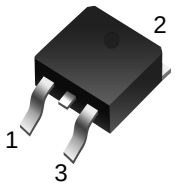
WGD30N02

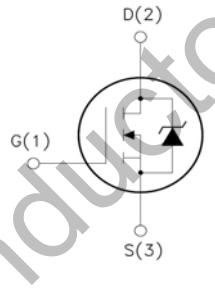
TO-252

RoHS COMPLIANT



Features:

- ☐ Advanced Trench Technology
- ☐ Excellent Switching Characteristics
- ☐ Extended Safe Operating Area
- ☐ Ultra Low Gate Charge:Qg=10.05nC (Typ.)
- ☐ VDSS=20V, ID=30A
- ☐ Rds(on):7.8mΩ(Typ.) @VG=4.5V
- ☐ 100% Avalanche Tested



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

Absolute Maximum Ratings (Ta=25℃ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		20	V
I_D	Drain Current	T_C=25℃	30	A
		T_C=100℃	13	
V_{GSS}	Gate-Source Voltage		±12	V
E_{AS}	Single Pulse Avalanche Energy (note1)		8.1	mJ
I_{AR}	Avalanche Current (note2)		30	A
P_D	Power Dissipation (Ta=25℃)		20.8	W
T_j	Junction Temperature(Max)		150	℃
T_{stg}	Storage Temperature		-55~+150	
TL	Maximum lead temperature for soldering purpose,1/8" from case for 5 seconds		300	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance,Junction to Case	-	6.0	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	-	62	℃/W

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Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BVDSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	20	22		V
△BVDSS/△TJ	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.018	---	V/℃
VGS(th)	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	0.50	0.65	1.0	V
RDS(ON)	Static Drain-Source On-Resistance	V_{GS}=4.5V, I_D=20A		7.8	10	mΩ
RDS(ON)	Static Drain-Source On-Resistance	V_{GS}=2.5V, I_D=20A		11	15	
RDS(ON)	Static Drain-Source On-Resistance					
IDSS	Zero Gate Voltage Drain Current	V_{DS}=20V,V_{GS}=0V			1	μA
IGSS	Gate-Body Leakage Current	V_{GS}=±10V, V_{DS}=0V			±100	nA
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V,f=1MHZ		888		pF
C_{oss}	Output Capacitance			133		
C_{rss}	Reverse Transfer Capacitance			117		
Q_g	Total Gate Charge	V_{GS}=4.5V,V_{DS}=10V,I_D=6.8A		11.05		nC
Q_{gs}	Gate-Source Charge			1.73		
Q_{gd}	Gate-Drain Charge			3.1		
tD(on)	Turn-on Delay Time	V_{GS}=4.5V, V_{DS}=10V, I_D=6.8A R_{GEN}=3Ω		7		ns
t_r	Turn-on Rise Time			46		
tD(off)	Turn-off Delay Time			30		
t_f	Turn-off fall Time			52		
V_{SD}	Diode Forward Voltage	I_S=7.6A,V_{GS}=0V			1.2	V

Note :

1、The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3、The power dissipation is limited by 150℃ junction temperature
4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

