
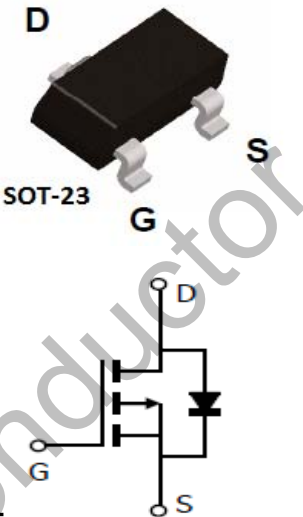
 <p style="font-size: 1.2em; font-weight: bold; margin-top: 10px;">WG3401</p> <p>30V P-Channel MOSFET</p> <p>Features:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Low Intrinsic Capacitances. <input type="checkbox"/> Excellent Switching Characteristics. <input type="checkbox"/> Extended Safe Operating Area. <input type="checkbox"/> Unrivalled Gate Charge :Qg= 6.4nC (Typ.). <input type="checkbox"/> BVDS= -30V, ID= -4A <input type="checkbox"/> RDS(on) : 75mΩ (Max) @VG=-4.5V <input type="checkbox"/> 100% Avalanche Tested 	<p style="text-align: right;">SOT-23 </p> <div style="text-align: center;">  <p style="margin-top: 10px;">MARKING: A19T</p> </div>
---	--

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

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

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	30	-30*	---	V
Zero Gate Voltage Drain Current	I_{DSS}	$T_J=25^\circ\text{C}$ $V_{DS}=-24V, V_{GS}=0V$	---	---	-1	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	± 100	nA
On Characteristics ^a						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.7	---	-1.3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.2A$	---	50	60	m Ω
		$V_{GS}=-4.5V, I_D=-3.5A$	---	62	75	m Ω
		$V_{GS}=-2.5V, I_D=-2.0A$	---	80	110	m Ω
Forward Transconductance	g_{fs}	$V_{DS}=-10V, I_D=-3A$	---	5.5	---	S
Drain-Source Diode Characteristics ^a						
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	---	---	-4.2	A
Pulsed Source Current	I_{SM}		---	---	-16.8	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1.0A, T_J=25^\circ\text{C}$	---	---	-1.0	V
Dynamic Characteristics ^b						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, F=1\text{MHz}$	---	515	745	pF
Output Capacitance	C_{oss}		---	55	80	pF
Reverse Transfer Capacitance	C_{rss}		---	20	30	pF
Switching Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3A$	---	6.4	9	nC
Gate-Source Charge	Q_{gs}		---	0.9	1	nC
Gate-Drain Charge	Q_{gd}		---	1.6	3	nC
Turn-On Delay Time	$T_d(on)$	$V_{DD}=-10V, V_{GS}=-4.5V,$ $R_G=25\Omega, I_D=-1A$	---	5	9	ns
Rise Time	T_r		---	17.4	33	ns
Turn-Off Delay Time	$T_d(off)$		---	40.7	80	ns
Fall Time	T_f		---	11.4	23	ns

Notes: a. Repetitive Rating: Pulsed width limited by maximum junction temperature.

b. Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$. Essential independent of operating temperature.

c. Guaranteed by design, not subject to production testing.

