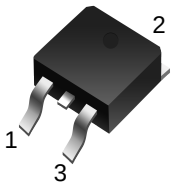
WGD100N03T

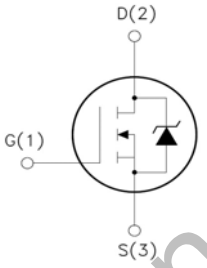
Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 34 nC (Typ.).
- ☐ BVDSS=30V,I_D= 100A
- ☐ R_{DS}(on) : 4.1mΩ (Typ) @V_G=10V
- ☐ 100% Avalanche Tested

TO-252S

RoHS COMPLIANT





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

Absolute Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		30	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	100	A
		T_C = 100°C	45	
I_{DM}	Pulsed Drain Current (1)		280	A
E_{AS}	Single Pulsed Avalanche Energy (2)		81	mJ
P_D	Power Dissipation	T_C = 25°C	50	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(3)		31	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.5	
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

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Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 30V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.6	2.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 30A	-	4.1	6.0	mΩ
		V_{GS} = 4.5V, I_D = 20A	-	7.3	9.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	-	1788	-	pF
C_{oss}	Output Capacitance		-	225	-	pF
C_{rss}	Reverse Transfer Capacitance		-	180	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V, V_{DS} = 15V, I_D = 30A	-	34	-	nC
Q_{gs}	Gate Source Charge		-	6.5	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	7.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 15V, I_D= 30A, R_{GEN} = 3Ω	-	7	-	ns
t_r	Turn-On Rise Time		-	14	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	34	-	ns
t_f	Turn-Off Fall Time		-	11	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	100	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	280	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 20A, di/dt = 100A/us	-	10	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	1.7	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25C, V_{DD}=15V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=18A

3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

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Typical Performance Characteristics

