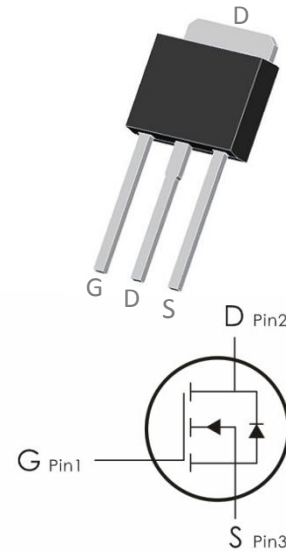


Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=800V, I_D=2A, R_{DS(ON)} < 6000m\ \Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
UQ02NG	Q02N	TO- 251	80 pcs/Tube

Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	800	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Continuous Drain Current $T_J=25^\circ C$	2	A
	Continuous Drain Current $T_J=100^\circ C$	1.25	
I_{DM}	Pulsed Drain Current	8	
P_D	Power Dissipation	50	W
E_{AS}	Single pulse avalanche energy ¹	180	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.5	$^\circ C/W$

R_{θJA}	Thermal Resistance, Junction to Ambient	62.5	°C/W
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Electrical Characteristics: (T_C=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	800	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =800V	---	---	1	μ A
I_{GSS}	Gate-Source Leakage Current	V _{GS} =± 30V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V_{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	3	---	5	V
R_{DS(ON)}	Drain-Source On Resistance ¹	V _{GS} =10V, I _D =1A	---	4200	6000	m Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	579	---	pF
C_{oss}	Output Capacitance		---	44	--	
C_{rss}	Reverse Transfer Capacitance		---	5.4	---	
Switching Characteristics						
t_{d(on)}	Turn-On Delay Time ^{3,4}	V _{DS} =400V, I _D =2A, R _{ENG} =25 Ω, V _{GS} =10V	---	11	34	ns
t_r	Rise Time ^{3,4}		---	29	69	ns
t_{d(off)}	Turn-Off Delay Time ^{3,4}		---	24	59	ns
t_f	Fall Time ^{3,4}		---	27	64	ns
Q_{gs}	Total Gate Charge ^{3,4}	V _{GS} =10V, V _{DS} =640V, I _D =2A	---	2.5	---	nc
Q_{gd}	Gate-Source Charge ^{3,4}		---	5	---	nc
Q_g	Gate-Drain "Miller" Charge ^{3,4}		---	11	14	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =2A	---	---	1.4	V
I_S	Continuous Drain Current	V _D =V _G =0V	---	---	2	A
I_{SM}	Pulsed Drain Current		---	---	8	A
T_{rr}	Reverse Recovery Time ³	I _F =2A, T _J =25°C	---	480	---	ns
Q_{rr}	Reverse Recovery Charge ³	di/dt=100A/us	---	2	---	nc

Notes:

- 1, L=5mH, IAS=2A, 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: (Tc=25°C unless otherwise noted)