Typical Characteristics

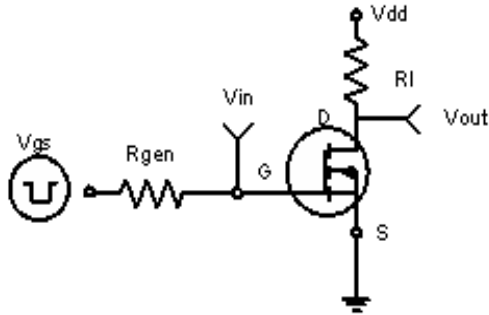


Figure 1: Switching Test Circuit

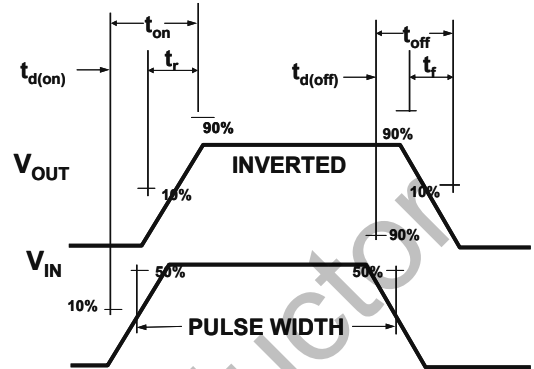


Figure 2: Switching Waveforms

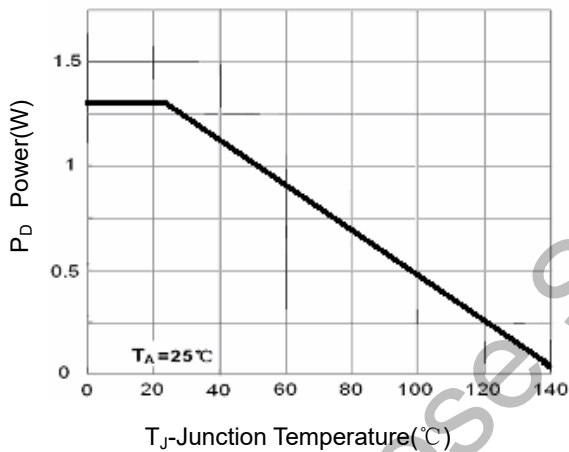


Figure 3 Power Dissipation

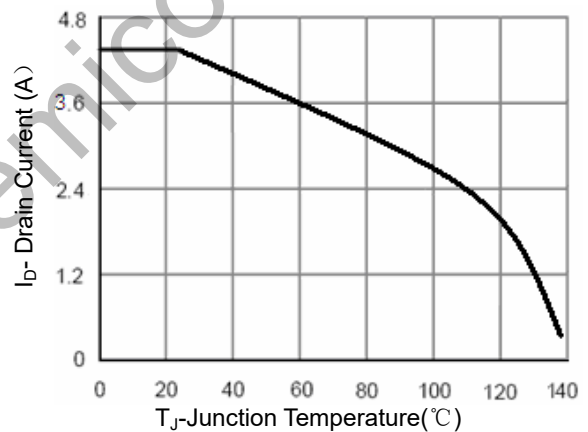


Figure 4 Drain Current

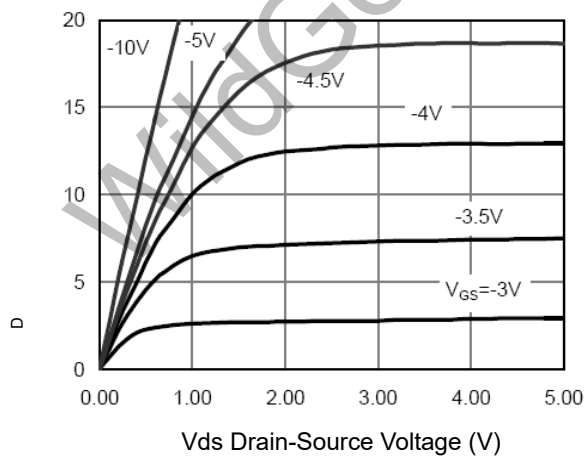


Figure 5 Output Characteristics

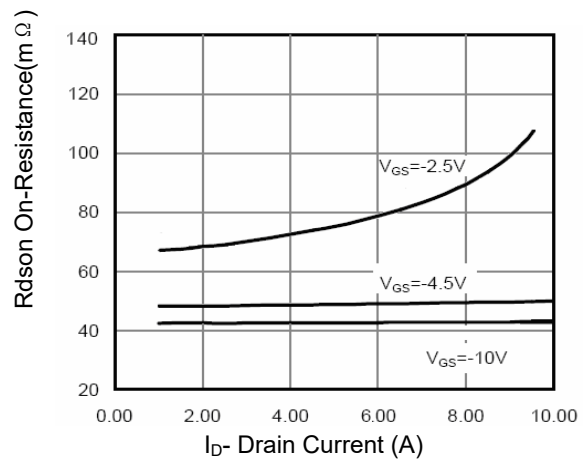


Figure 6 Drain-Source On-Resistance

Typical Characteristics (Continued)

