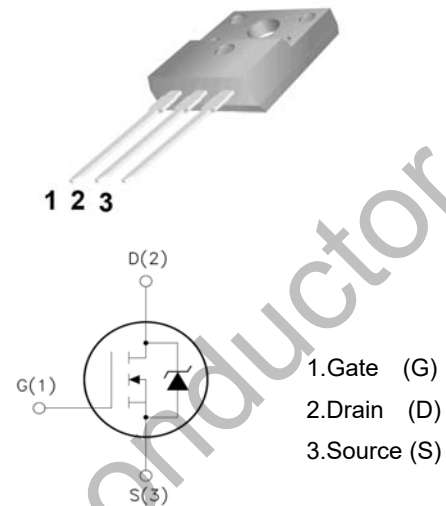


WGF3N150

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge: Qg= 64nC (Typ.).
- BV_{DSS}=1500V, I_D=3A
- R_{DS(on)} : 7.5Ω (Max) @V_G=10V
- 100% Avalanche Tested

TO-220F



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

Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	1500	V
I _D	Drain Current	T _C =25°C	3.0
		T _C =100°C	1.6
V _{GS(TH)}	Gate Threshold Voltage	±30	V
E _{AS}	Single Pulse Avalanche Energy (note1)	450	mJ
I _{AR}	Avalanche Current (note2)	3	A
P _D	Power Dissipation (T _j =25°C)	35	W
T _j	Junction Temperature(MAX)	150	°C
T _{stg}	Storage Temperature	-55~+150	°C
TL	Maximum lead temperature for soldering purpose, 1/8" from case for 5 seconds	300	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance, Junction to Case	-	4.4	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	-	62.5	°C/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0	1500	-	-	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	I _D =250μA, Reference to 25°C	-	0.5	-	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =1500V, V _{GS} =0V	-	-	10	μA
		V _{DS} =1500V, T _C =125°C	-	-	500	
I _{GSSF}	Gate-body leakage Current, Forward	V _{GS} =+30V, V _{DS} =0V	-	-	100	nA
I _{GSSR}	Gate-body leakage Current, Reverse	V _{GS} =-30V, V _{DS} =0V	-	-	-100	
On Characteristics						
V _{GS(TH)}	Gate Threshold Voltage	I _D =250μA, V _{DS} =V _{GS}	3	-	5	V
R _{DS(ON)}	Static Drain-Source On-Resistance	I _D =1.3A, V _{GS} =10V	-	6.1	7.5	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0, f=1.0MHz	-	1450	-	pF
C _{oss}	Output Capacitance		-	101	-	
C _{rss}	Reverse Transfer Capacitance		-	40	-	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =600V, I _D =1.25A R _G =25Ω (Note 3,4)	-	35	-	ns
T _r	Turn-On Rise Time		-	47	-	
T _{d(off)}	Turn-Off Delay Time		-	95	-	
T _f	Turn-Off Rise Time		-	44	-	
Q _g	Total Gate Charge	V _{DS} =600V, V _{GS} =10V, I _D =2.5A (Note 3,4)	-	64	-	nC
Q _{gs}	Gate-Source Charge		-	9.1	-	
Q _{gd}	Gate-Drain Charge		-	33	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Max. Diode Forward Current	-	-	-	3	A
I _{SM}	Max. Pulsed Forward Current	-	-	-	10	
V _{SD}	Diode Forward Voltage	I _D =2.5A	-	-	1.6	V
T _{rr}	Reverse Recovery Time	I _S =2.5A, V _{GS} =0V diF/ dt=100A/μs (Note3)	-	1475	-	nS
Q _{rr}	Reverse Recovery Charge		-	3.53	-	μC

 Notes : 1, L=20.8mH, I_{AS}=3A, V_{DD}=50V, R_G=25Ω, Starting T_J =25°C

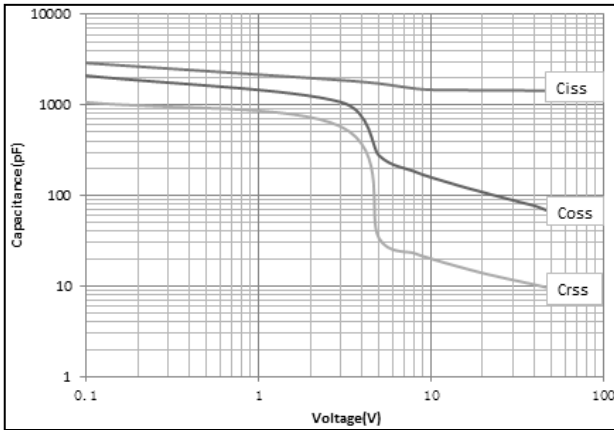
2, Repetitive Rating : Pulse width limited by maximum junction temperature