Figure 1: Output Characteristics

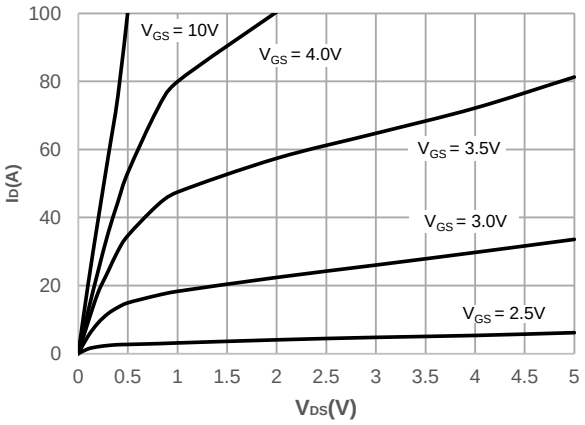


Figure 2: Typical Transfer Characteristics

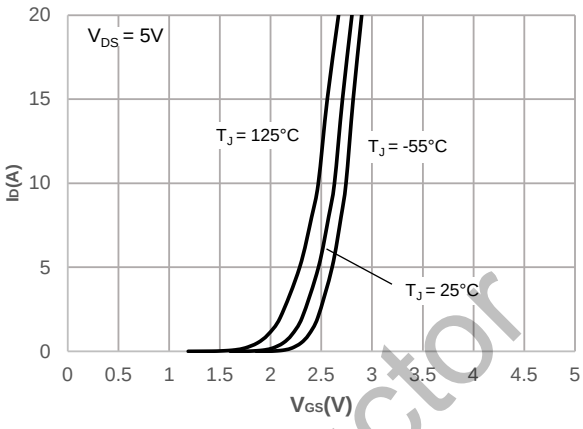


Figure 3: On-resistance vs. Drain Current

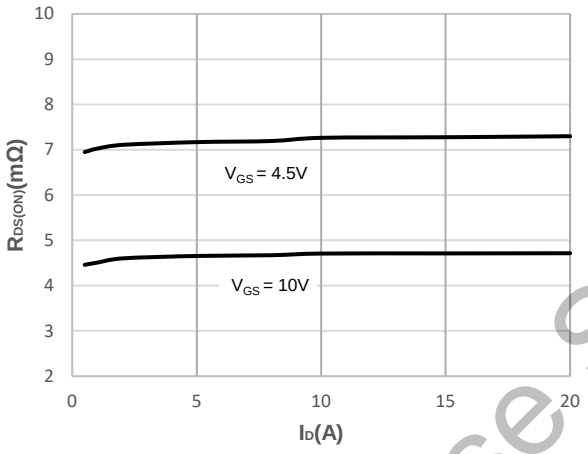


Figure 4: Body Diode Characteristics

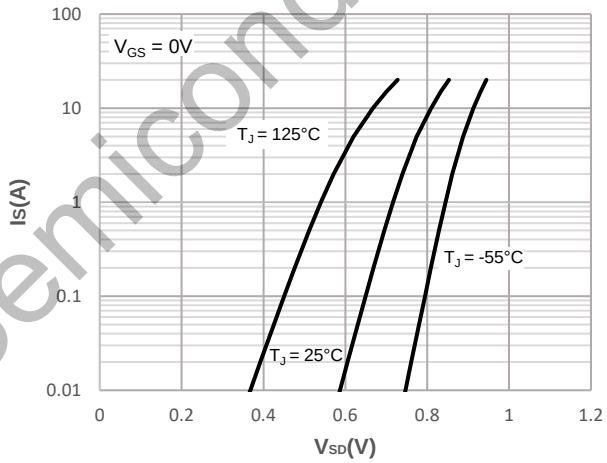


Figure 5: Gate Charge Characteristics

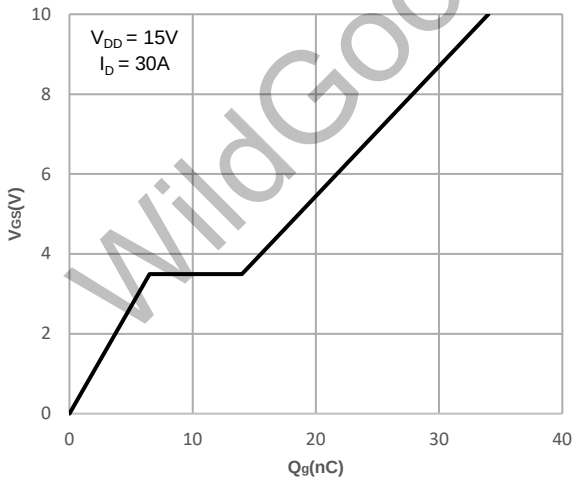
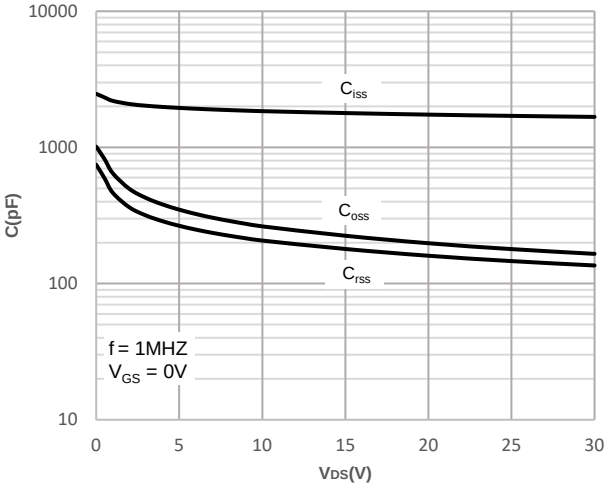


Figure 6: Capacitance Characteristics



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Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