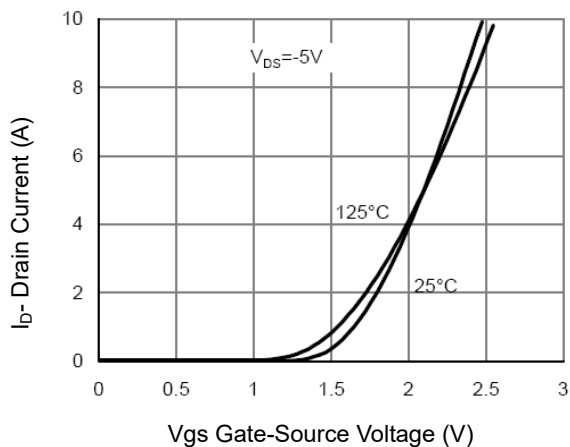


Figure 7 Transfer Characteristics

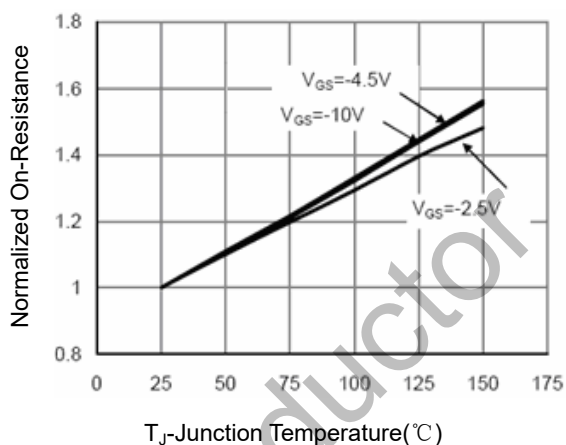


Figure 8 Drain-Source On-Resistance

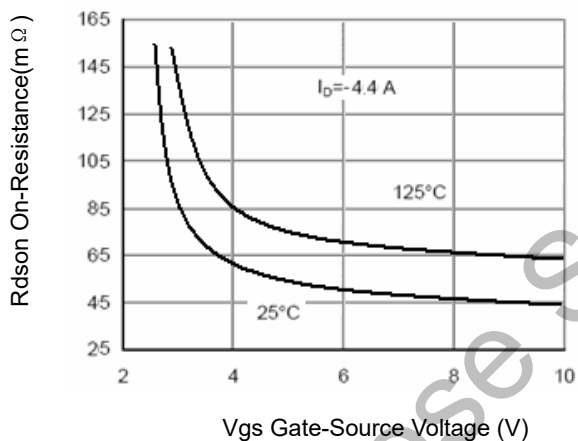


Figure 9 Rdson vs Vgs

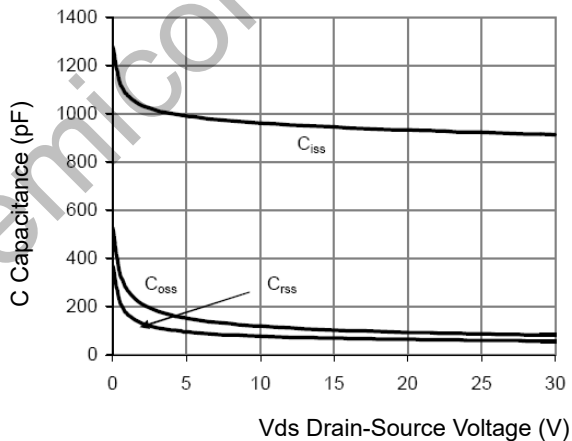


Figure 10 Capacitance vs Vds

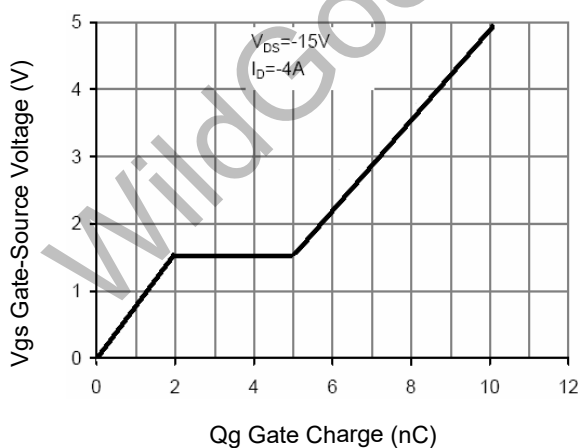


Figure 11 Gate Charge

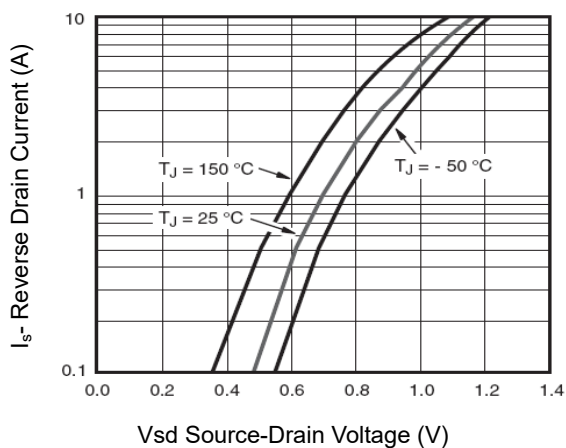


Figure 12 Source- Drain Diode Forward

Typical Characteristics (Continued)