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Typical Characteristics

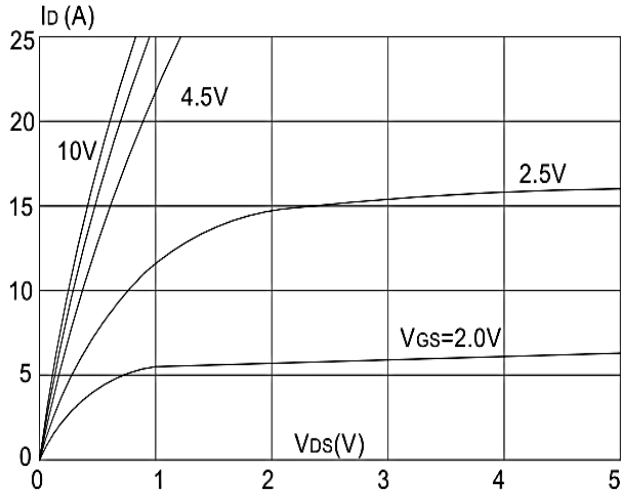

Figure1: Output Characteristics

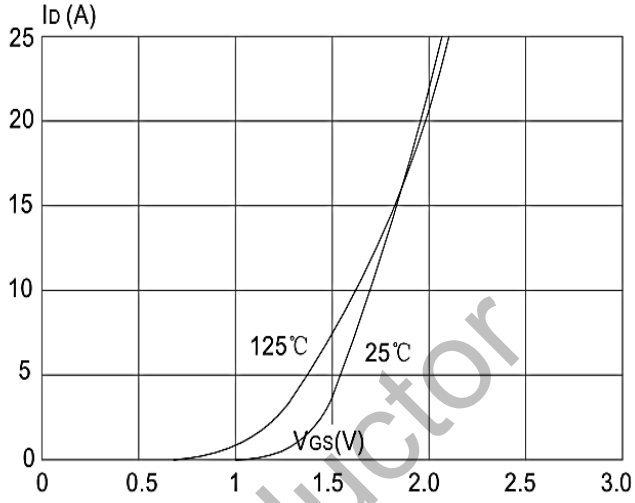

Figure 2: Typical Transfer Characteristics

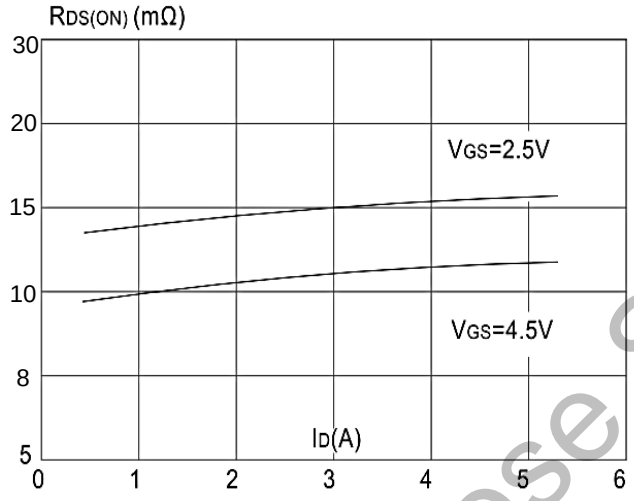

Figure 3:On-resistance vs. Drain Current

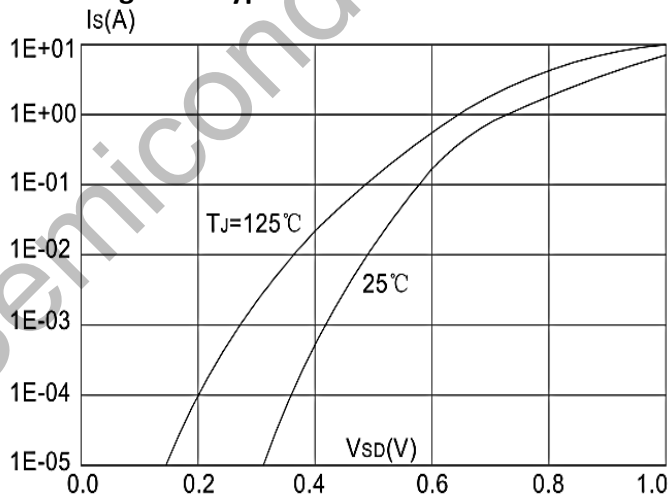

Figure 4: Body Diode Characteristics

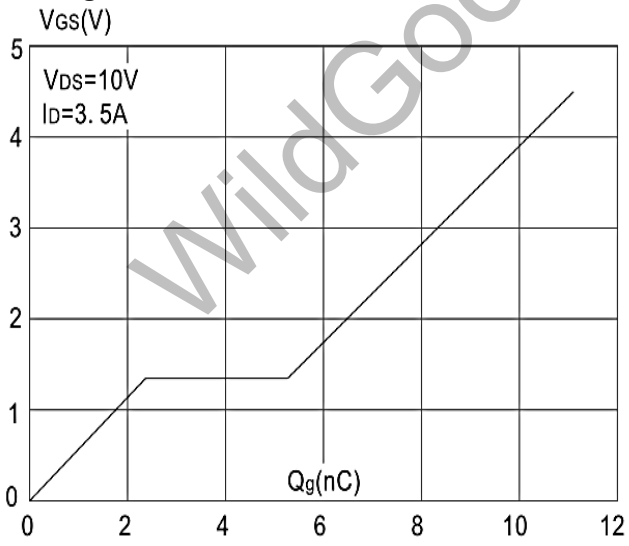