3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

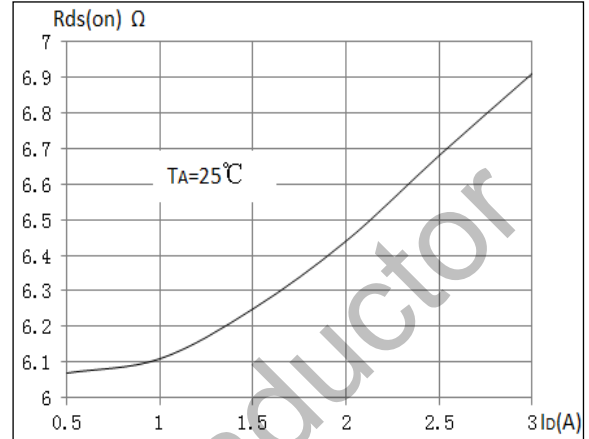
4, Essentially Independent of Operating Temperature

Typical Characteristics

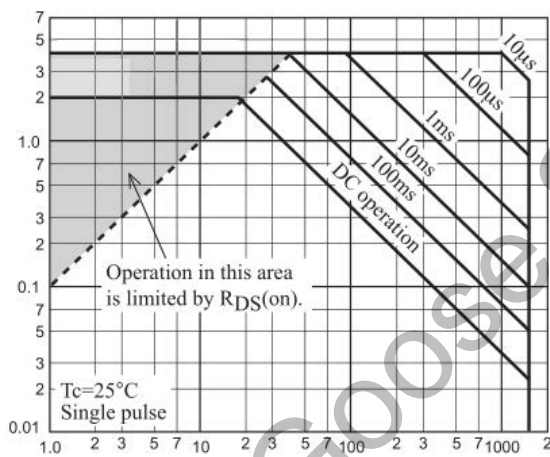
Capacitance Characteristics



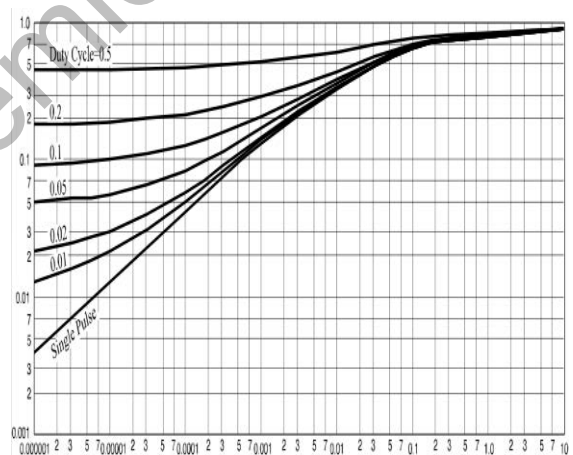
On-Resistance Variation vs. Id



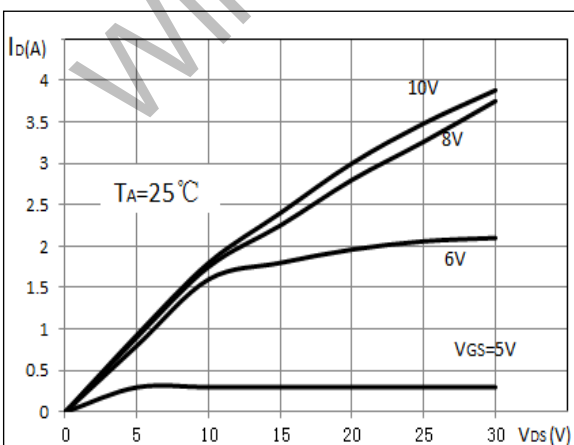
Maximum Safe Operating Area



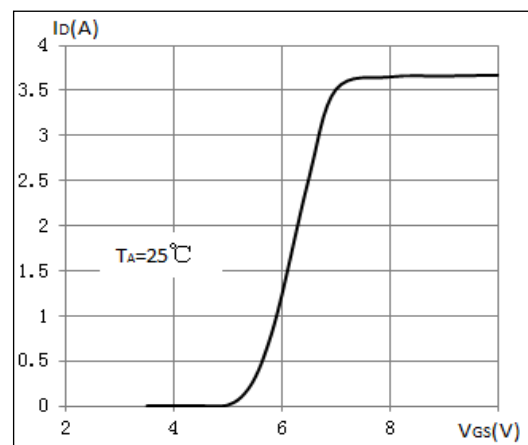
Thermal impedance



Output characteristics