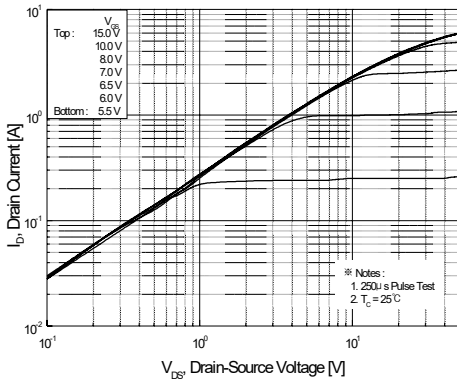


Figure 1. On-Region Characteristics

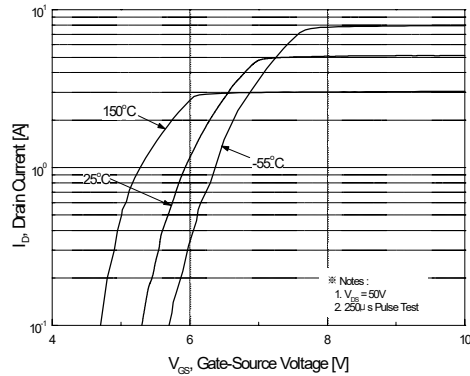


Figure 2. Transfer Characteristics

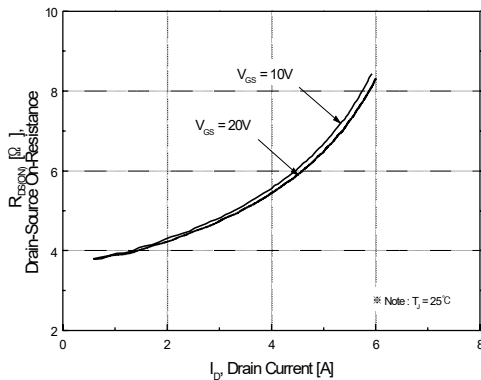


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

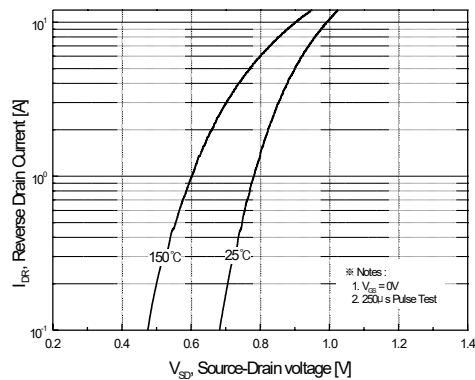


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

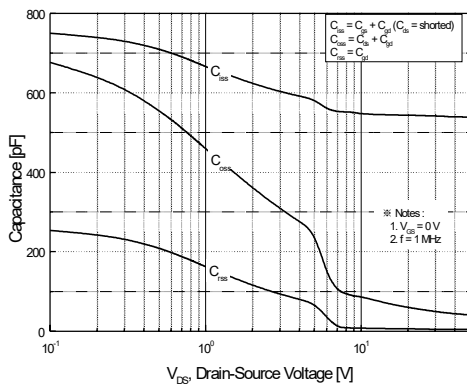


Figure 5. Capacitance Characteristics

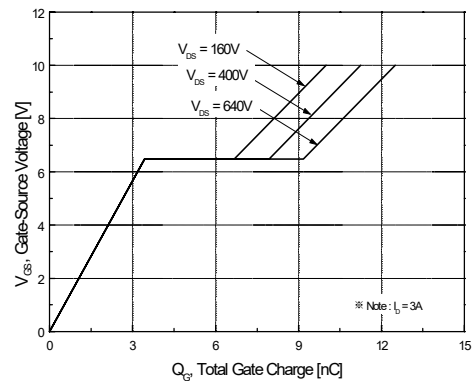