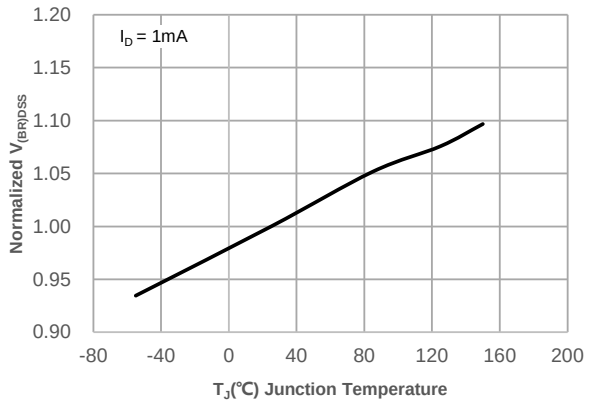


Figure 8: Normalized on Resistance vs. Junction Temperature

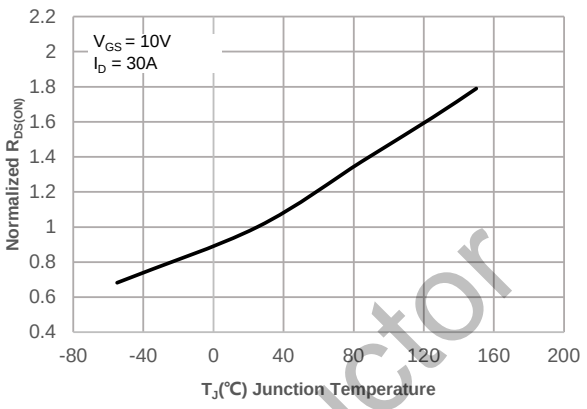


Figure 9: Maximum Safe Operating Area

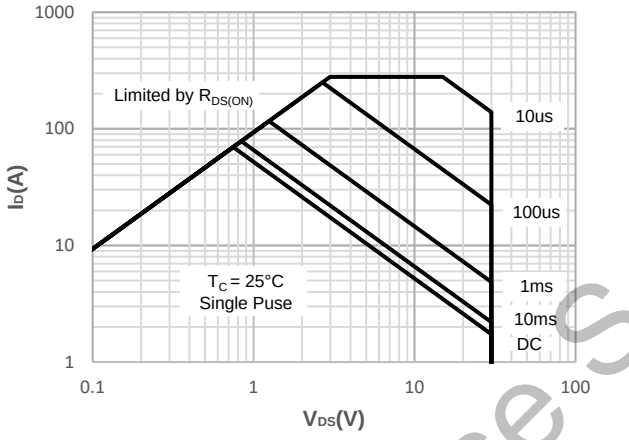


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

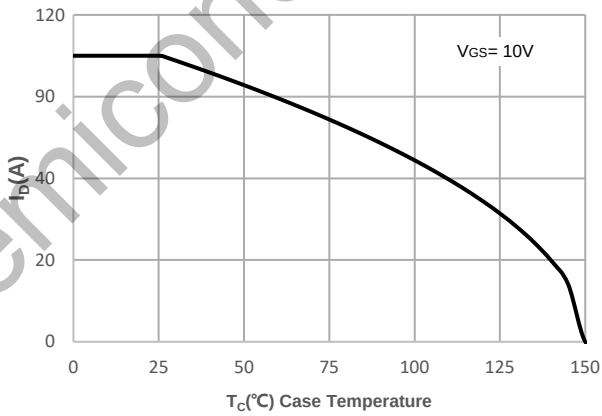


