
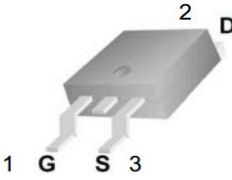
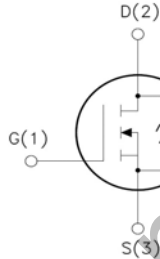
 <p style="font-size: 24pt; font-weight: bold; margin-top: 10px;">WGD30N10</p> <p>100V N-Channel MOSFET</p> <p>Features:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Low Intrinsic Capacitances. <input type="checkbox"/> Excellent Switching Characteristics. <input type="checkbox"/> Extended Safe Operating Area. <input type="checkbox"/> Unrivalled Gate Charge :Qg= 61.7nC (Typ.). <input type="checkbox"/> BVDSS=100V, I_D=30A <input type="checkbox"/> R_{DS(on)} : 0.043Ω (Typ) @V_G=10V <input type="checkbox"/> 100% Avalanche Tested 	<p style="text-align: center; font-weight: bold;">TO-252</p>  <div style="text-align: center; margin-top: 20px;">  <p>1 G 2 D 3 S</p> </div> <div style="text-align: center; margin-top: 20px;">  <p>1.Gate (G) 2.Drain (D) 3.Source (S)</p> </div>
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Absolute Maximum Ratings* (T_c=25°C Unless otherwise noted)

Symbol	PARAMETER	Value	Unit
V _{DSS}	Drain-Source Voltage	100	V
I _D	Drain Current	T _C =25°C	30
		T _C =100°C	21
V _{GS(TH)}	Gate Threshold Voltage	±20	V
E _{AS}	Single Pulse Avalanche Energy (note1)	256	mJ
I _{AR}	Avalanche Current (note2)	30	A
P _D	Power Dissipation (T _c =25°C)	85	W
T _j	Junction Temperature(MAX)	175	°C
T _{stg}	Storage Temperature	-55~+175	°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	-	1.8	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	-	65	°C/W
R _{θCS}	Thermal Resistance, Case to Sink	-	110	°C/W

Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3	1.8	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=20A$	-	43	46	m Ω
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=10A$	-	15	-	S
Dynamic Characteristics (Note 4)						
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V,$ $F=1.0MHz$	-	2356	-	PF
C_{oss}	Output Capacitance		-	94	-	PF
C_{rss}	Reverse Transfer Capacitance		-	83.3	-	PF
Switching Characteristics (Note 4)						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=50V, R_L=5\Omega$ $V_{GS}=10V, R_{GEN}=3\Omega$	-	7	-	nS
t_r	Turn-on Rise Time		-	7	-	nS
$t_{d(off)}$	Turn-Off Delay Time		-	29	-	nS
t_f	Turn-Off Fall Time		-	7	-	nS
Q_g	Total Gate Charge	$V_{DS}=50V, I_D=10A,$ $V_{GS}=10V$	-	61.7	-	nC
Q_{gs}	Gate-Source Charge		-	8.3	-	nC
Q_{gd}	Gate-Drain Charge		-	16.7	-	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage (Note 3)	$V_{GS}=0V, I_S=10A$	-	-	1.2	V
I_S	Diode Forward Current (Note 2)	-	-	-	30	A
t_{rr}	Reverse Recovery Time	$T_J = 25^\circ\text{C}, I_F = 10A$	-	32	-	nS
Q_{rr}	Reverse Recovery Charge	$di/dt = 100A/\mu s$ (Note 3)	-	53	-	nC
t_{on}	Forward Turn-On Time	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, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. EAS Condition : $T_j=25^\circ\text{C}, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega, I_{AS}=32A$