Figure 6. Gate Charge Characteristics

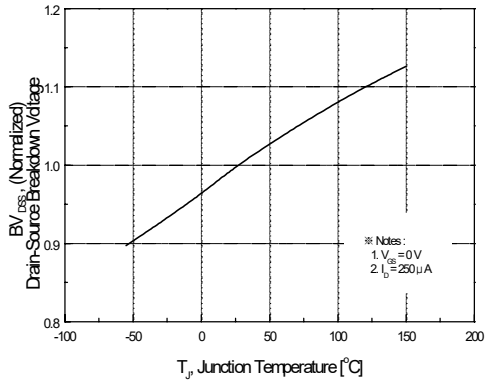


Figure 7. Breakdown Voltage Variation vs Temperature

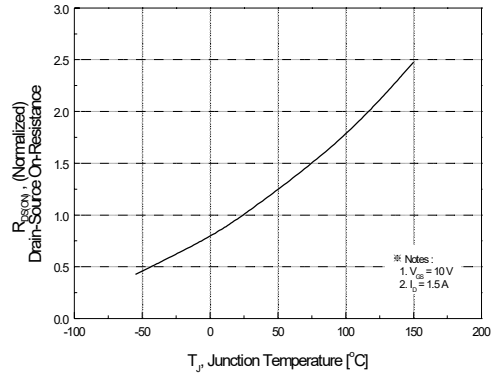


Figure 8. On-Resistance Variation vs Temperature

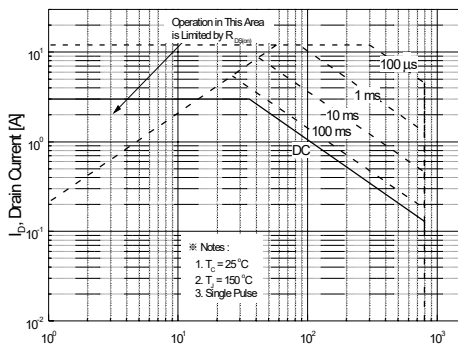


Figure 9-1. Maximum Safe Operating Area for WGP3N80

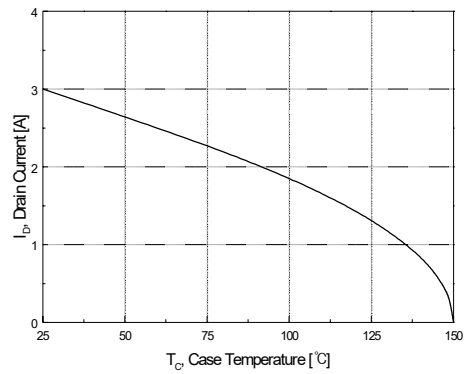


Figure 10. Maximum Drain Current vs Case Temperature

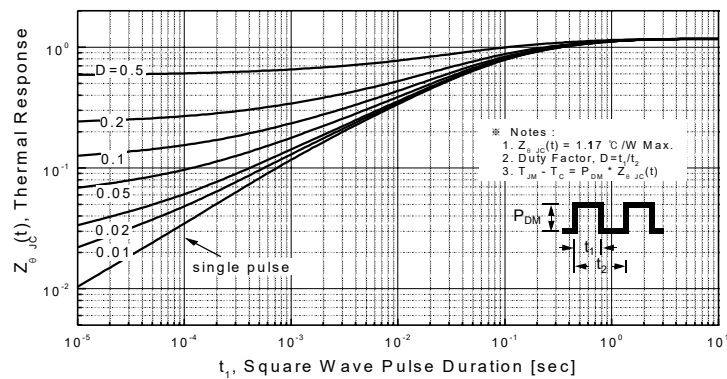
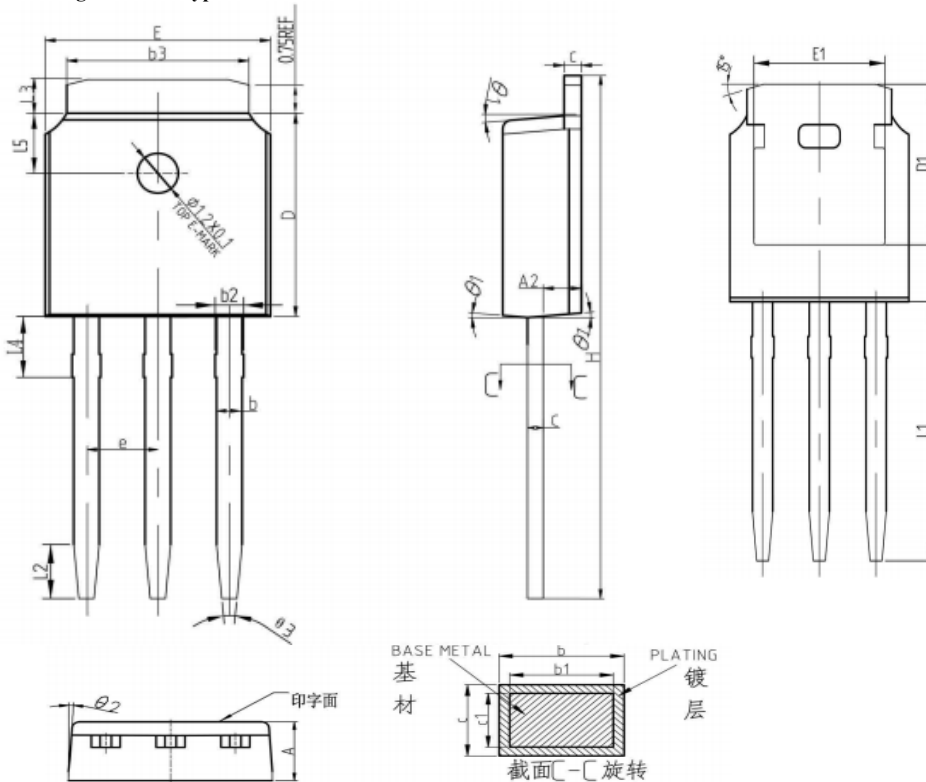


