

N-Channel Enhancement Mode Power MOSFET

<p>Description</p> <p>This Product uses advanced trench technology MOSFETs to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● V_{DS} 200V ● I_D (at $V_{GS} = 10V$) 1.7A ● $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 1.5Ω ● $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 1.7Ω ● 100% Avalanche Tested ● RoHS Compliant ● ESD (HBM)>5.0KV <p>Application</p> <ul style="list-style-type: none"> ● Power switch ● DC/DC converters 		<p>Schematic diagram</p> <p>TO-92</p>	
Device	Package	Marking	Packaging
G01N20RE	TO-92	G01N20	1000pcs/Carton

Absolute Maximum Ratings $T_C = 25^{\circ}C$, unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	200	V
Continuous Drain Current	I_D	1.7	A
Pulsed Drain Current (note1)	I_{DM}	6.8	A
Gate-Source Voltage	V_{GS}	±20	V
Power Dissipation	P_D	3	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	°C

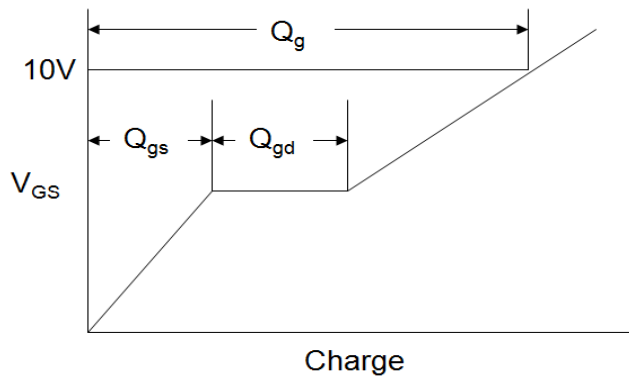
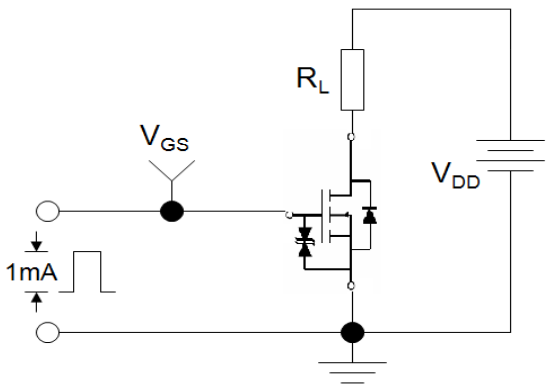
Thermal Resistance			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	42	°C/W

Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	200	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 200V, V_{GS} = 0V$	--	--	1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 30	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.8	2	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 1A$	--	0.87	1.5	Ω
		$V_{GS} = 4.5V, I_D = 1A$	--	0.9	1.7	
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=1.7A$	--	8	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 25V,$ $f = 1.0\text{MHz}$	--	580	--	pF
Output Capacitance	C_{oss}		--	90	--	
Reverse Transfer Capacitance	C_{rss}		--	30	--	
Total Gate Charge	Q_g	$V_{DD} = 100V,$ $I_D = 1.7A,$ $V_{GS} = 10V$	--	12	--	nC
Gate-Source Charge	Q_{gs}		--	2.5	--	
Gate-Drain Charge	Q_{gd}		--	3.8	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 100V,$ $I_D = 1.7A,$ $R_G = 2.5\Omega$	--	10	--	ns
Turn-on Rise Time	t_r		--	12	--	
Turn-off Delay Time	$t_{d(off)}$		--	15	--	
Turn-off Fall Time	t_f		--	15	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C = 25^\circ\text{C}$	--	--	1.7	A
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 1.7A, V_{GS} = 0V$	--	--	1.2	V