Typical Characteristics

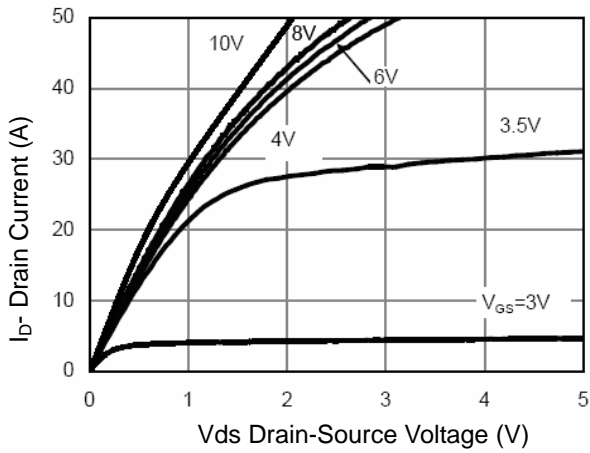


Figure 1 Output Characteristics

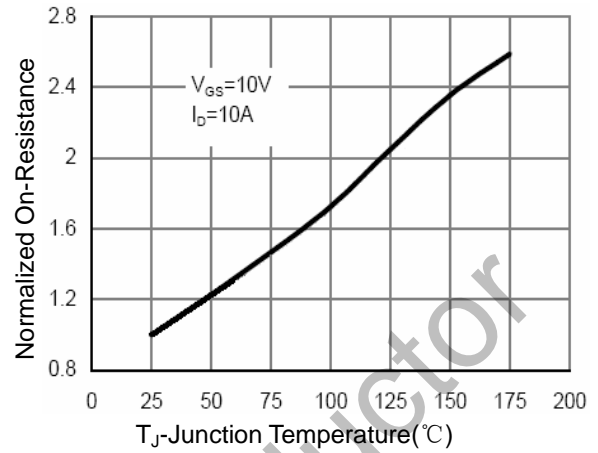


Figure 4 Rds(on)-Junction Temperature

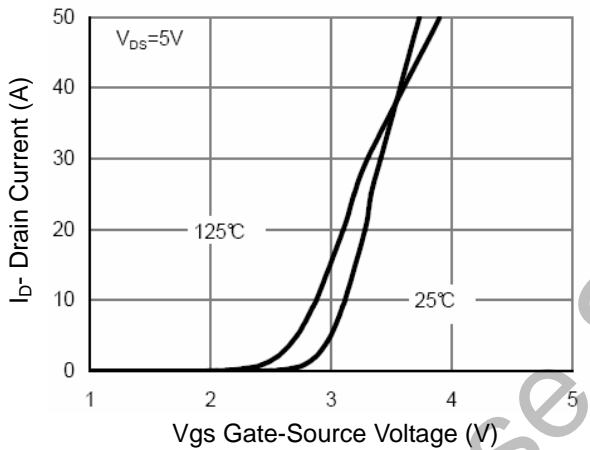


Figure 2 Transfer Characteristics

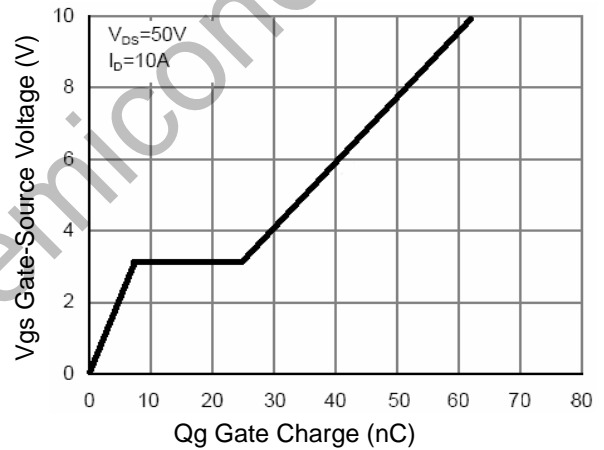


Figure 5 Gate Charge

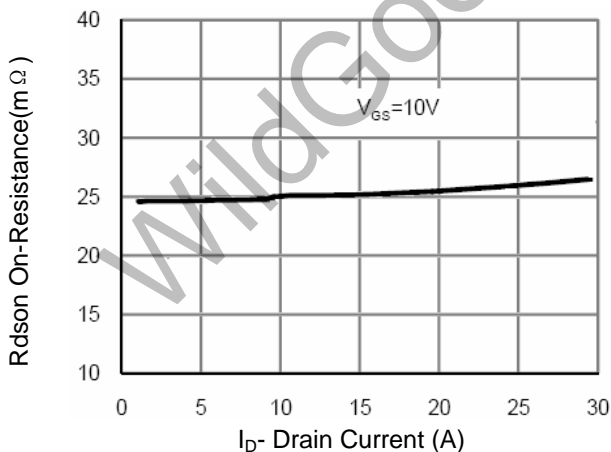


Figure 3 Rds(on)- Drain Current

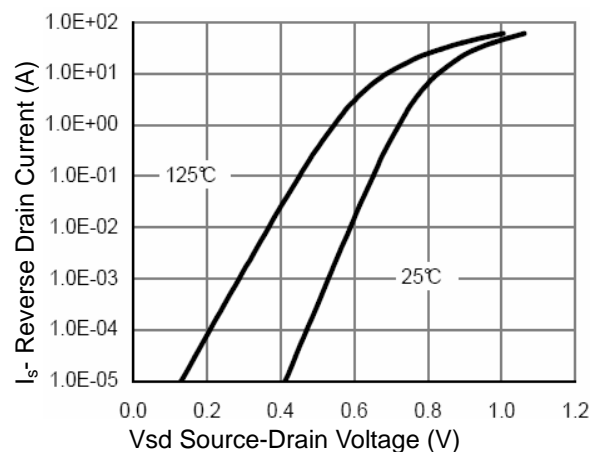


Figure 6 Source- Drain Diode Forward

Typical Characteristics (Continued)