Figure 5: Gate Charge Characteristics

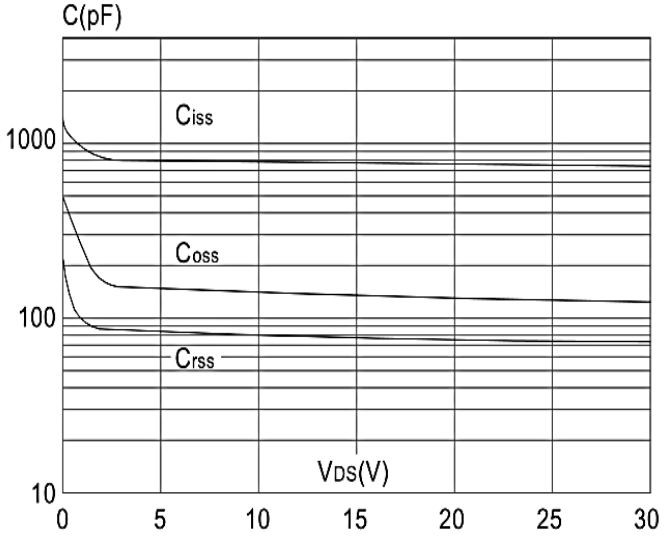

Figure 6: Capacitance Characteristics

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Typical Characteristics

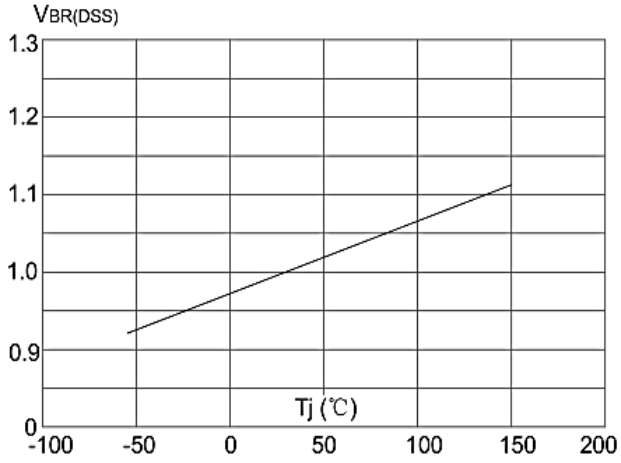

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

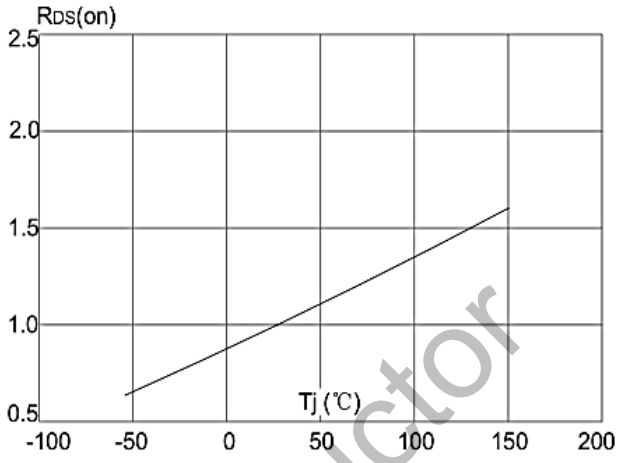

Figure 8: Normalized on Resistance vs Junction Temperature

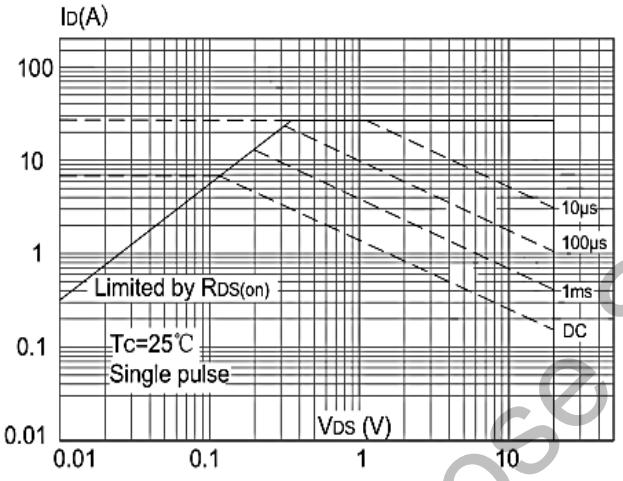

