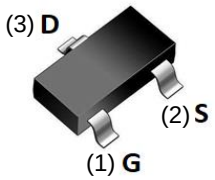
WG3401C

Features:

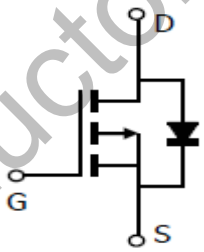
- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 6.4nC (Typ.).
- ☐ BVDSS= -30V,ID= -5.0A
- ☐ RDS(on) : 52 mΩ (Typ.) @VG=-4.5V
- ☐ 100% Avalanche Tested

SOT-23

RoHS COMPLIANT



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



Marking:A19T

Schematic diagram

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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		-30	V
V_{GS}	Gate-to-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A = 25°C	-5.0	A
		T_A = 100°C	-3	
I_{DM}	Pulsed Drain Current (1)		-20	A
P_D	Power Dissipation	T_A = 25°C	1.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(2)		108	°C/W
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} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-0.6	-0.9	-1.3	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = -10V, I_D =-4.0A	-	52	56	mΩ
		V_{GS} = -4.5V, I_D =-3A	-	60	69	mΩ
		V_{GS} = -2.5V, I_D = -1A	-	72	96	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz	-	762	-	pF
C_{oss}	Output Capacitance		-	74	-	pF
C_{rss}	Reverse Transfer Capacitance		-	61	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to -4.5V V_{DS} = -15V, I_D = -3A	-	8	-	nC
Q_{gs}	Gate Source Charge		-	2	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	2	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = -4.5V, V_{DD} = -15V I_D= -3A, R_{GEN} = 3Ω	-	8	-	ns
t_r	Turn-On Rise Time		-	16	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	46	-	ns
t_f	Turn-Off Fall Time		-	34	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-5.0	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-20	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S =-5.0A	-	-	-1.2	V
trr	Body Diode Reverse Recovery Time	I_F = -4A, di/dt = 100A/us	-	8	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	3	-	nC

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

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

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

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Typical Performance Characteristics

