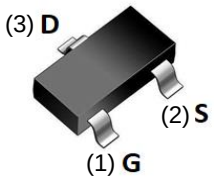
WG2301C

Features:

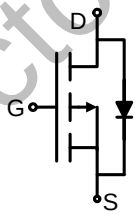
- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 4.1nC (Typ.)
- ☐ BVDSS=-20V,ID=-2.2A
- ☐ RDS(on) :112mΩ (Max) @V G=-4.5V
- ☐ 100% Avalanche Tested

SOT-23

RoHS COMPLIANT



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



Marking:A1SHB

Schematic diagram

WildGoose Semiconductor

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	-2.2	A
Drain Current -Pulsed (Note 1)	I_{DM}	-12	A
Maximum Power Dissipation	P_D	1	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	125	℃/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	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -20V, V_{GS}=0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D= -250μA	-0.5	-0.7	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS}= -4.5V, I_D= -2A	-	89	112	mΩ
		V_{GS}= -2.5V, I_D= -1A	-	118	148	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= -10V, V_{GS}=0V, f=1.0MHz	-	234	-	pF
C_{oss}	Output Capacitance		-	34	-	pF
C_{rss}	Reverse Transfer Capacitance		-	24	-	pF
Q_g	Total Gate Charge	V_{DS}= -10V, I_D= -2A, V_{GS}= -4.5V	-	4.1	-	nC
Q_{gs}	Gate-Source Charge		-	0.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	1.1	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}= -10V, I_D= -2A, R_G=1Ω, V_{GEN}= -4.5V, R_L=1.2Ω	-	11	-	ns
t_r	Turn-on Rise Time		-	52	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	16	-	ns
t_f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-2	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-12	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= -2A	-	-	-1.2	V