Figure 11-1. Transient Thermal Response Curve for WGP3N80

TO-251 Package Information

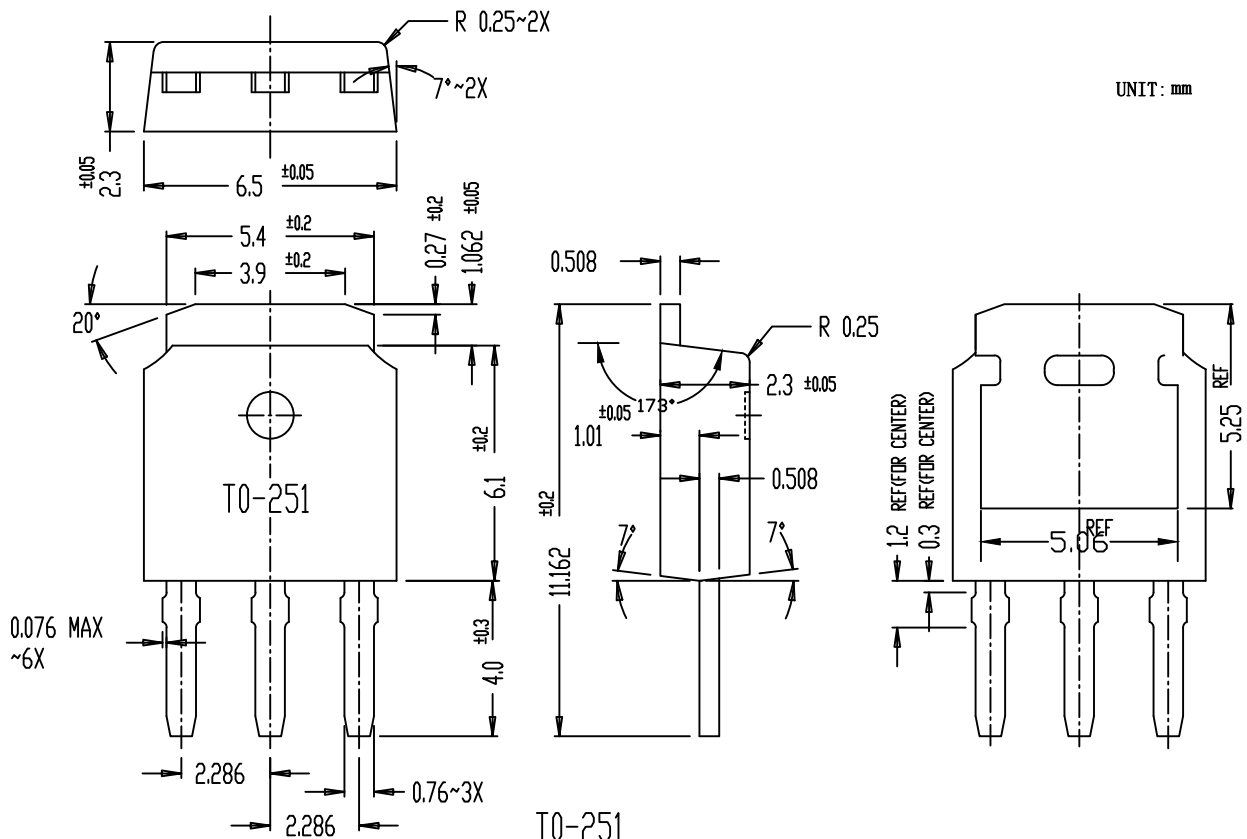
Package Outline Type-A



SYMBOL	mm		
	MIN	NOM	MAX
*A	2.20	2.30	2.38
*A2	0.97	1.07	1.17
*b	0.72	0.78	0.85
b1	0.71	0.76	0.81
*b2	0.72	0.88	0.95
*b3	5.23	5.33	5.46
*c	0.47	0.53	0.58
c1	0.46	0.51	0.56
*D	6.00	6.10	6.20
D1	5.30REF		
*E	6.50	6.60	6.70
E1	4.70	4.83	4.92
*e	2.286BSC		
*H	16.10	16.40	16.60
*L1	9.20	9.40	9.60
L2	1.25	1.35	1.45
*L3	0.90	1.02	1.22
L4	0.95	1.05	1.15
L5	1.70	1.80	1.90
θ 1	5°	7°	9°
θ 2	5°	7°	9°
θ 3	11°	13°	15°

带*为检验尺寸

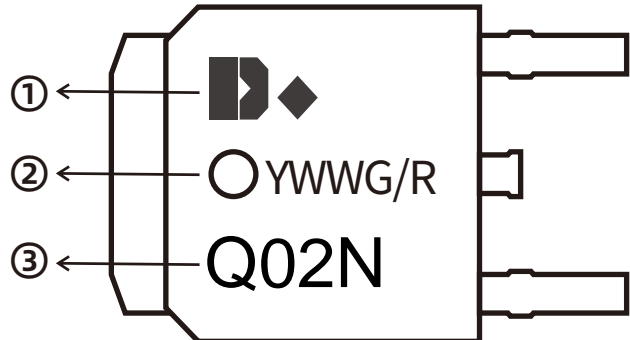
Package Outline Type-B




T0-251

Marking Information:

- ①. Doingter LOGO
- ②. Date Code(YWWG / R)
 - Y : Year Code , last digit of the year
 - WW : Week Code(01-53)
 - G/R : G(Green) /R(Lead Free)
- ③. Part NO.

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