WildGoose

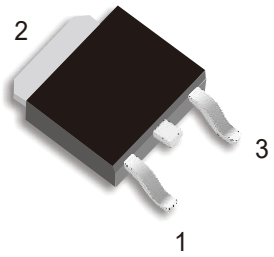
RoHS COMPLIANT

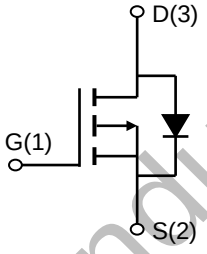
WGD90P03

Features:

- ☐ Advanced Trench Technology
- ☐ Ultra Low Gate Charge:Qg=30nC (Typ.)
- ☐ VDSS=-30V, ID=-90A
- ☐ Rds(on):4.3mΩ(Typ.) @VG=-10V
- ☐ 100% Avalanche Tested

TO-252





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

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

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V_{DSS}		-30	V
Drain Current	I_D	Tj=25℃	-90	A
		Tj=100℃	-49	
Gate-Source Voltage	V_{GSS}		±20	V
Single Pulse Avalanche Energy (2)	E_{AS}		210	mJ
Pulsed Drain Current (1)	I_{DM}		-300	A
Power Dissipation (Tj=25℃)	P_D		55	W
Junction Temperature(Max)	T_j		150	℃
Storage Temperature	T_{stg}		-55~+175	℃
Maximum lead temperature for soldering purpose,1/8'from case for 5 seconds	TL		300	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	-	2.3	℃/W

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= -250μA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -30V, V_{GS}=0V	-	-	-1	μA
I_{GSS}	Gate to 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 note3	V_{GS}= -10V, I_D= -30A	-	4.3	5.4	mΩ
		V_{GS}= -4.5V, I_D= -20A	-	7.0	9.1	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= -15V, V_{GS}=0V, f=1.0MHz	-	6800	-	pF
C_{oss}	Output Capacitance		-	769	-	pF
C_{rss}	Reverse Transfer Capacitance		-	726	-	pF
Q_g	Total Gate Charge	V_{DS}= -15V, I_D= -30A, V_{GS}= -10V	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	8	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}= -15V, I_D= -30A, V_{GS}= -10V, R_{GEN}=2.5Ω	-	11	-	ns
t_r	Turn-on Rise Time		-	13	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	52	-	ns
t_f	Turn-off Fall Time		-	21	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-90	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-300	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= -30A	-	-0.8	-1.2	V

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

2. E_{AS} condition: Starting T_J=25℃, V_{DD}= -15V, V_G= -10V, R_G=25Ω, L=0.5mH, I_{AS}= -29A

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

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Typical Performance Characteristics