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

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

WildGoose Semiconductor

Typical Performance Characteristics

Figure1: Output Characteristics

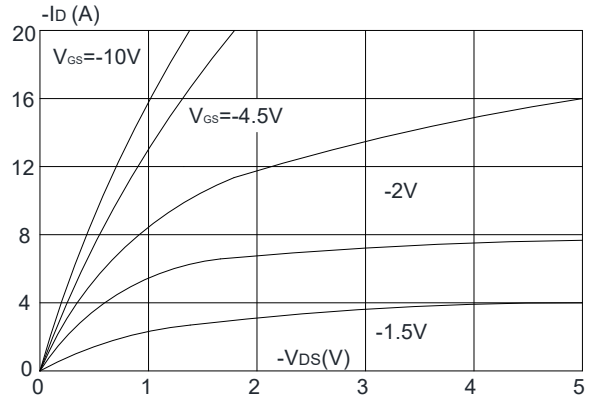


Figure 2: Typical Transfer Characteristics

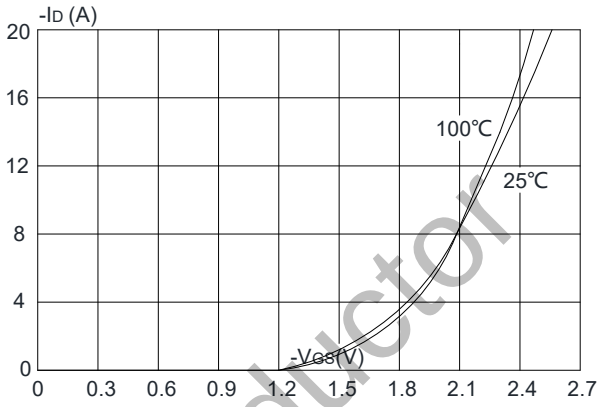


Figure 3: On-resistance vs. Drain Current

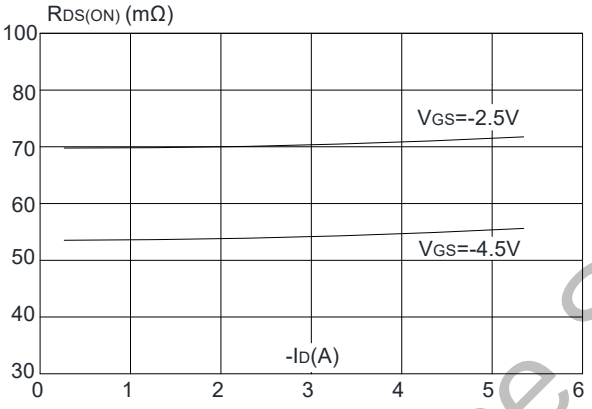


Figure 4: Body Diode Characteristics

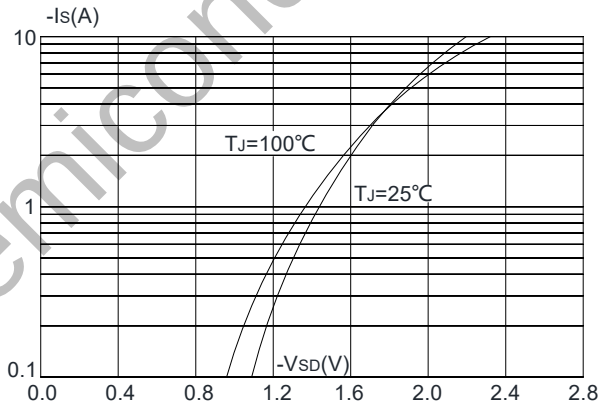


Figure 5: Gate Charge Characteristics

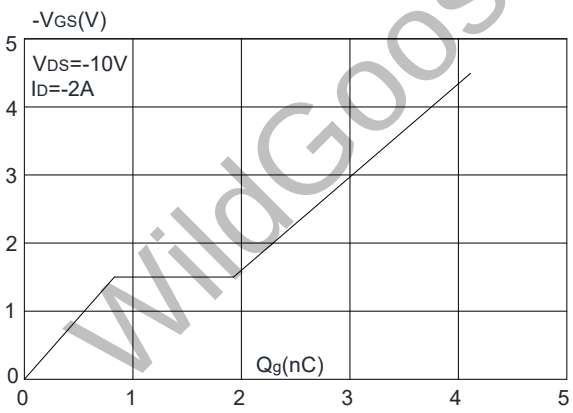
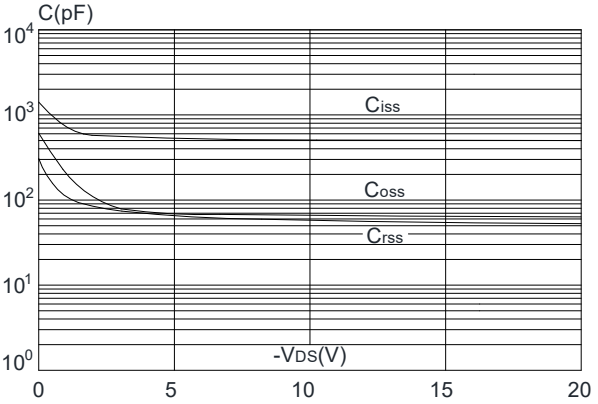


Figure 6: Capacitance Characteristics



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Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