Figure 9: Maximum Safe Operating Area vs. Case Temperature

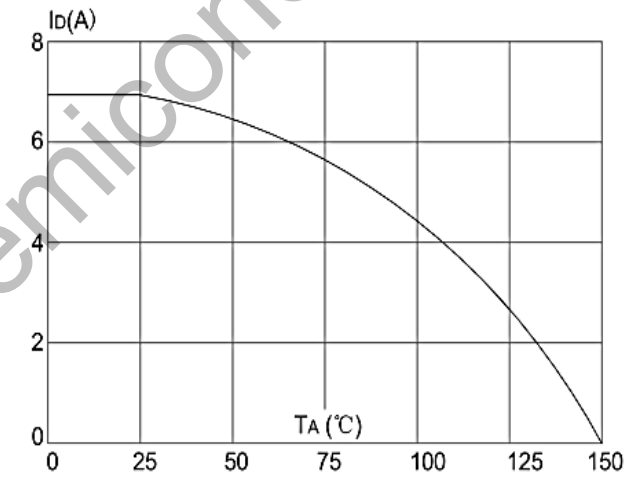

Figure 10: Maximum Continuous Drain Current

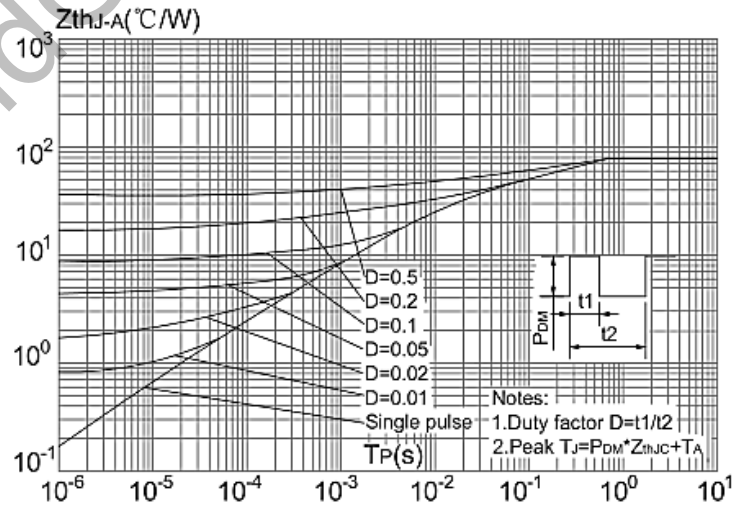

Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

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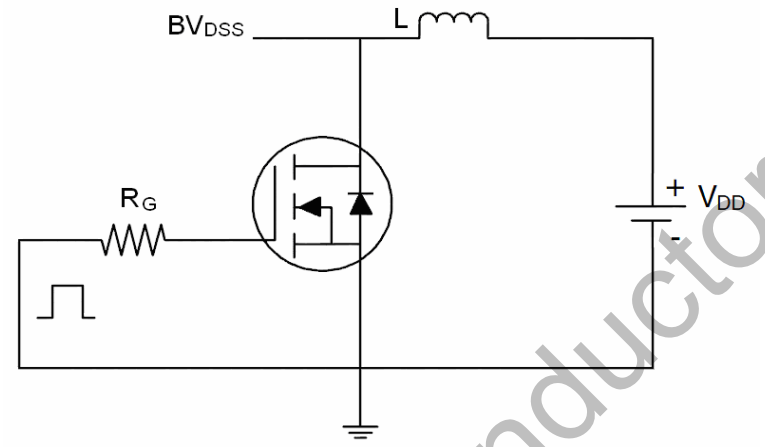
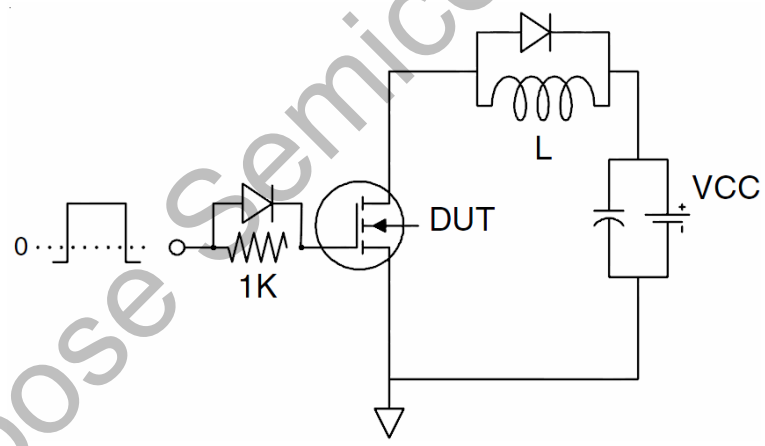
Gate Charge Test Circuit & Waveform

