
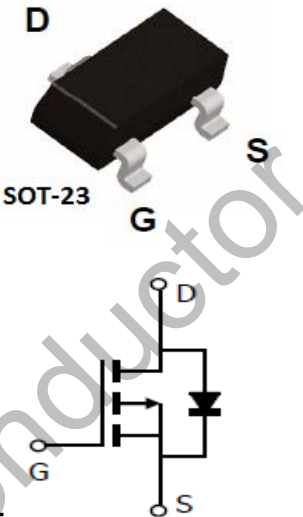


**WG3401**  
30V P-Channel MOSFET

**Features:**

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg= 6.4nC (Typ.).
- BVDS= -30V, ID= -4A
- RDS(on) : 75mΩ (Max) @VG=-4.5V
- 100% Avalanche Tested

SOT-23 



MARKING: A19T

**Absolute Maximum Ratings (TA=25°C unless otherwise noted)**

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V <sub>DS</sub>	-30	V
Gate-Source Voltage		V <sub>GS</sub>	±12	V
Drain Current <sup>a</sup>	T <sub>C</sub> =25°C	I <sub>D</sub>	-4.0	A
	T <sub>C</sub> =70°C		-2.5	
Drain Current –Pulsed <sup>a</sup>		I <sub>DM</sub>	-16.8	A
Power Dissipation (T <sub>C</sub> =25°C)		P <sub>D</sub>	1.56	W
Power Dissipation – Derate above 25°C			0.012	W/°C
Storage Temperature Range		T <sub>STG</sub>	-55 ~ +150	°C
Operating Junction Temperature Range		T <sub>J</sub>	-55 ~ +150	°C
Thermal Resistance, Junction-to-Ambient <sup>1</sup>		R <sub>θJA</sub>	90	°C/W

**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	30	-30*	---	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V	---	---	-1	μA
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	---	---	±100	nA
<b>On Characteristics <sup>a</sup></b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.7	---	-1.3	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.2A	---	50	60	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.5A	---	62	75	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.0A	---	80	110	mΩ
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-3A	---	5.5	---	S
<b>Drain-Source Diode Characteristics <sup>a</sup></b>						
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	-4.2	A
Pulsed Source Current	I <sub>SM</sub>		---	---	-16.8	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1.0A, T <sub>J</sub> =25°C	---	---	-1.0	V
<b>Dynamic Characteristics <sup>b</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, F=1MHz	---	515	745	pF
Output Capacitance	C <sub>oss</sub>		---	55	80	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		---	20	30	pF
<b>Switching Characteristics <sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3A	---	6.4	9	nC
Gate-Source Charge	Q <sub>gs</sub>		---	0.9	1	nC
Gate-Drain Charge	Q <sub>gd</sub>		---	1.6	3	nC
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =-10V, V <sub>GS</sub> =-4.5V, R <sub>G</sub> =25Ω, I <sub>D</sub> =-1A	---	5	9	ns
Rise Time	T <sub>r</sub>		---	17.4	33	ns
Turn-Off Delay Time	T <sub>d(off)</sub>		---	40.7	80	ns
Fall Time	T <sub>f</sub>		---	11.4	23	ns

Notes: a. Repetitive Rating: Pulsed width limited by maximum junction temperature.  
 b. Pulse test; pulse width ≤ 300us, duty cycle ≤ 2%. Essential independent of operating temperature.  
 c. Guaranteed by design, not subject to production testing.

