


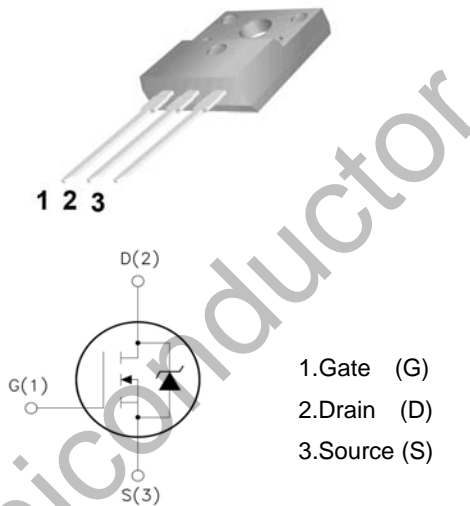
WGF30N10

100V N-Channel MOSFET

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg= 31nC (Typ.).
- BVDSS=100V, I_D= 30A
- R_{DS(on)} : 0.07Ω (Max) @V_G=10V
- 100% Avalanche Tested

TO-220F 



1. Gate (G)
2. Drain (D)
3. Source (S)

Absolute Maximum Ratings* (T_c=25°C Unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous	I _D	30	A
Drain Current-Continuous(T _C =100°C)	I _D (100°C)	12	A
Pulsed Drain Current	I _{DM}	60	A
Maximum Power Dissipation	P _D	55	W
Single pulse avalanche energy ^(Note 5)	E _{AS}	250	mJ
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 To 150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case(Note 2)	R _{θJC}	2.27	°C/W
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Electrical Characteristics (T_C=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	100	110	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.8	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A	-	56	70	mΩ
Forward Transconductance	g _{FS}	V _{DS} =50V, I _D =9A	12	-	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, F=1.0MHz	-	1350	-	PF
Output Capacitance	C _{OSS}		-	240	-	PF
Reverse Transfer Capacitance	C _{rss}		-	180	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =2A, R _L =15Ω V _{GS} =10V, R _G =2.5Ω	-	13.8	-	nS
Turn-on Rise Time	t _r		-	9.3	-	nS
Turn-Off Delay Time	t _{d(off)}		-	43.8	-	nS
Turn-Off Fall Time	t _f		-	11.4	-	nS
Total Gate Charge	Q _g	V _{DS} =30V, I _D =3A, V _{GS} =10V	-	31	-	nC
Gate-Source Charge	Q _{gs}		-	6.4	-	nC
Gate-Drain Charge	Q _{gd}		-	9.4	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =9A	-	-	1.2	V
Diode Forward Current	I _S		-	-	30	A
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition : T_j=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_G=25Ω

Typical Electrical and Thermal Characteristics (Curves)