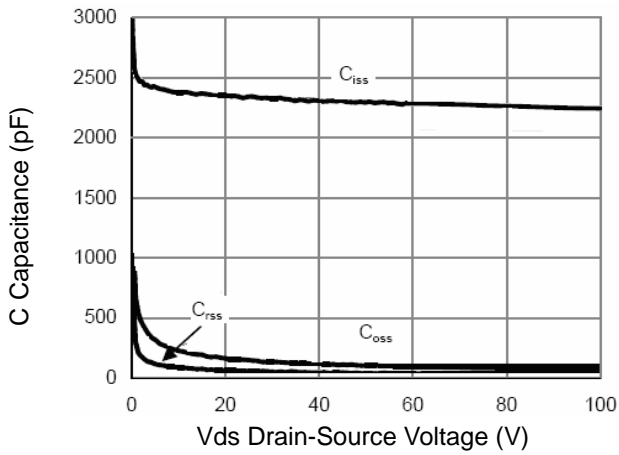


Figure 7 Capacitance vs Vds

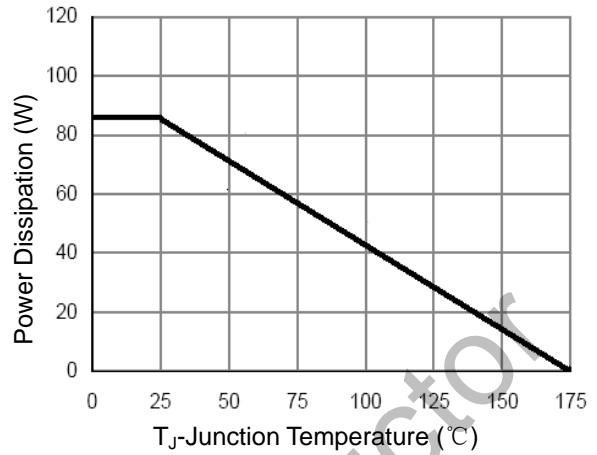


Figure 9 Power De-rating

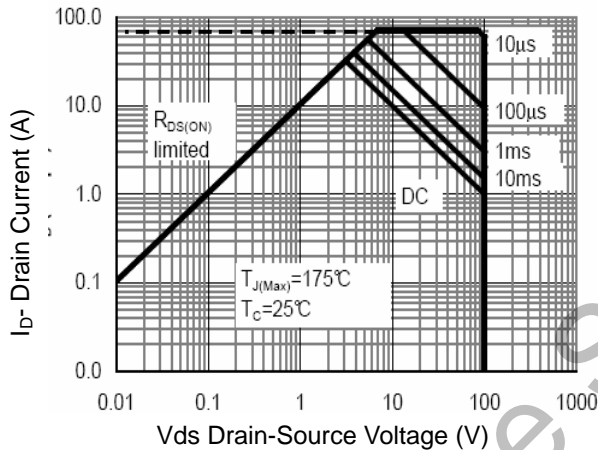