Typical Characteristics

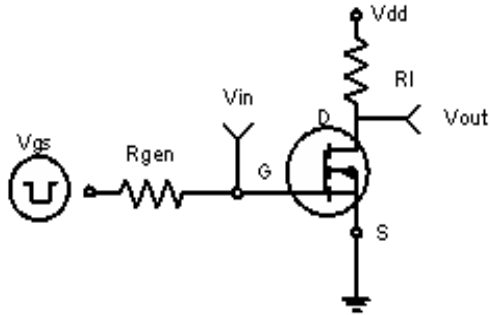


Figure 1: Switching Test Circuit

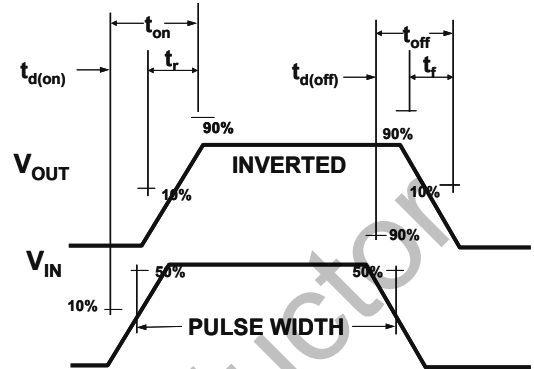


Figure 2: Switching Waveforms

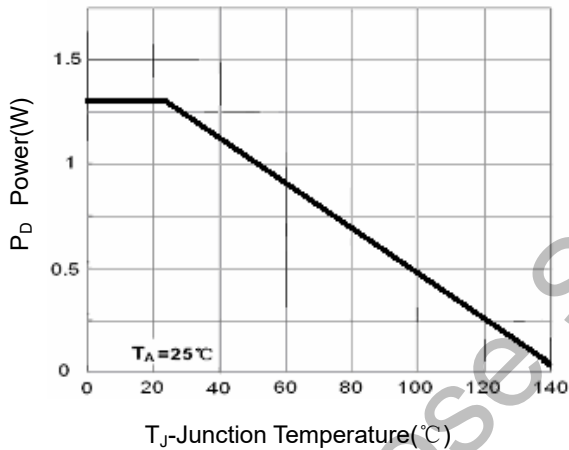


Figure 3 Power Dissipation

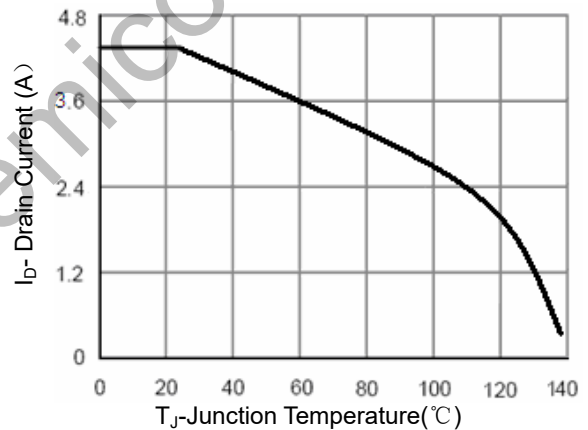


Figure 4 Drain Current

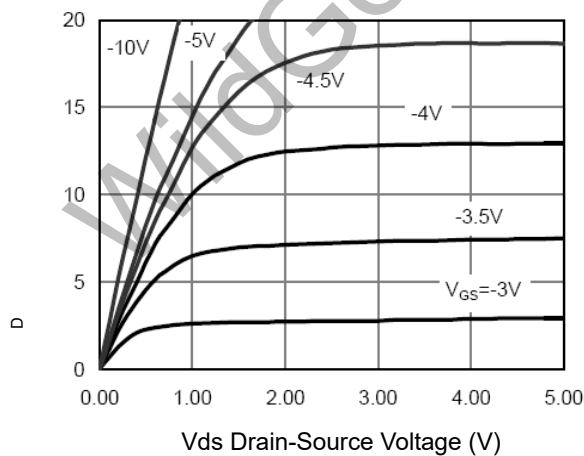


Figure 5 Output Characteristics

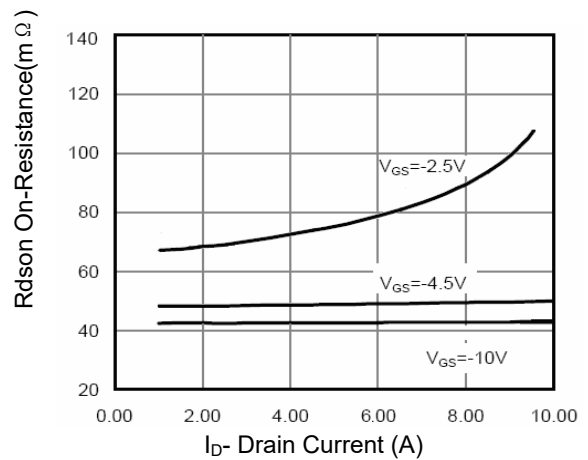


Figure 6 Drain-Source On-Resistance

Typical Characteristics (Continued)