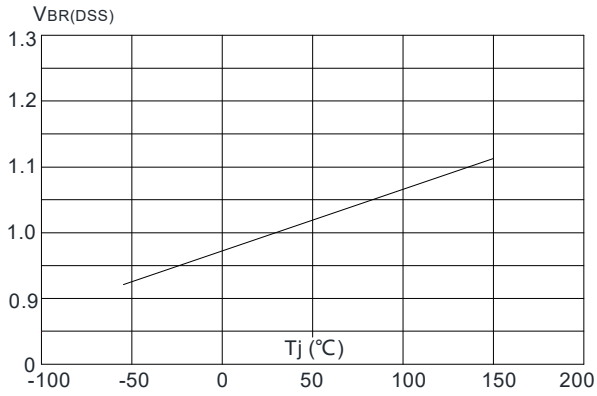


Figure 8: Normalized on Resistance vs. Junction Temperature

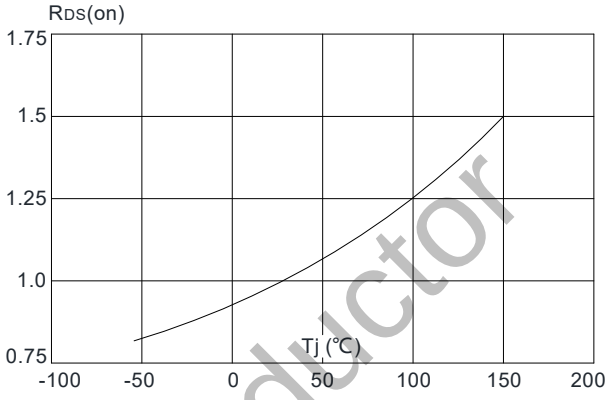


Figure 9: Maximum Safe Operating Area

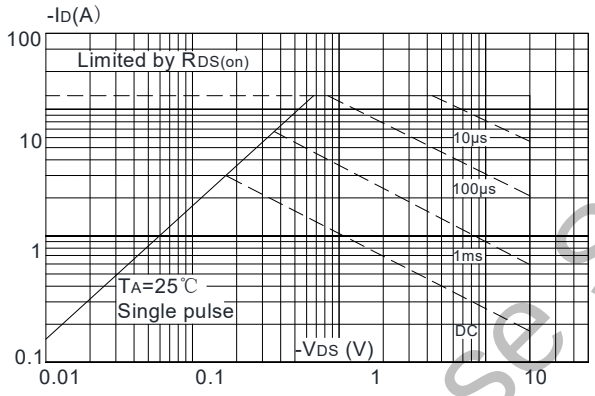


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

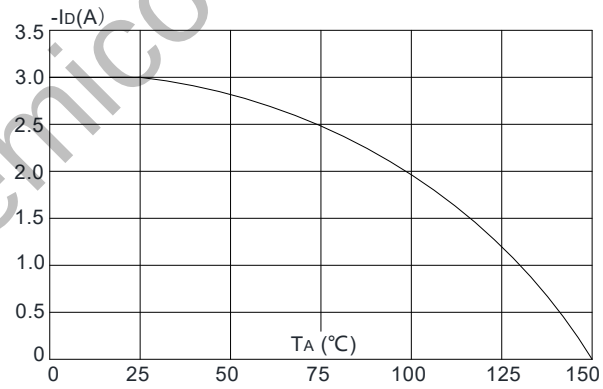
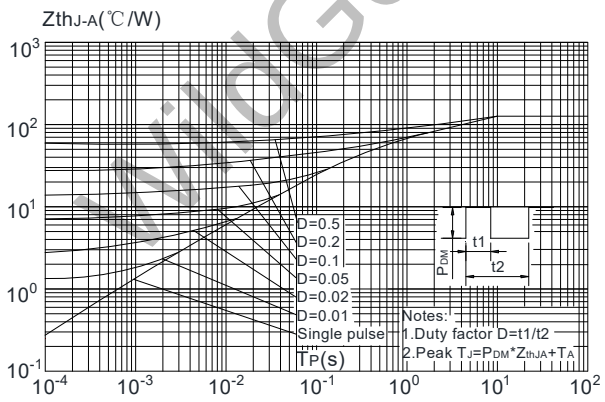


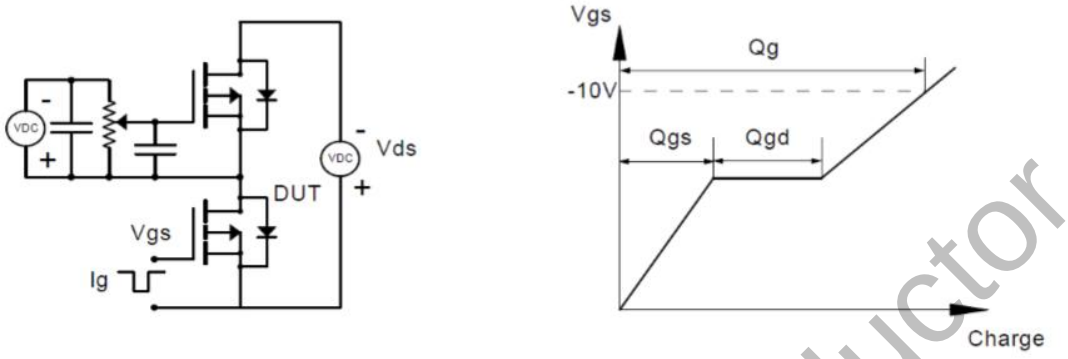
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



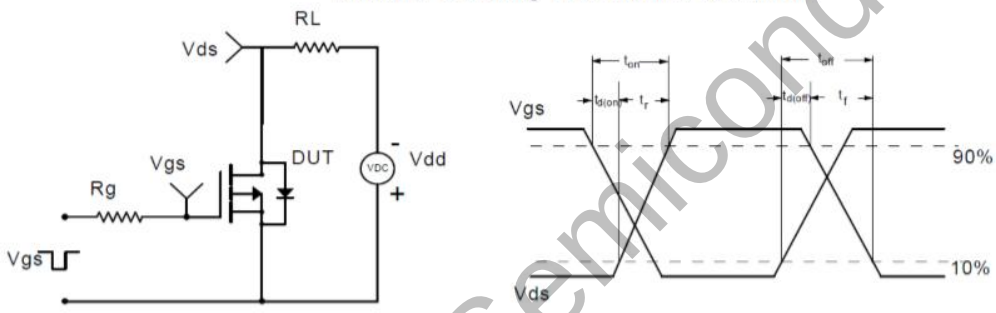
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Test Circuit