Figure 8 Safe Operation Area

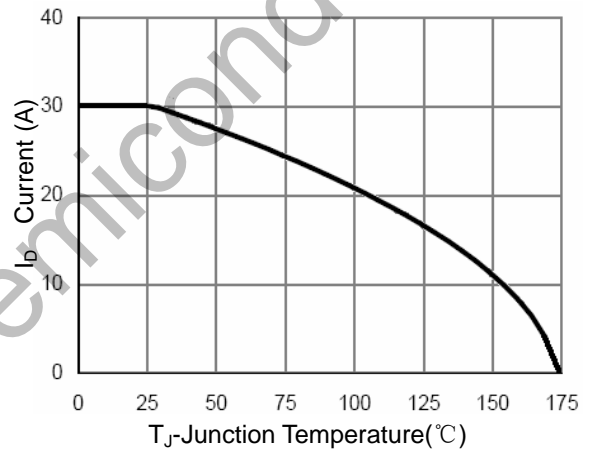


Figure 10 ID Current- Junction Temperature

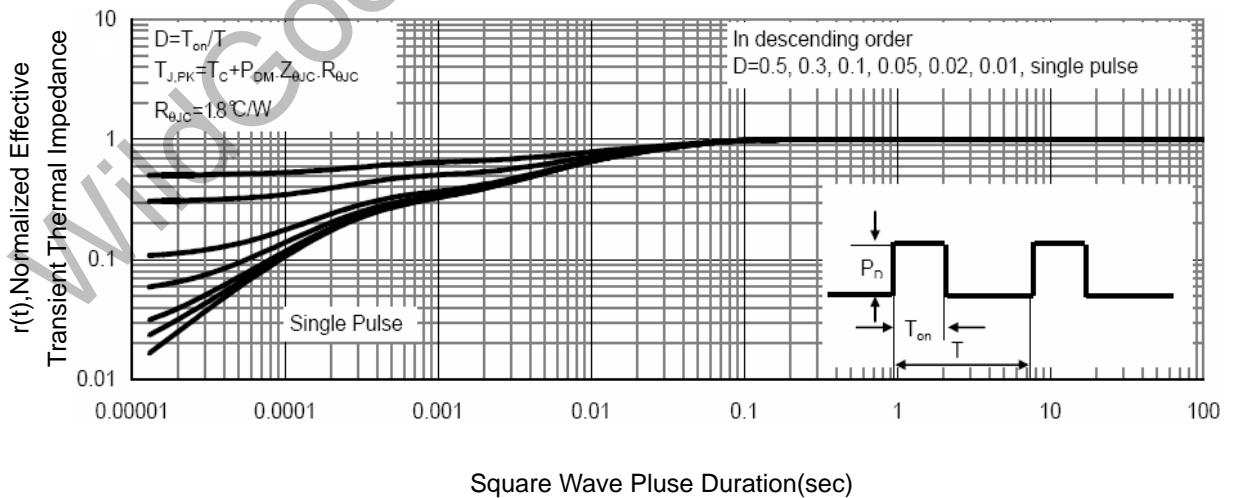
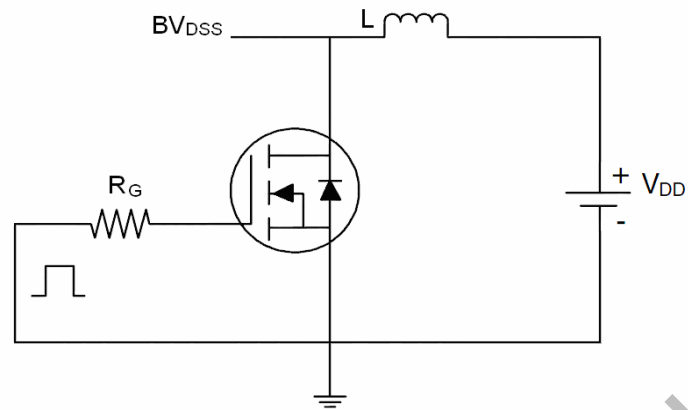