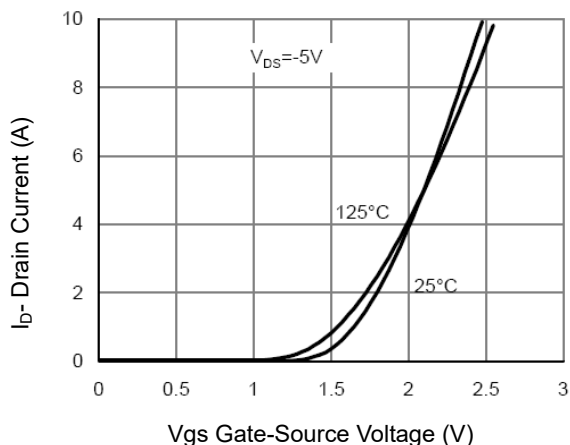


Figure 7 Transfer Characteristics

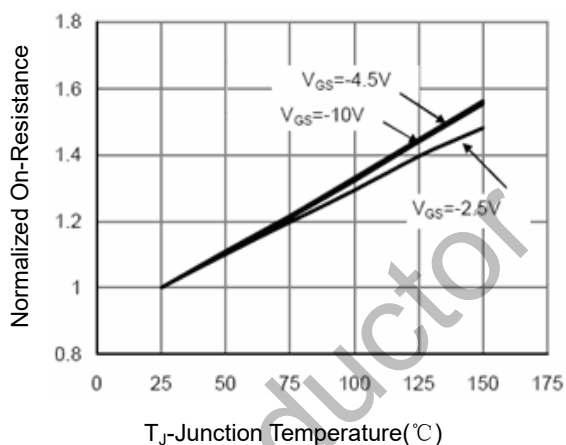


Figure 8 Drain-Source On-Resistance

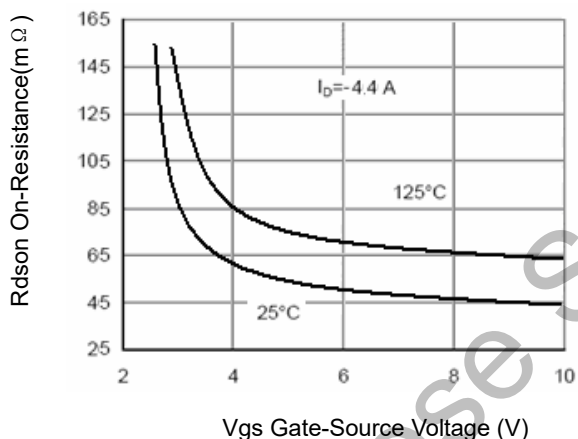


Figure 9 Rdson vs Vgs

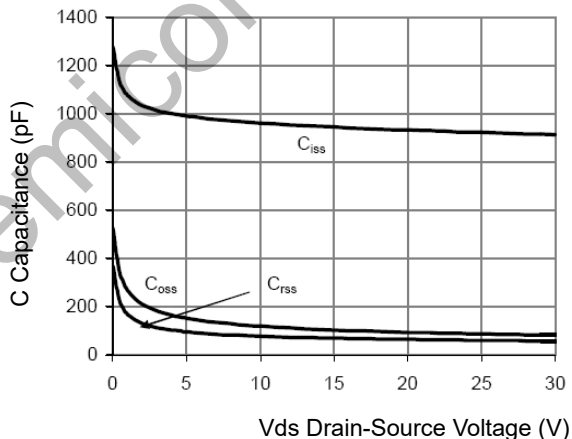


Figure 10 Capacitance vs Vds

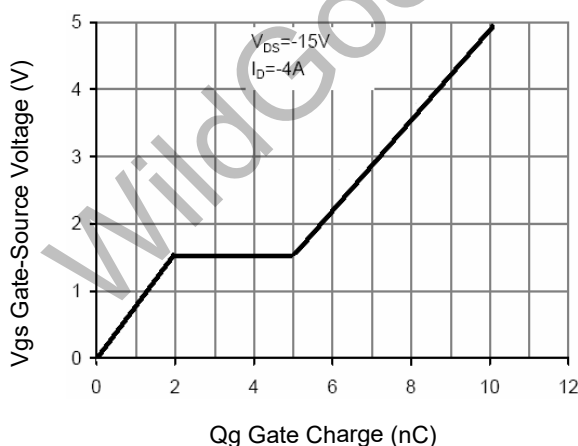


Figure 11 Gate Charge

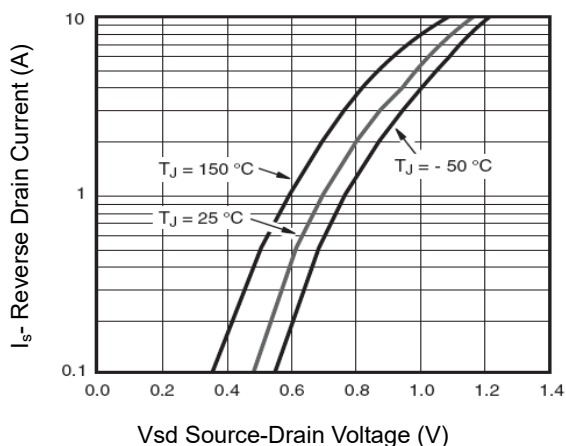


Figure 12 Source- Drain Diode Forward

Typical Characteristics (Continued)