Figure 11: Normalized Maximum Transient Thermal Impedance

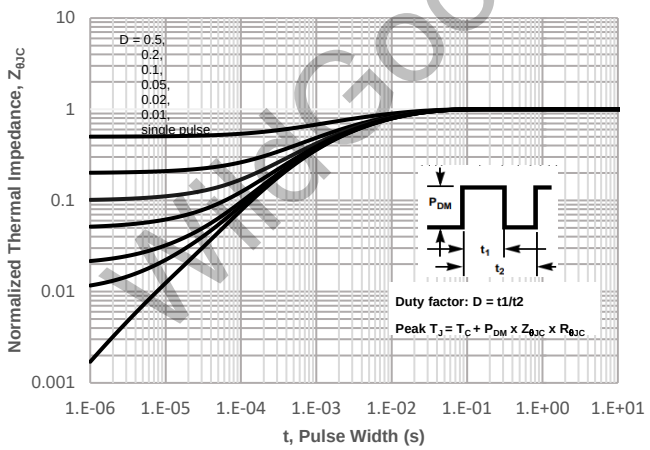
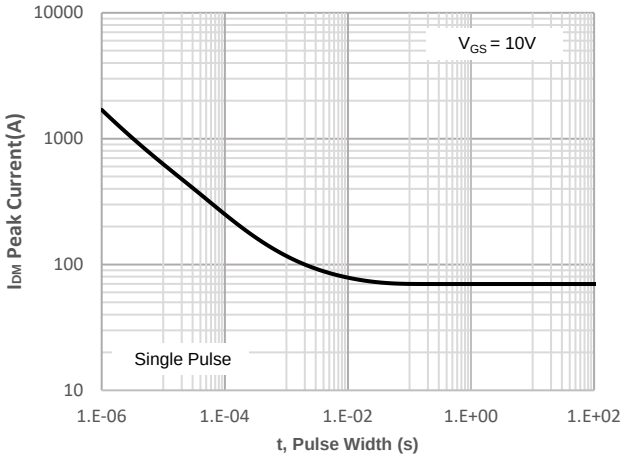


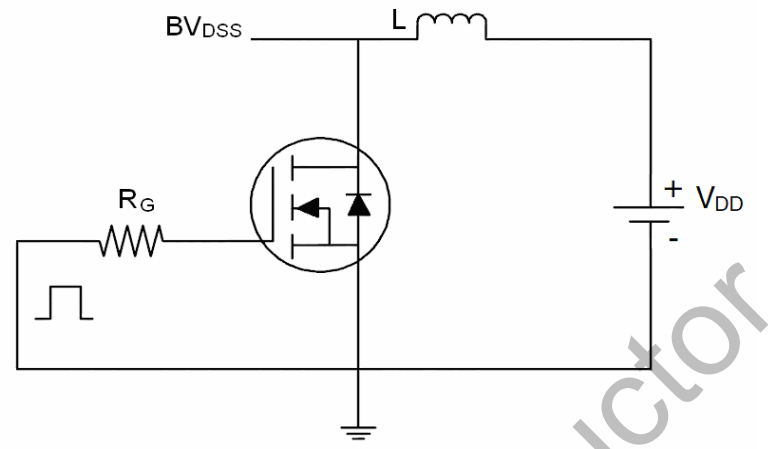
Figure 12: Peak Current Capacity



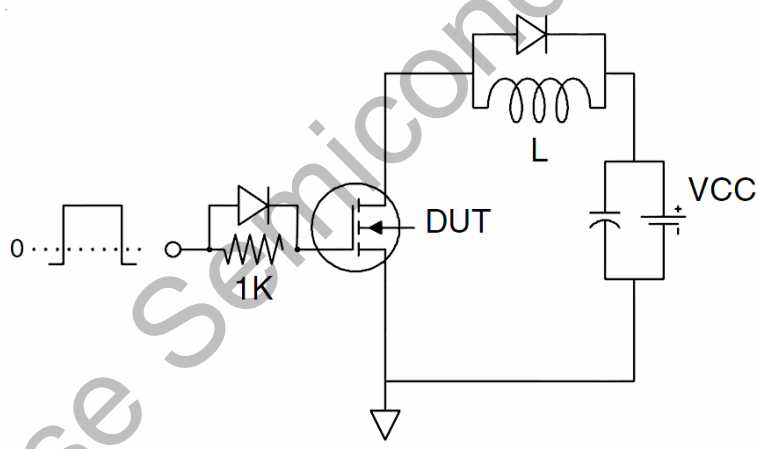
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Test Circuit