Figure 1: Output Characteristics

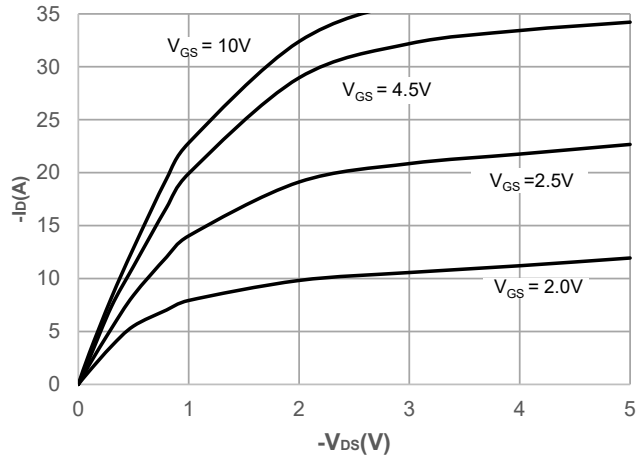


Figure 2: Typical Transfer Characteristics

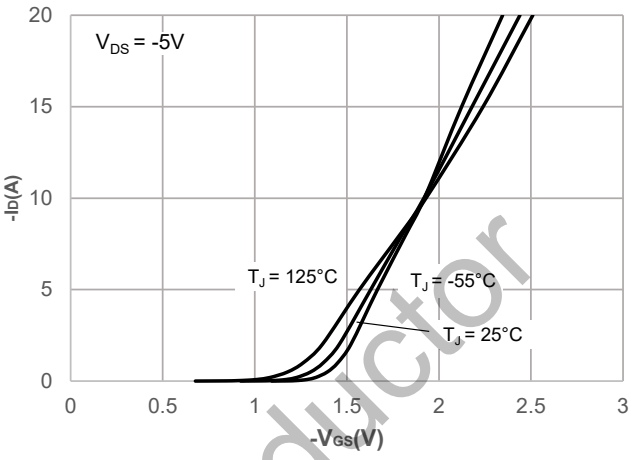


Figure 3: On-resistance vs. Drain Current

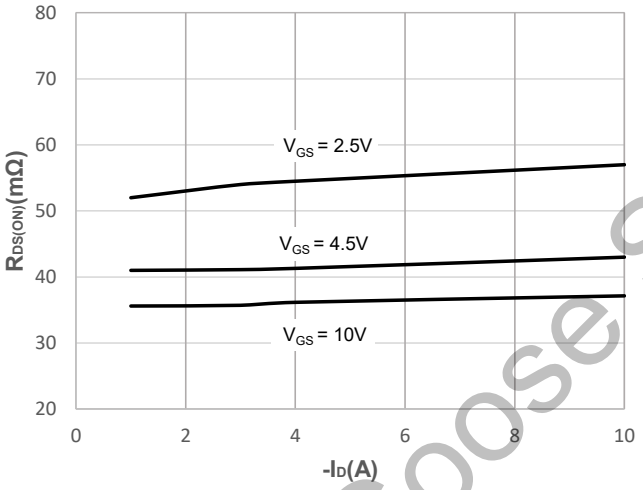


Figure 4: Body Diode Characteristics

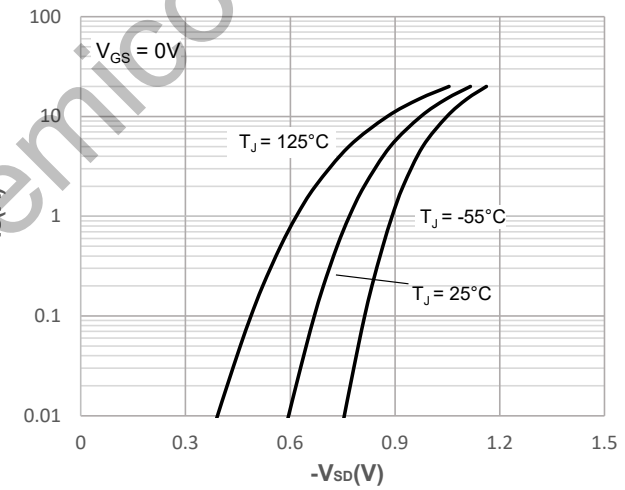


Figure 5: Gate Charge Characteristics

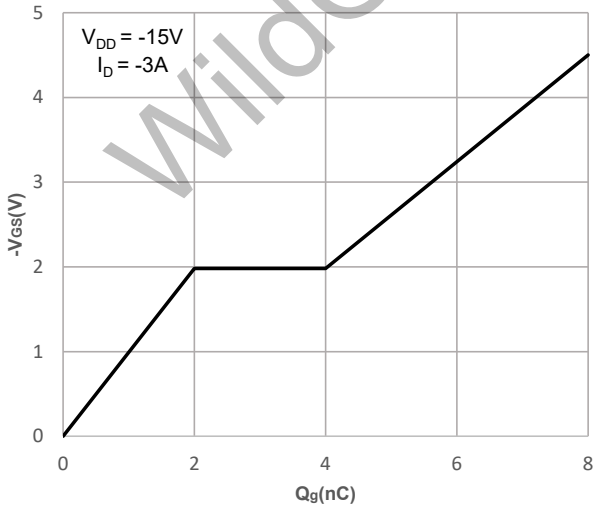
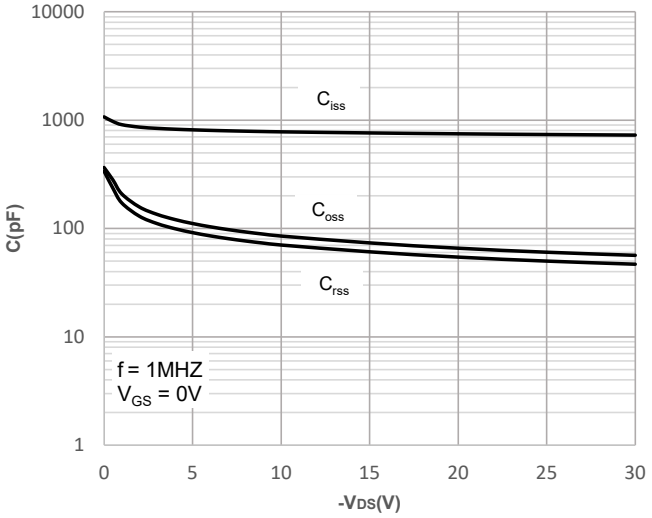


Figure 6: Capacitance Characteristics



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Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