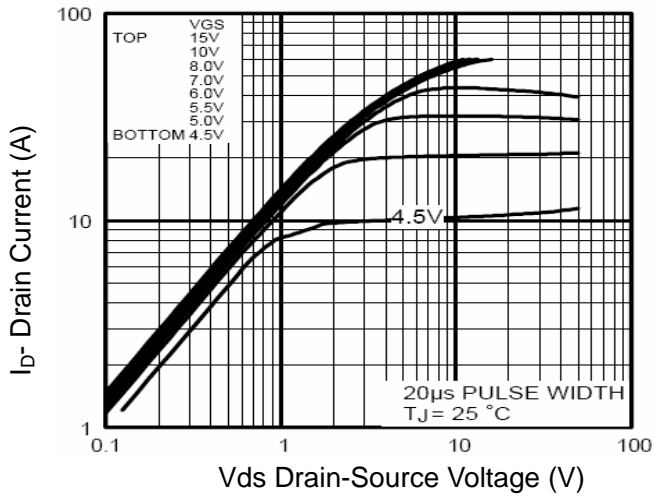


Figure 1 Output Characteristics

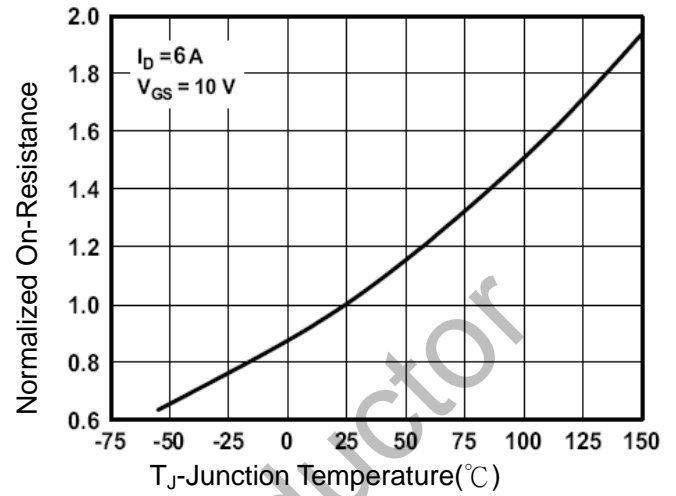


Figure 4 Rdson-Junction Temperature

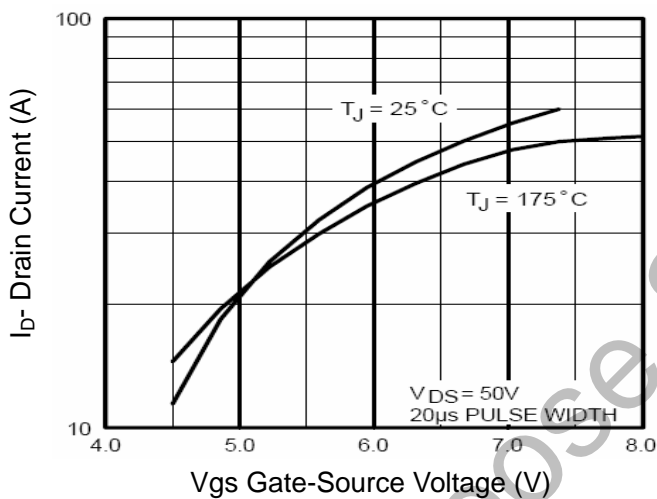


Figure 2 Transfer Characteristics

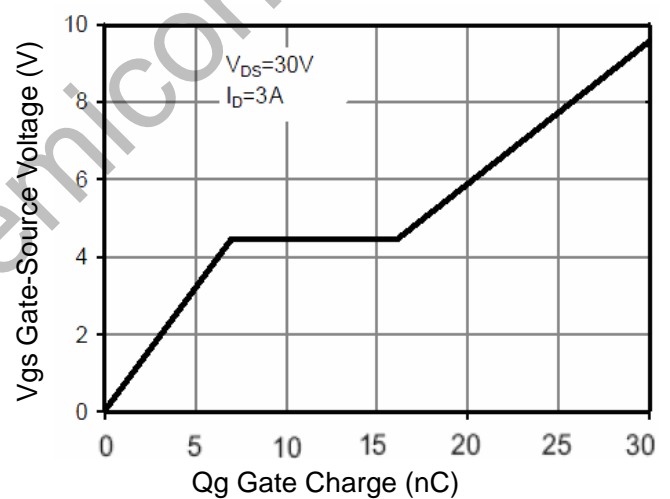