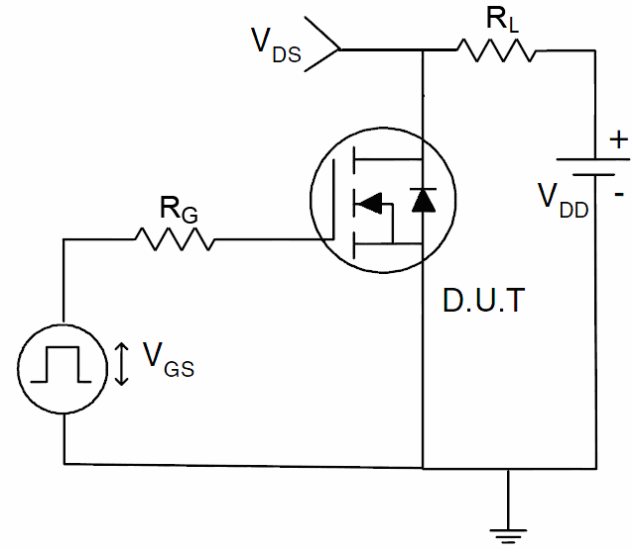
1）E_{AS} test Circuits



2）Gate charge test Circuit:



3）Switch Time Test Circuit：



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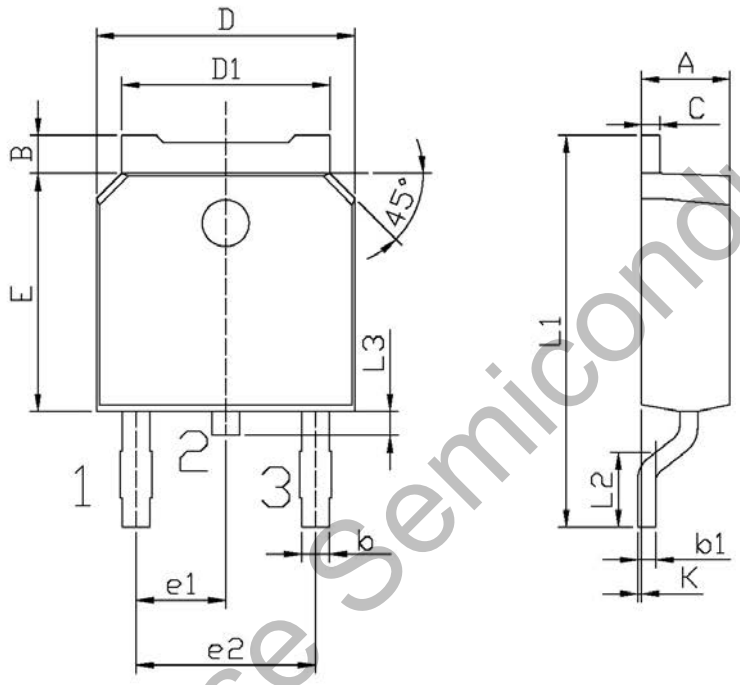
Package Dimension

TO-252

Unit: mm



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单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.20	5.40	K	0.00	0.10