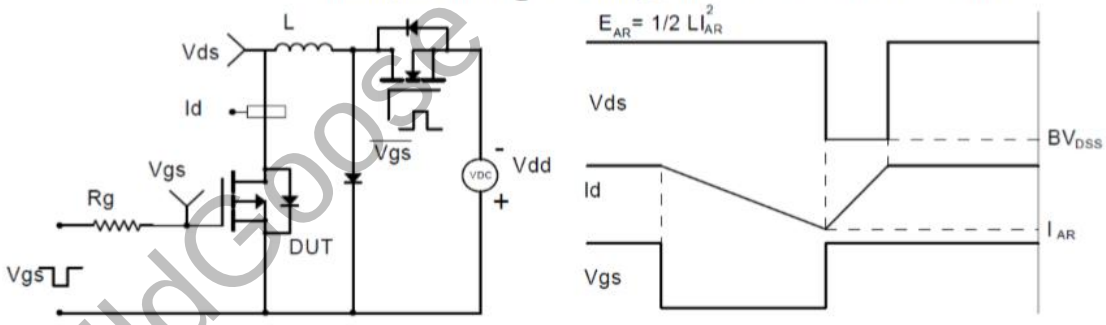
Gate Charge Test Circuit & Waveform



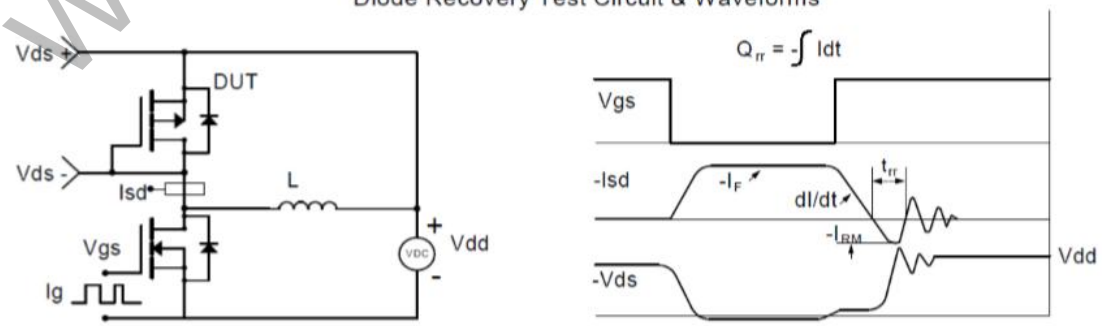
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

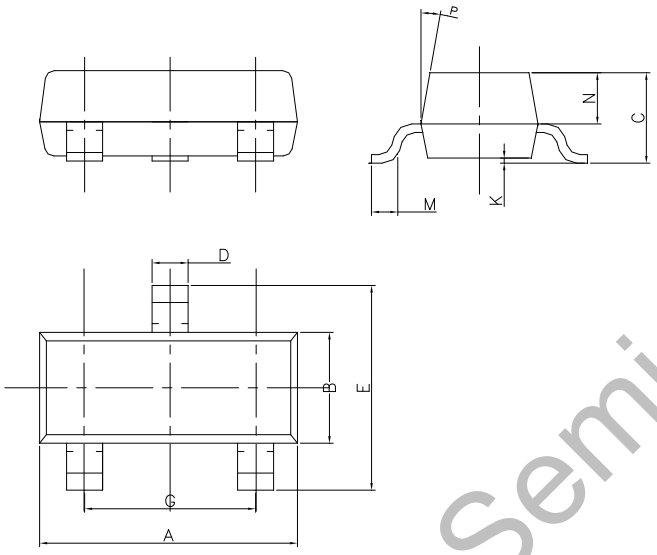


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Package Dimension

SOT-23

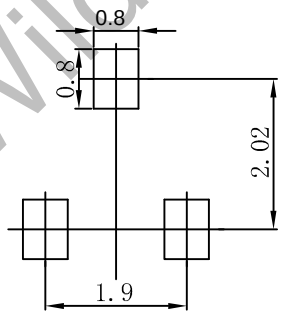
Unit: mm



DIM	MILLIMETERS
A	2.85~3.04
B	1.30±0.10
C	1.00±0.10
D	0.45±0.05
E	2.25~2.55
G	1.90±0.1
K	0.00−0.10
M	0.20 MIN
N	0.60±0.10
P	7±2°

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SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.