Figure 5 Gate Charge

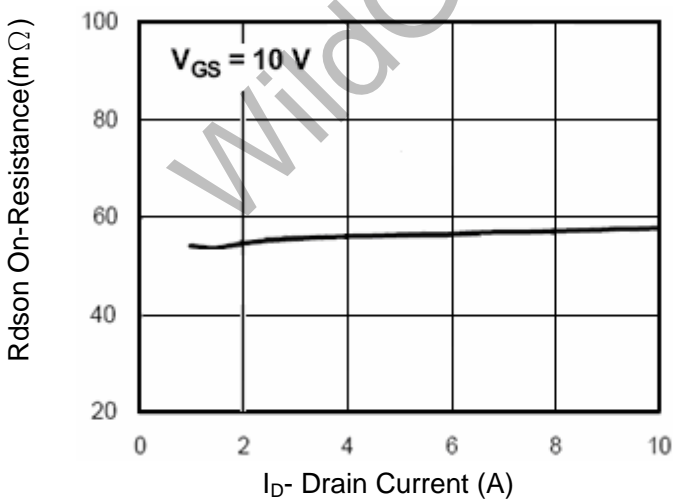


Figure 3 Rdson- Drain Current

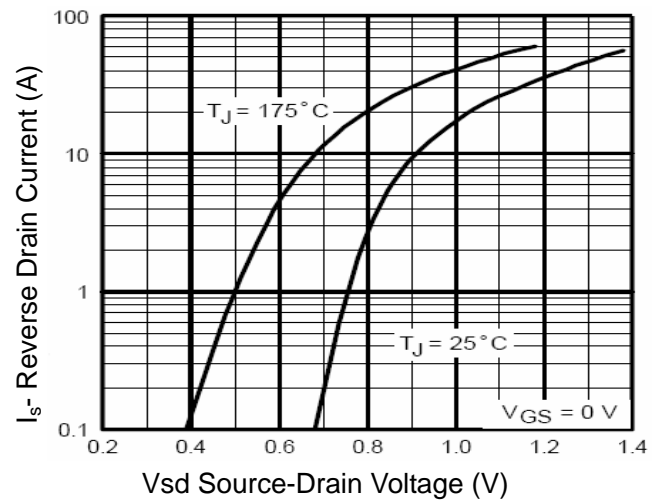


Figure 6 Source- Drain Diode Forward

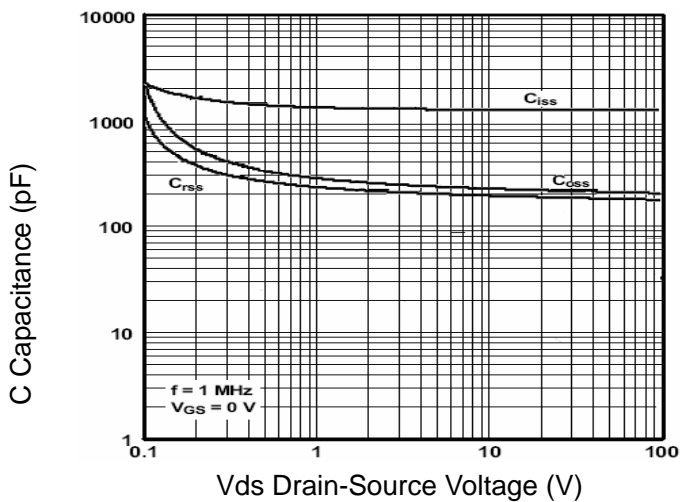


Figure 7 Capacitance vs Vds

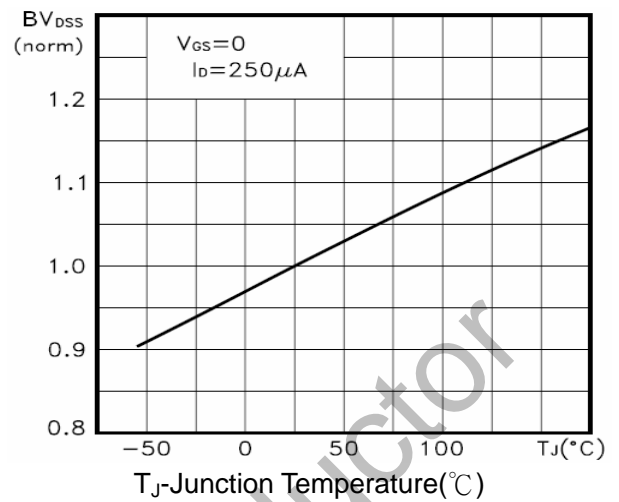