Figure 1: Output Characteristics

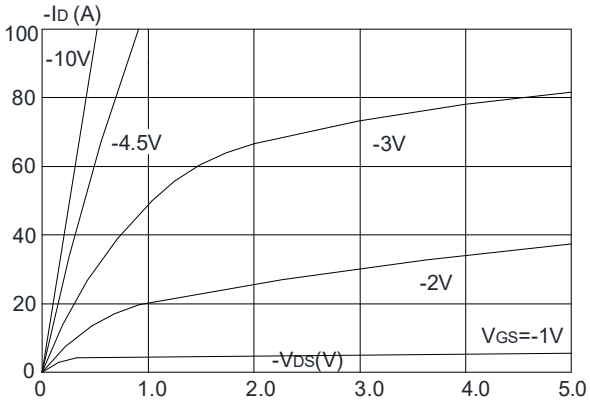


Figure 2: Typical Transfer Characteristics

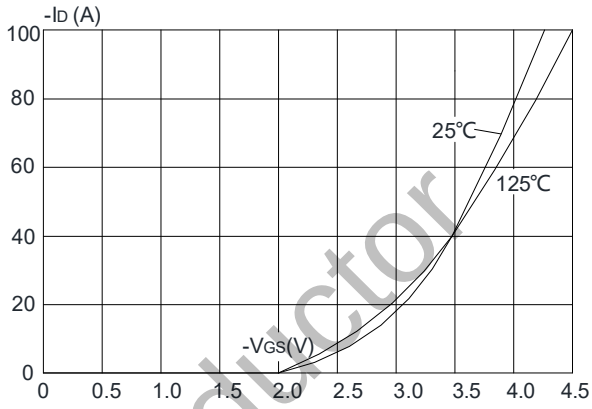


Figure 3: On-resistance vs. Drain Current

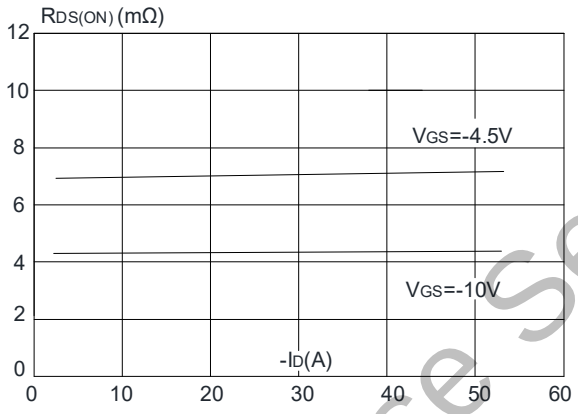


Figure 4: Body Diode Characteristics

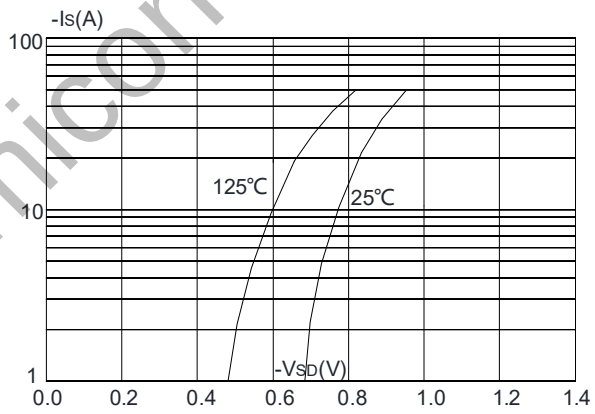


Figure 5: Gate Charge Characteristics

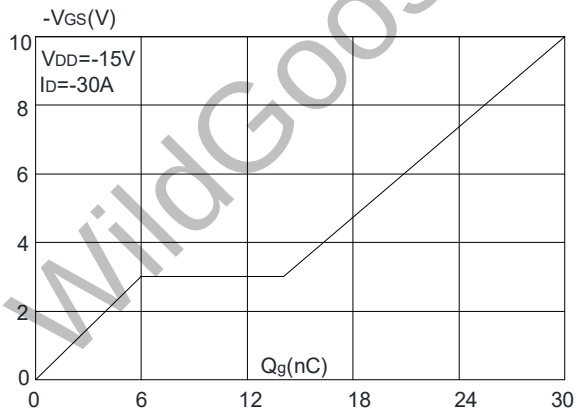
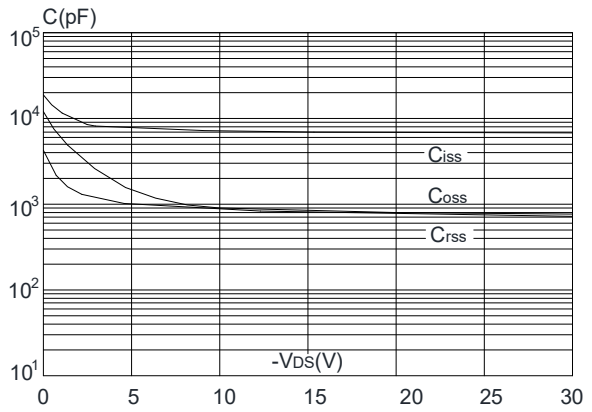


Figure 6: Capacitance Characteristics



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Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