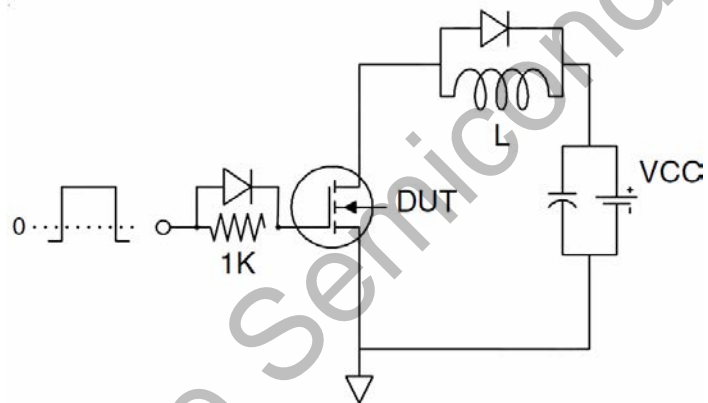
Figure 11 Normalized Maximum Transient Thermal Impedance

Test Circuit

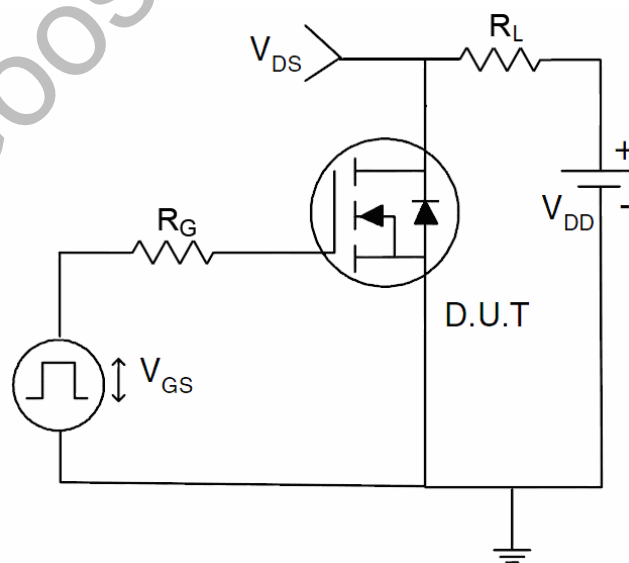
1) A_S Test Circuit



2) Gate Charge Test Circuit



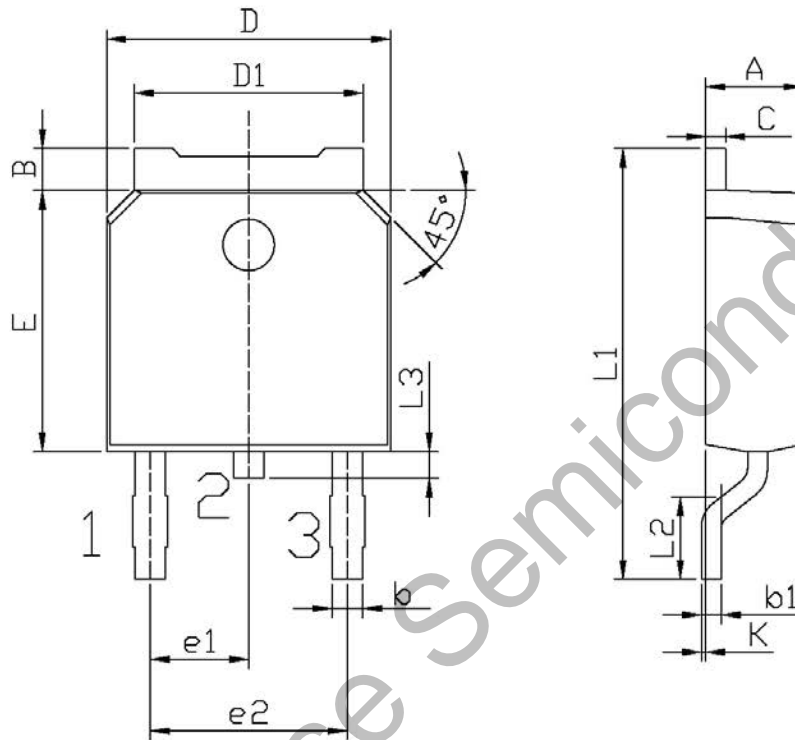
3) Switch Time Test Circuit



Package Dimension

TO-252

Unit: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

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