Figure 9 BV_{DSS} vs Junction Temperature

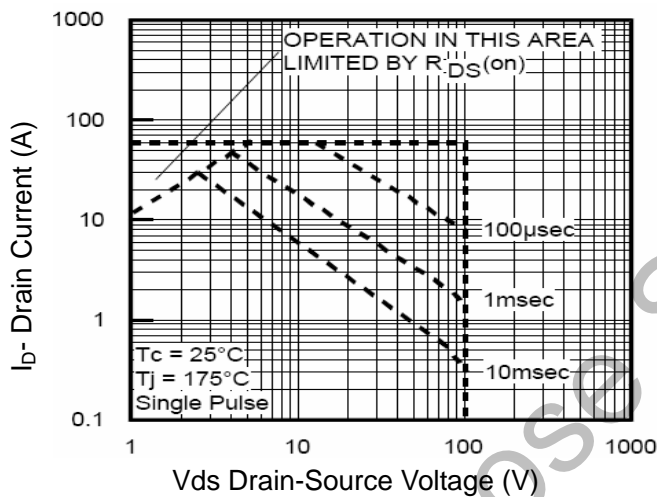


Figure 8 Safe Operation Area

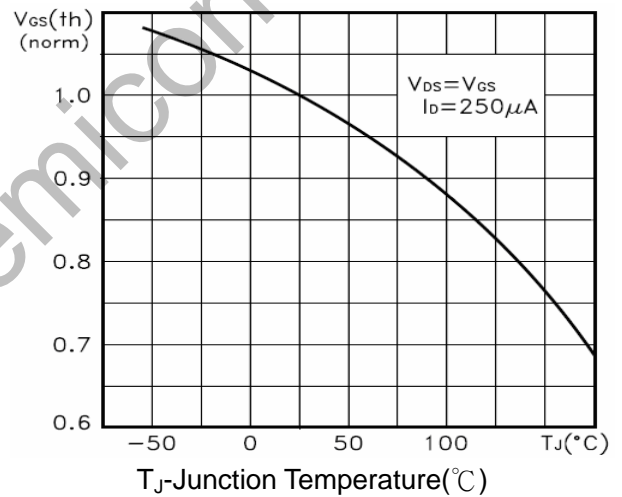


Figure 10 $V_{GS(th)}$ vs Junction Temperature

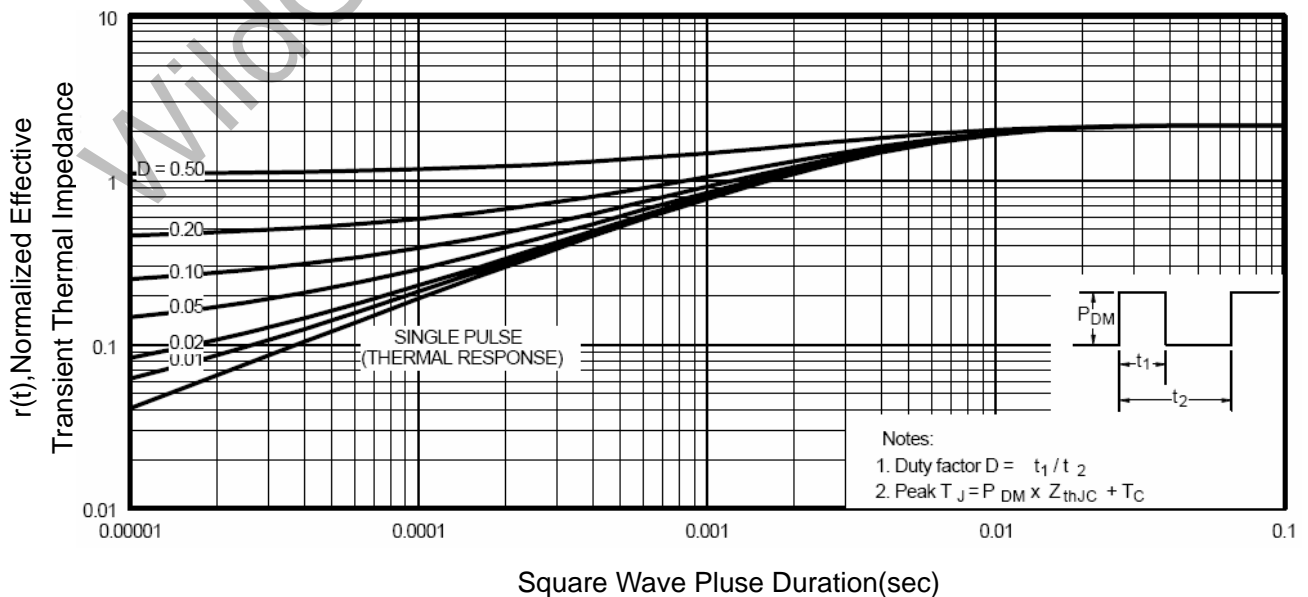
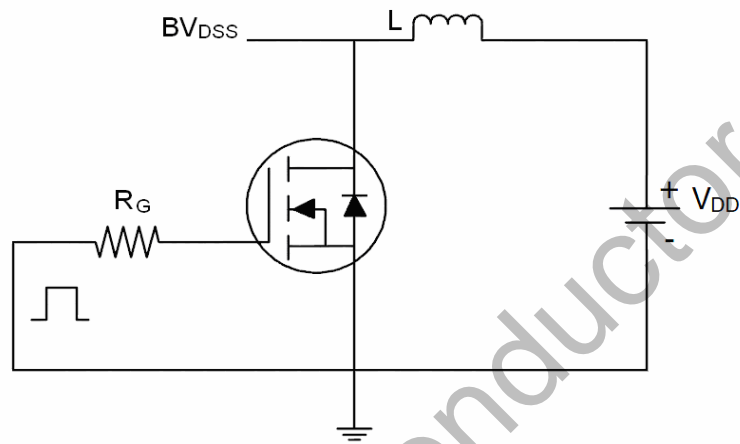