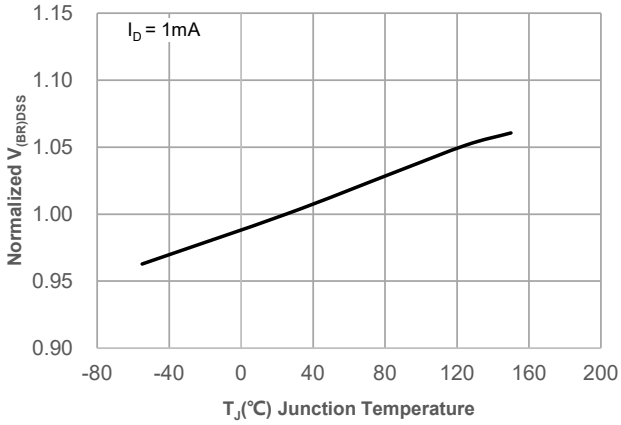


Figure 8: Normalized on Resistance vs. Junction Temperature

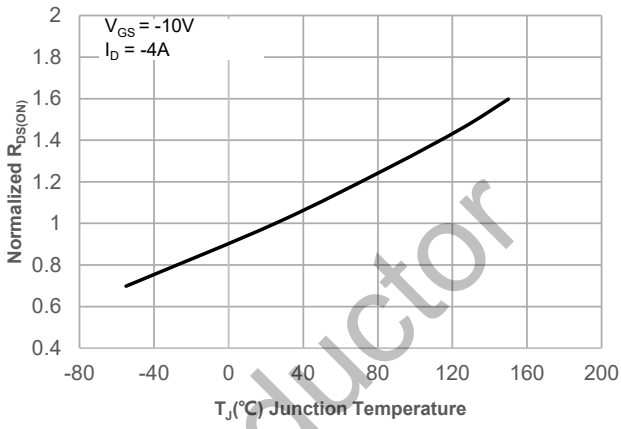


Figure 9: Maximum Safe Operating Area

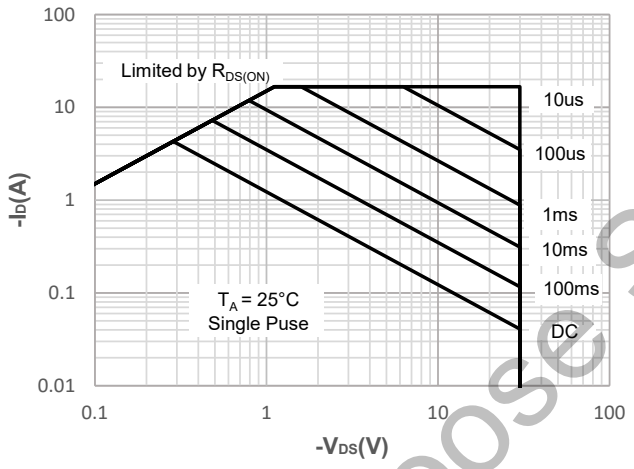


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

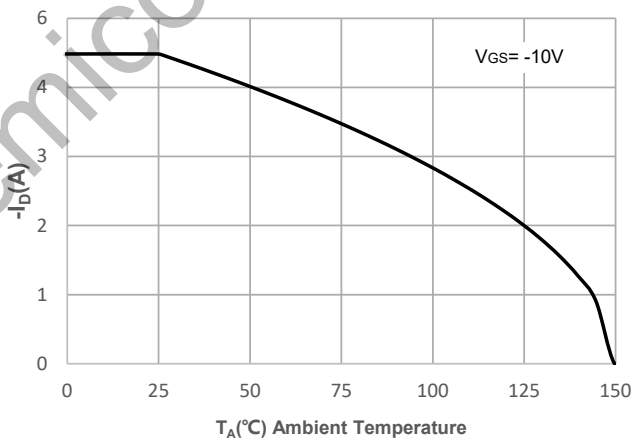


Figure 11: Normalized Maximum Transient Thermal Impedance

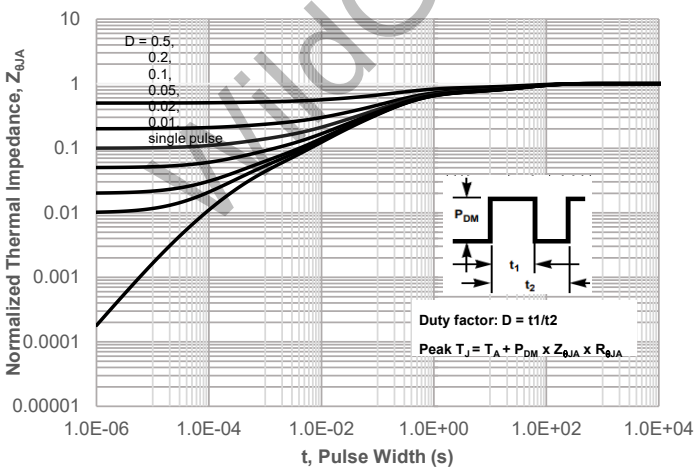
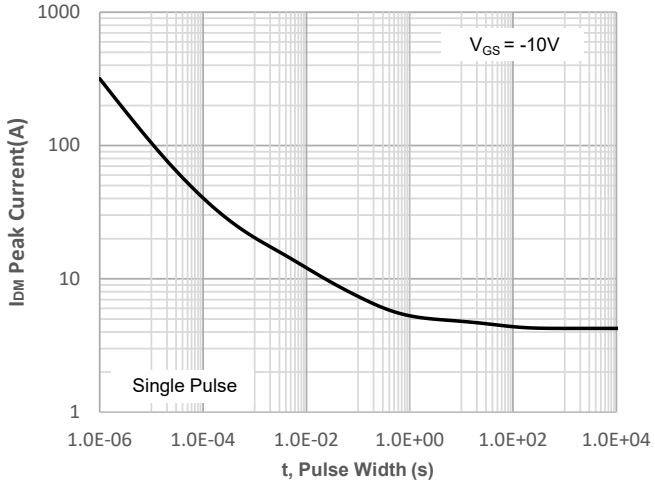