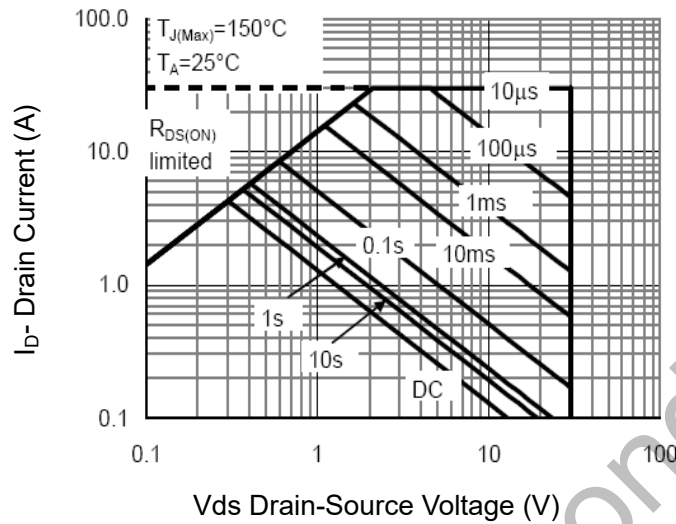


Figure 13 Safe Operation Area

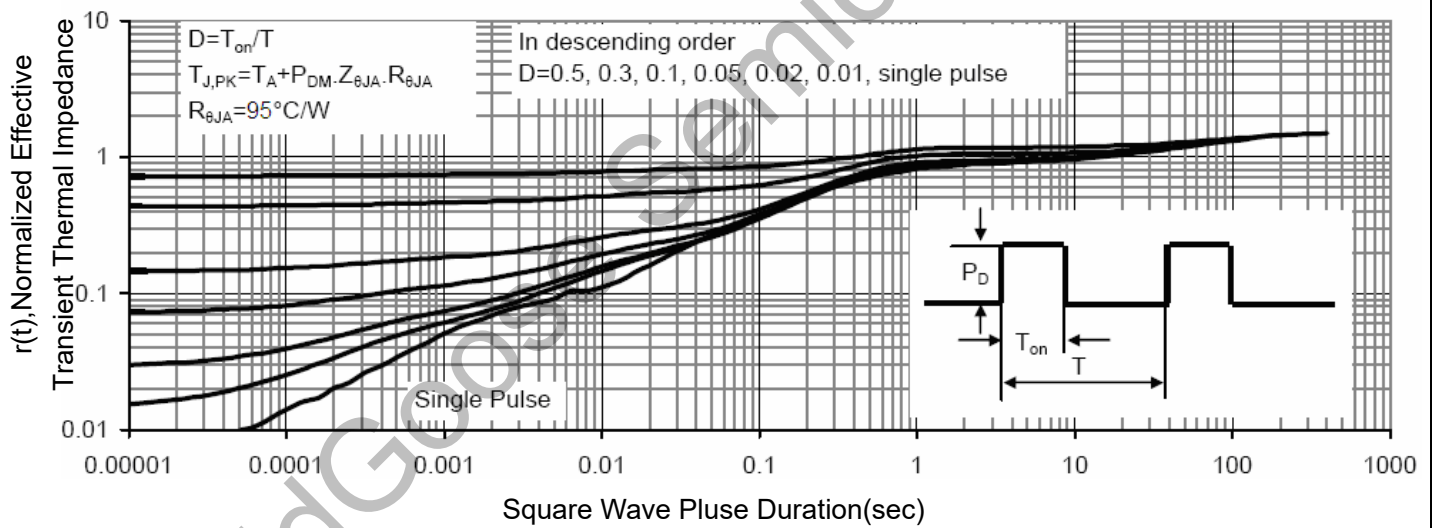


Figure 14 Normalized Maximum Transient Thermal Impedance