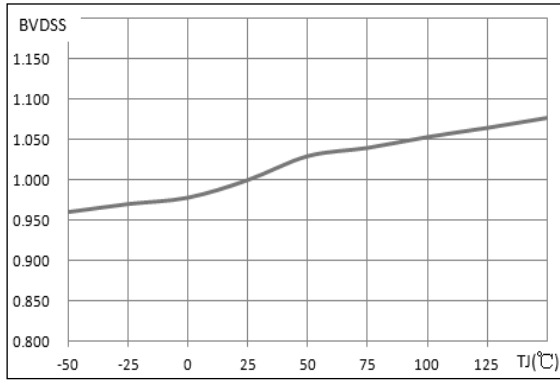


Transfer characteristics

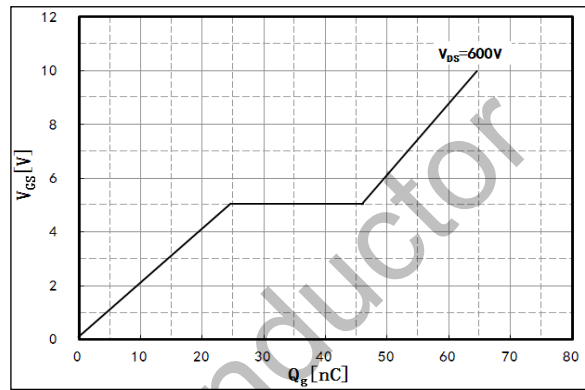


Typical Characteristics (Continued)

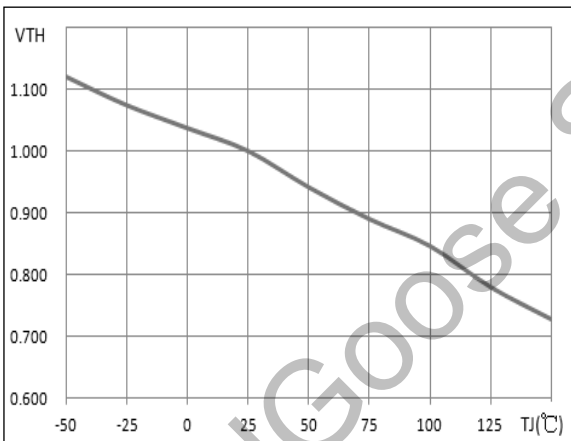
Normalized BV_{DSS} vs. temperature



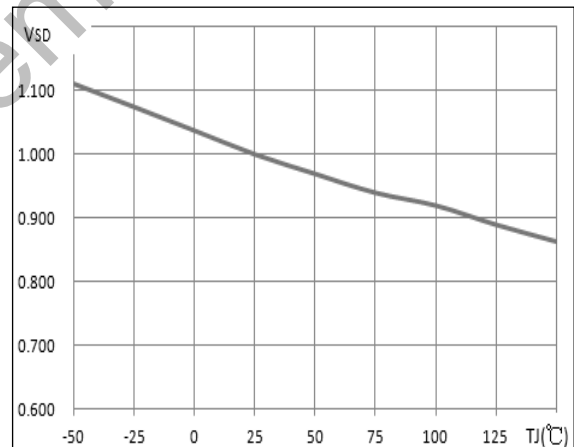
Gate charge vs. V_{GS}



Normalized V_{TH} vs. temperature



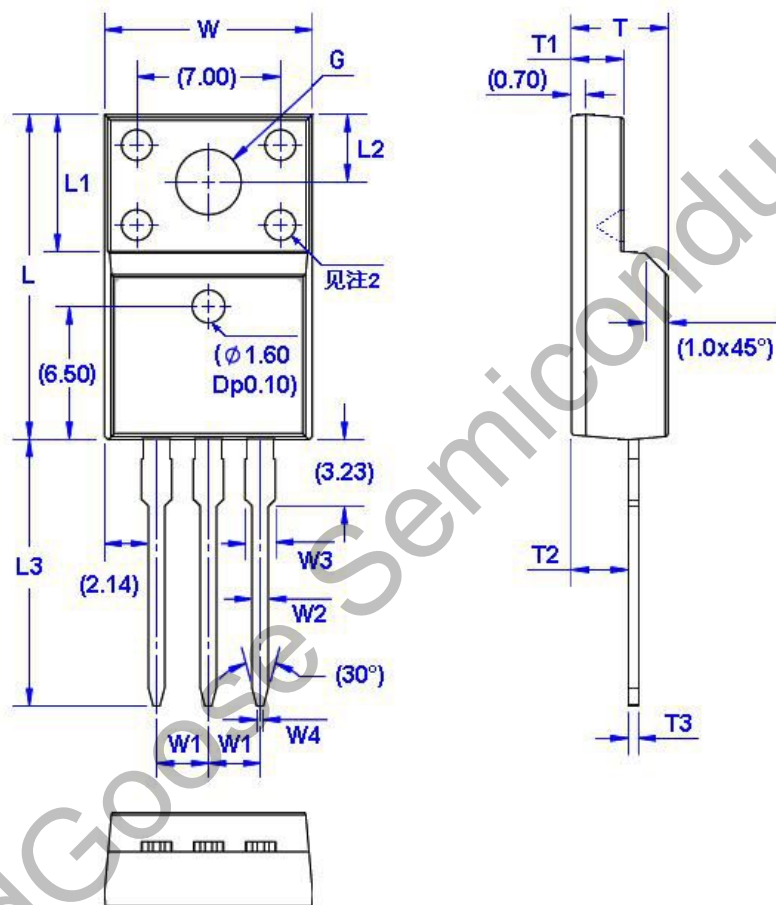
Normalized V_{SD} vs. temperature



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			

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