Figure 12: Peak Current Capacity



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Test Circuit

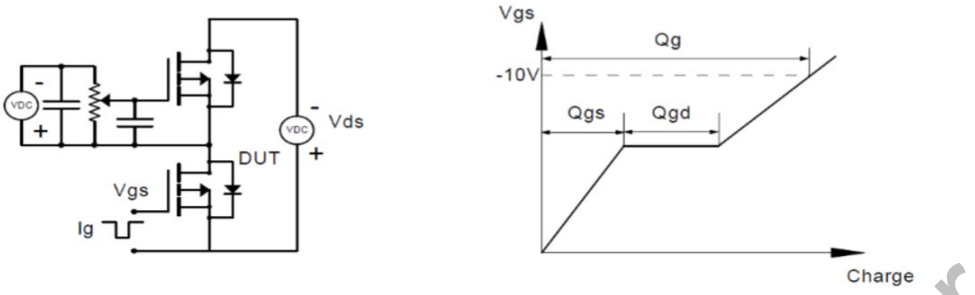

Figure 1: Gate Charge Test Circuit & Waveform

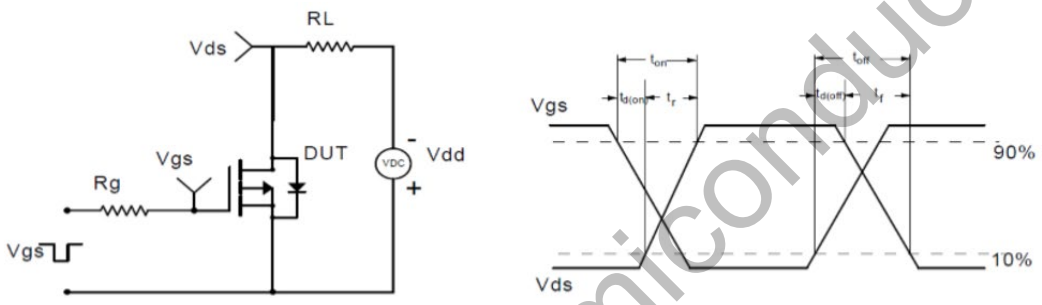

Figure 2: Resistive Switching Test Circuit & Waveform

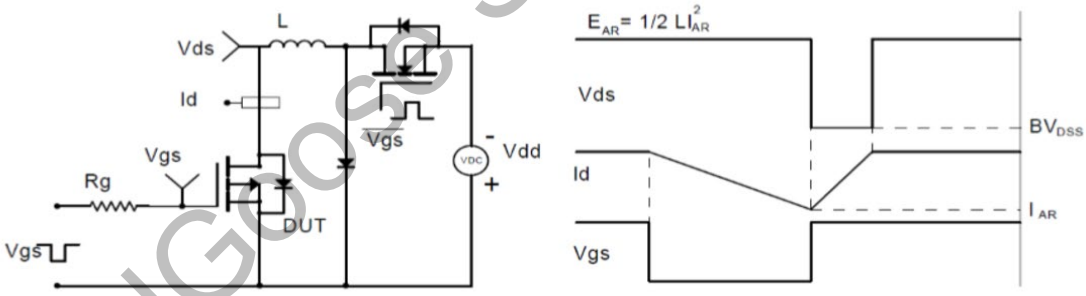

Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