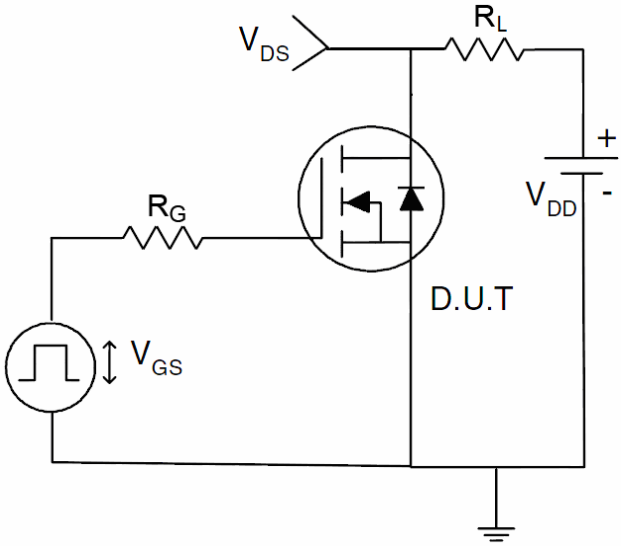
1) E_{AS} Test Circuits



2) Gate Charge Test Circuit:



3) Switch Time Test Circuit:

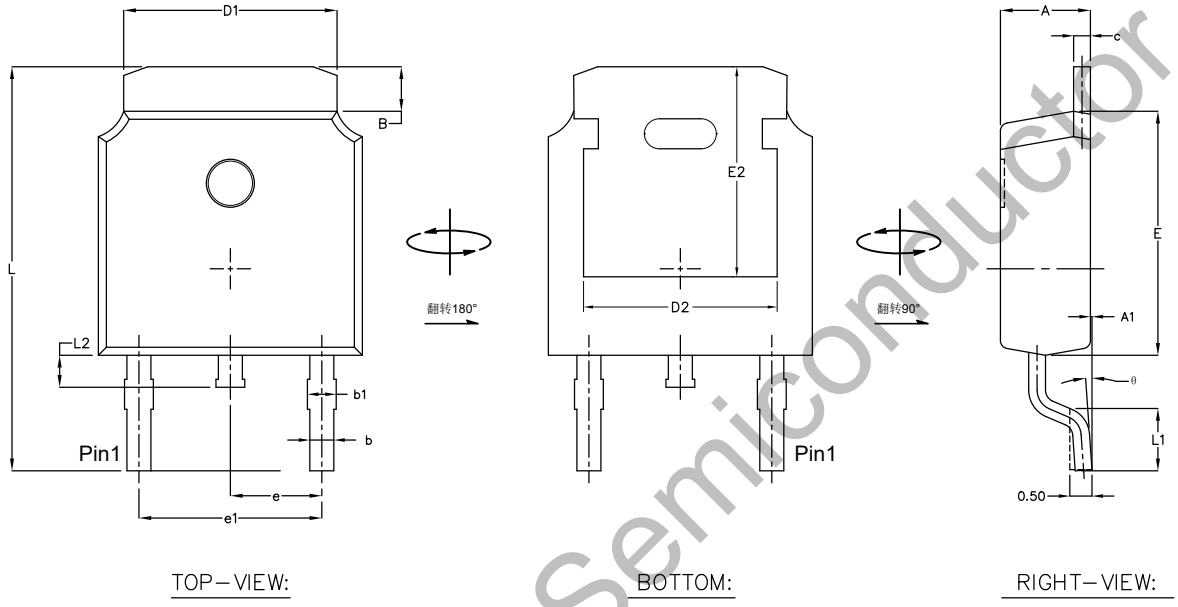


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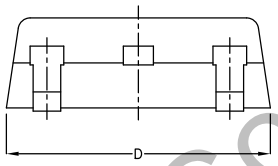
Package Dimension

TO-252S

Unit: mm



TOP—VIEW: BOTTOM: RIGHT—VIEW:



FRONT—VIEW:

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.20	2.25	2.30
A1	0.03	0.08	0.13
B	0.85	1.00	1.15
b	0.59	0.69	0.79
b1	0.74	0.84	0.94
c	0.48	0.50	0.52
D	6.55	6.60	6.65
D1	5.23	5.33	5.43
D2	4.74	4.84	4.94
E	6.05	6.10	6.15
E2	5.15	5.25	5.35
e	2.286TYP.		
e1	4.47	4.57	4.67
L	9.77	9.97	10.17
L1	1.40	1.50	1.60
L2	0.70	0.80	0.90
θ	0°	3°	6°

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