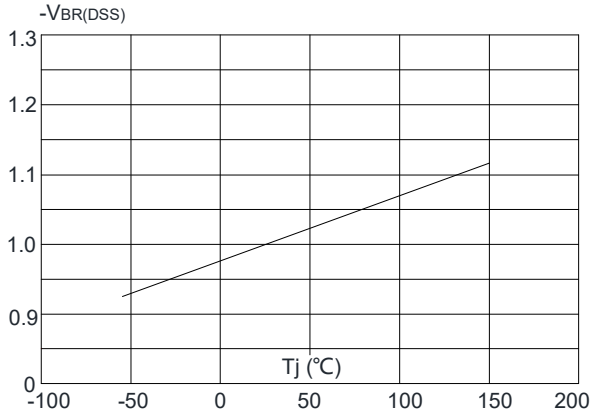


Figure 8: Normalized on Resistance vs. Junction Temperature

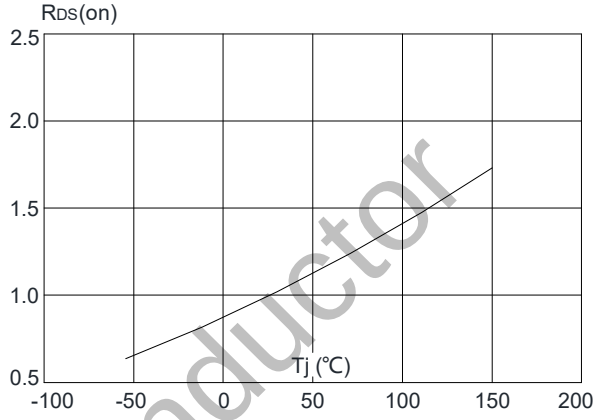


Figure 9: Maximum Safe Operating Area

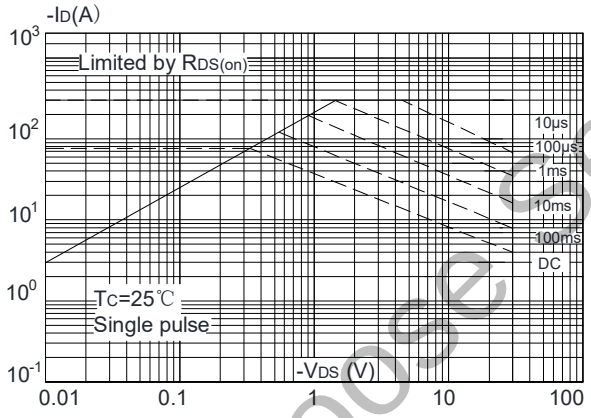


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

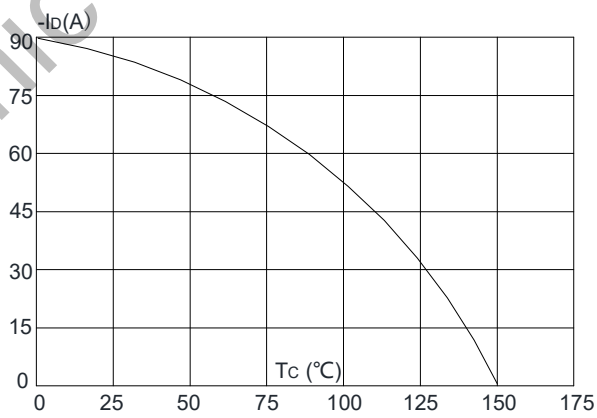
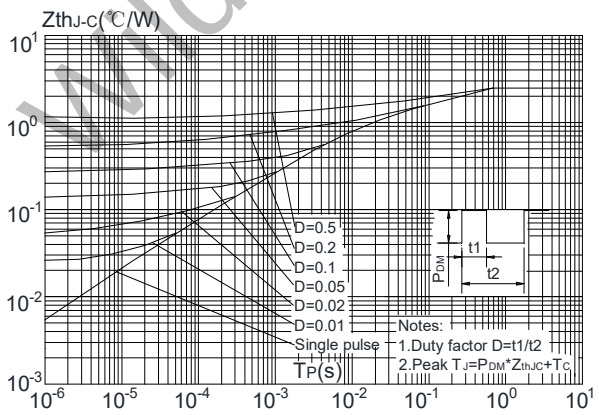