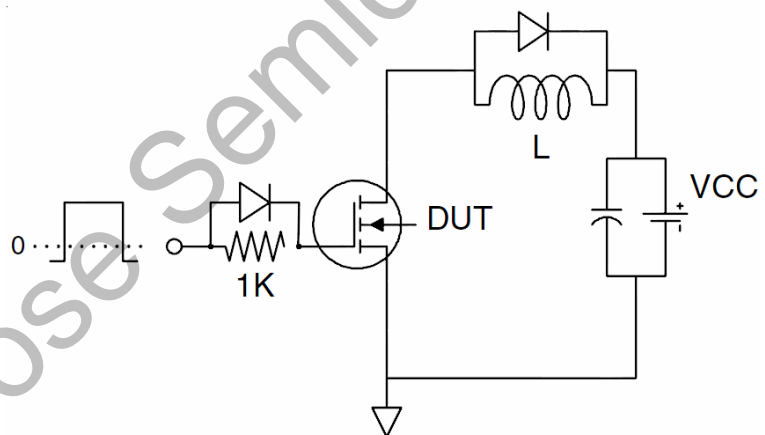
Figure 11 Normalized Maximum Transient Thermal Impedance

Test Circuit

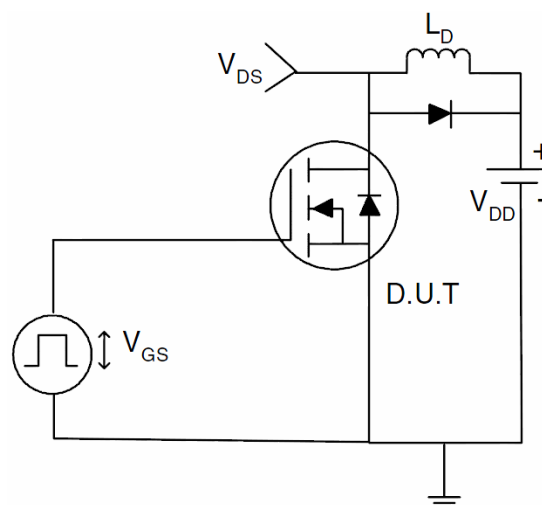
1) E_{AS} test Circuit



2) Gate charge test Circuit



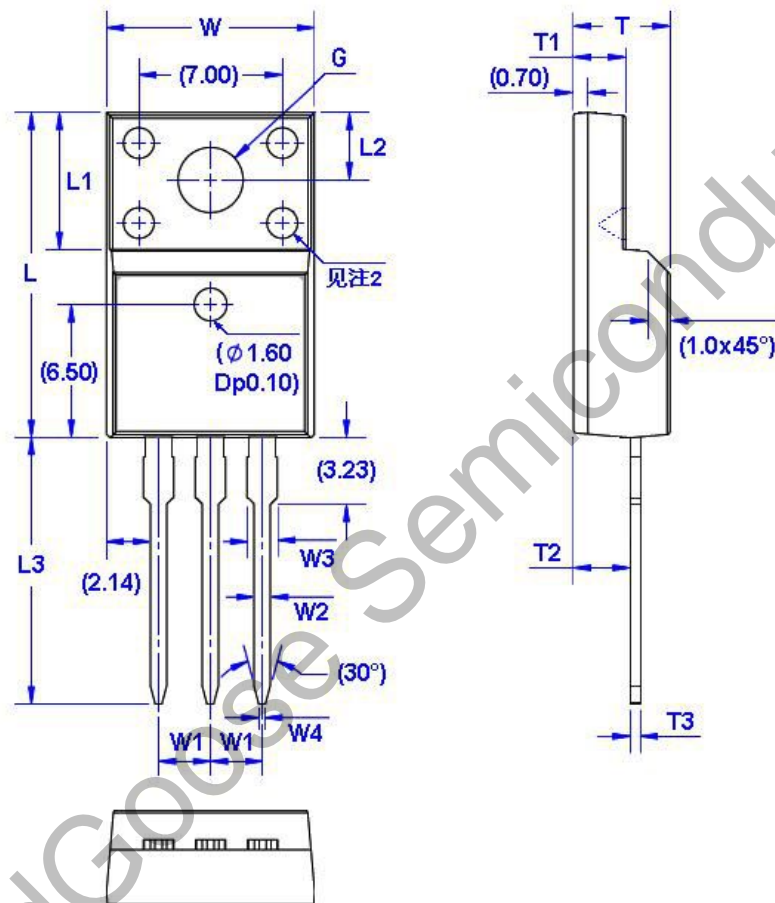
3) Switch Time Test Circuit



Package Dimension

TO-220F

Unit: mm



Symbol	Size		Symbol	Size		Symbol	Size		Symbol	Size	
	Min	Max		Min	Max		Min	Max		Min	Max
W	9.96	10.36	W4	0.25	0.45	L3	12.78	13.18	T3	0.45	0.60
W1	2.54 (TYP)		L	15.67	16.07	T	4.50	4.90	G(Φ)	3.08	3.28
W2	0.70	0.90	L1	6.48	6.88	T1	2.34	2.74			
W3	1.24	1.47	L2	3.20	3.40	T2	2.56	2.96			