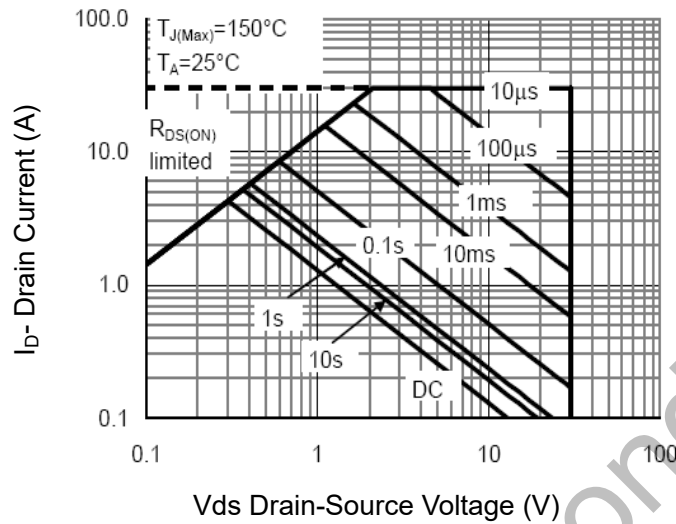


Figure 13 Safe Operation Area

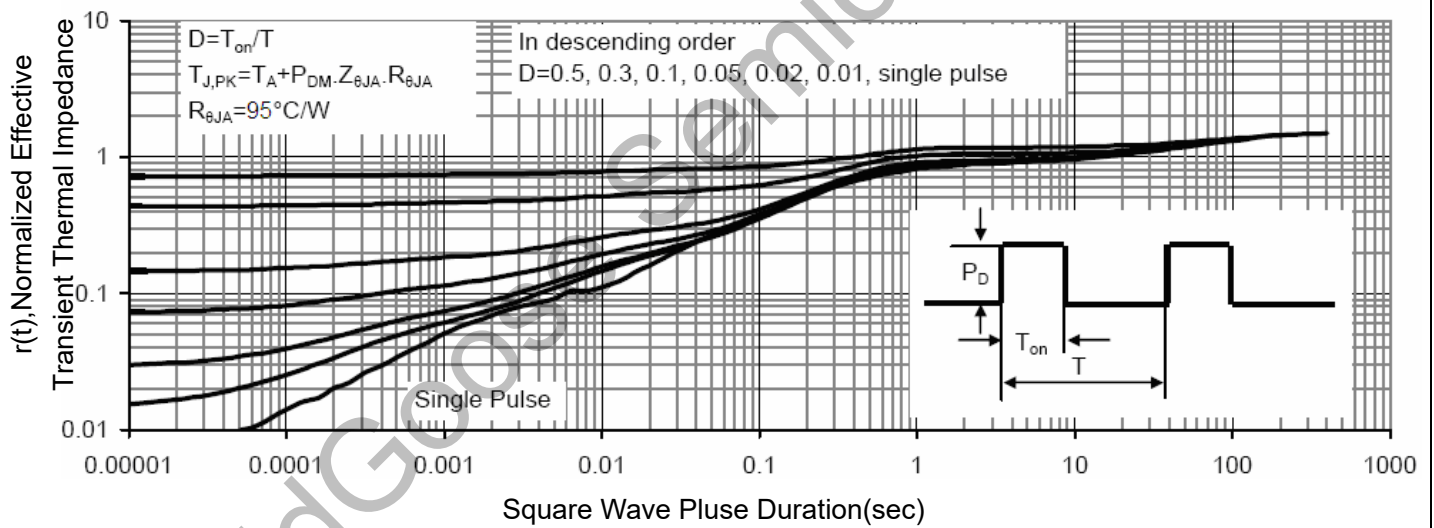


Figure 14 Normalized Maximum Transient Thermal Impedance

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