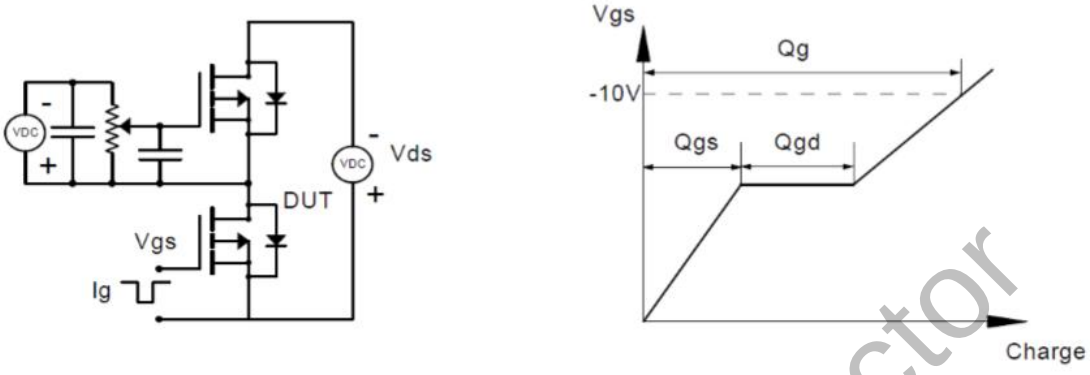
Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



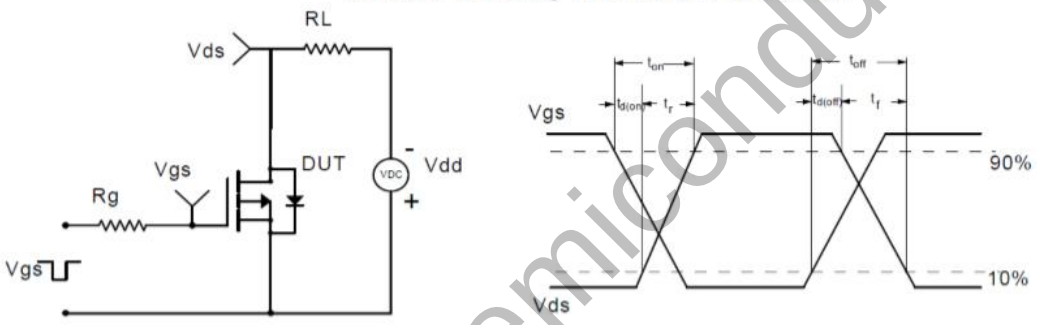
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Test Circuit

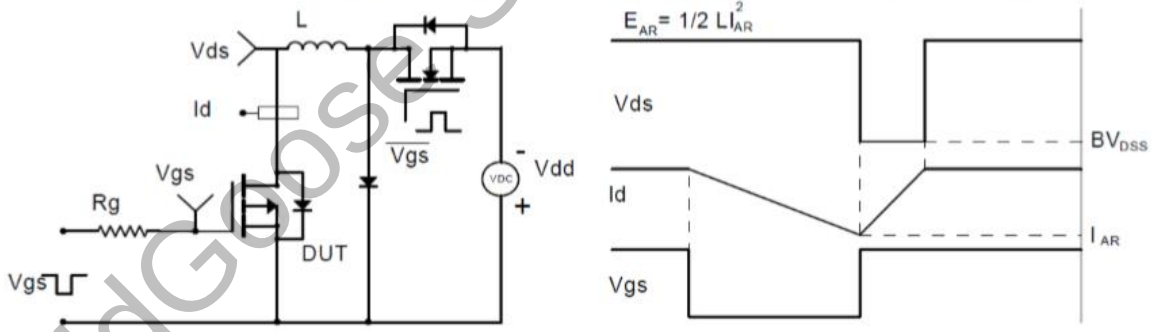
Gate Charge Test Circuit & Waveform



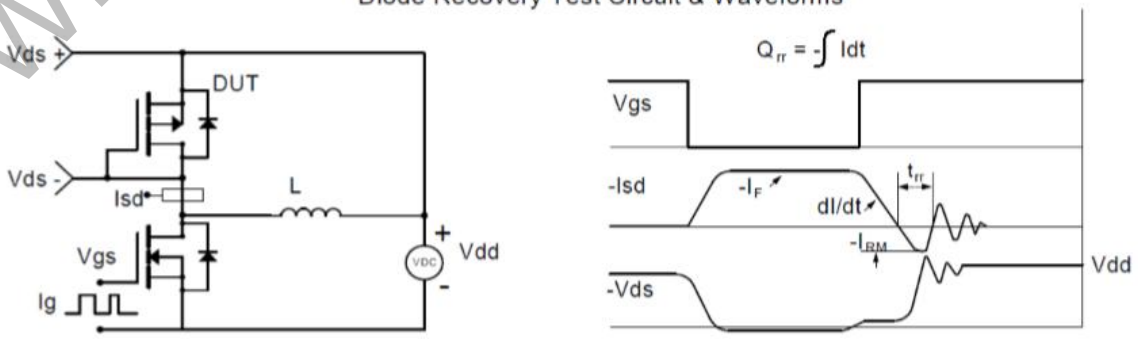
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

