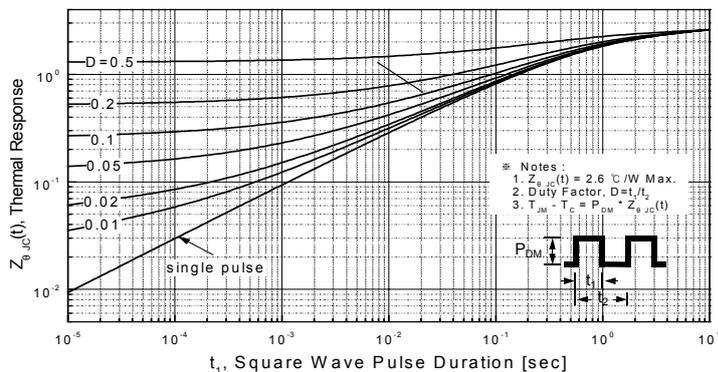
**Figure 8. On-Resistance Variation vs Temperature**



**Figure 9-2. Maximum Safe Operating Area for WFF8N60**

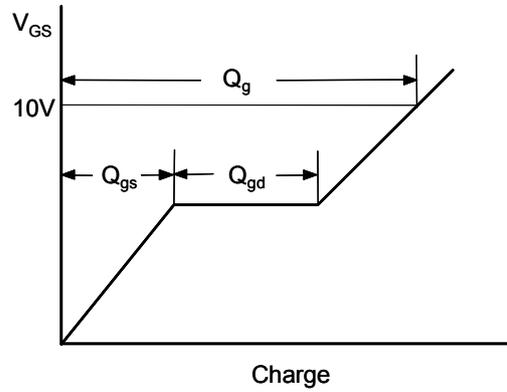
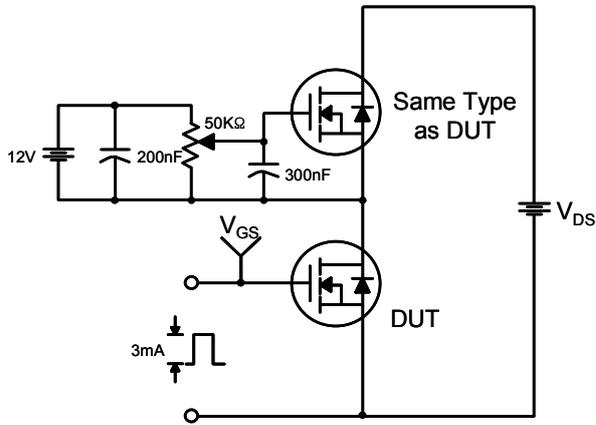


**Figure 10. Maximum Drain Current vs Case Temperature**

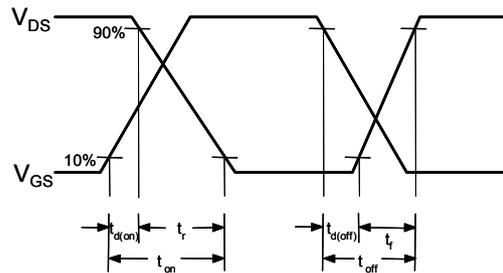
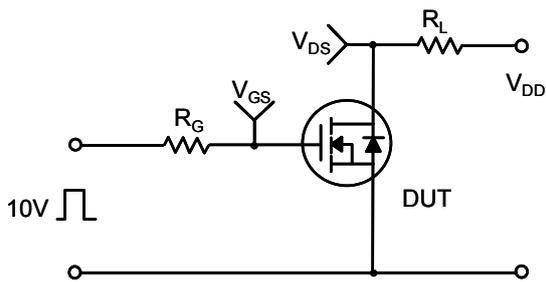


**Figure 11-2. Transient Thermal Response Curve for WFF8N60**

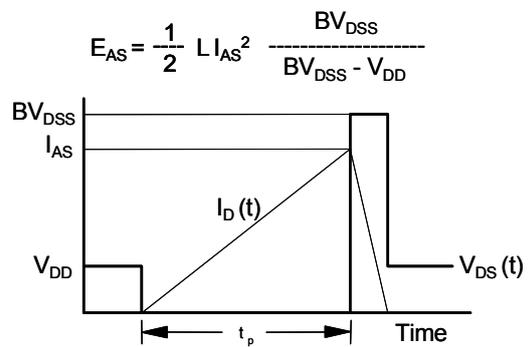
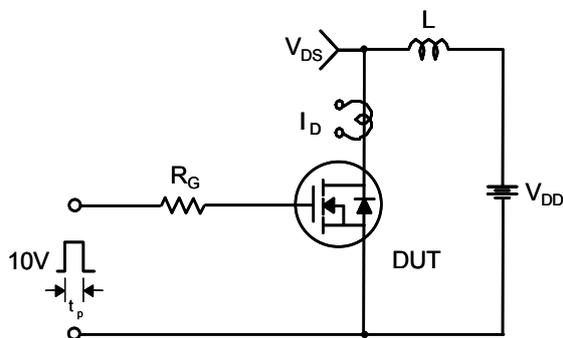
**Gate Charge Test Circuit & Waveform**



**Resistive Switching Test Circuit & Waveforms**



**Unclamped Inductive Switching Test Circuit & Waveforms**



Peak Diode Recovery dv/dt Test Circuit & Waveforms