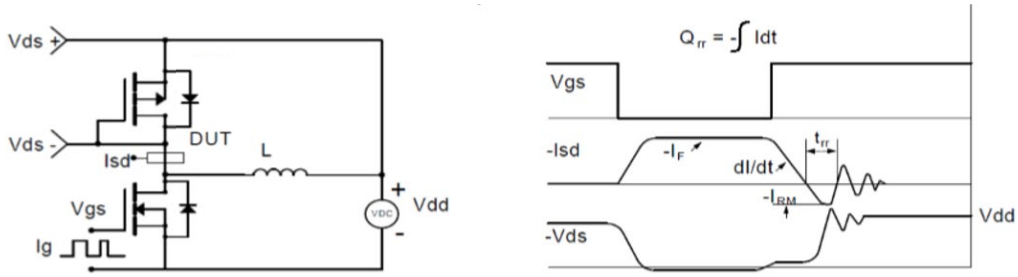

Figure 4: Diode Recovery Test Circuit & Waveform

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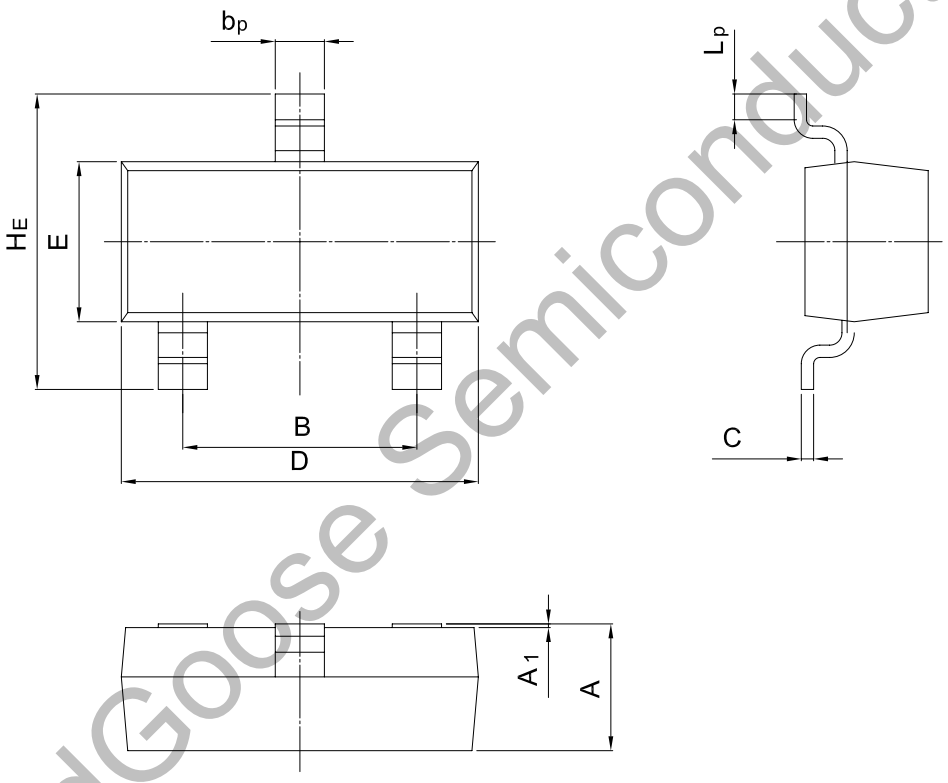
Package Dimension

SOT-23

Unit: mm



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

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