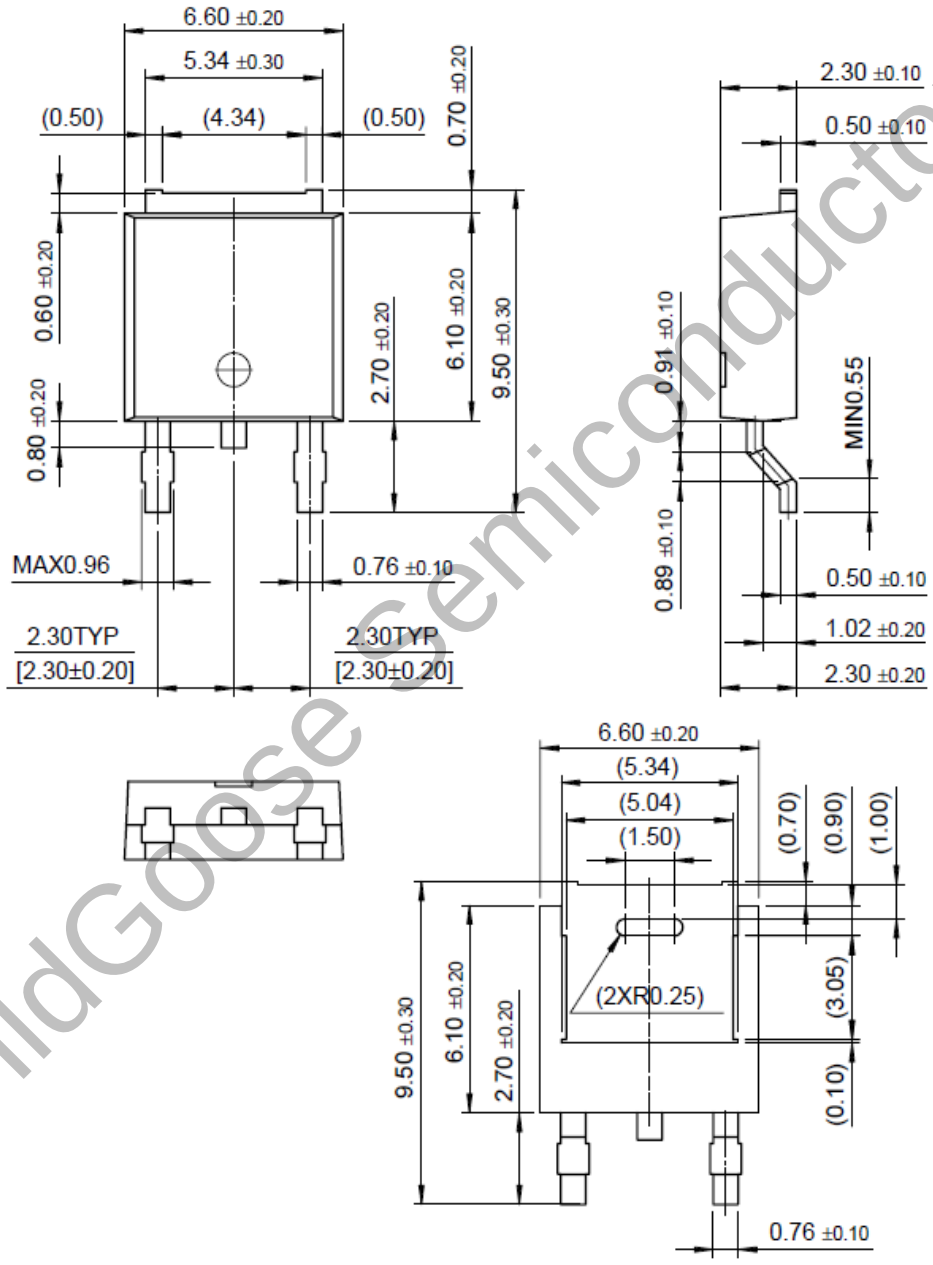


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Package Dimension

TO-252

Unit: mm



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