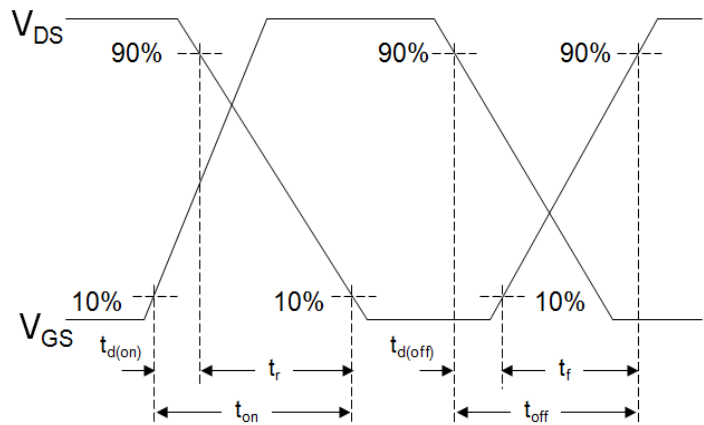
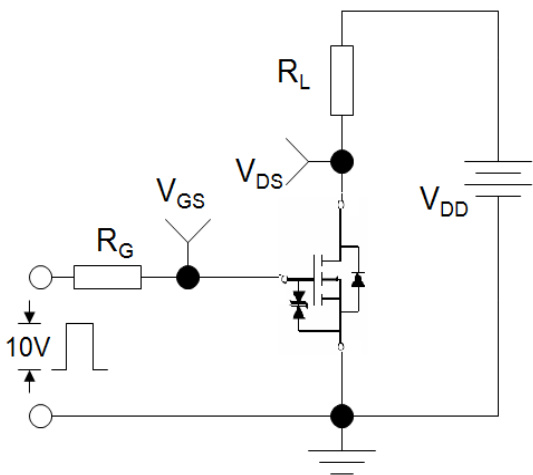
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G

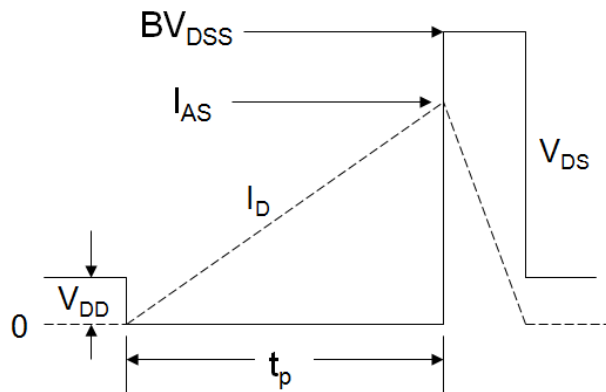
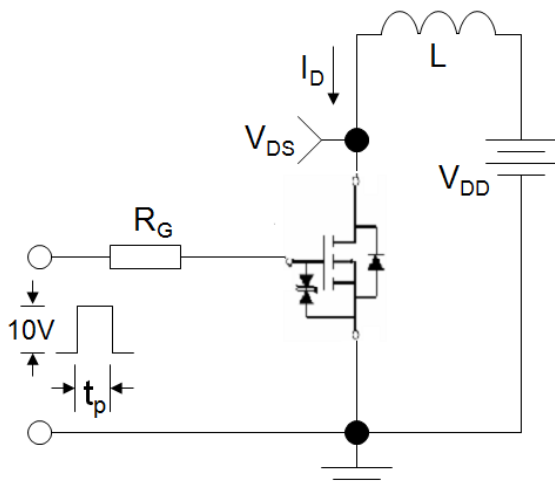
Gate Charge Test Circuit



EAS Test Circuit



Switch Time Test Circuit



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

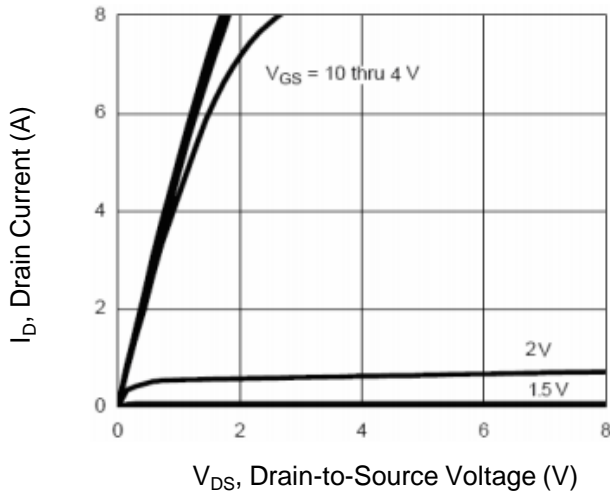


Figure 2. Transfer Characteristics

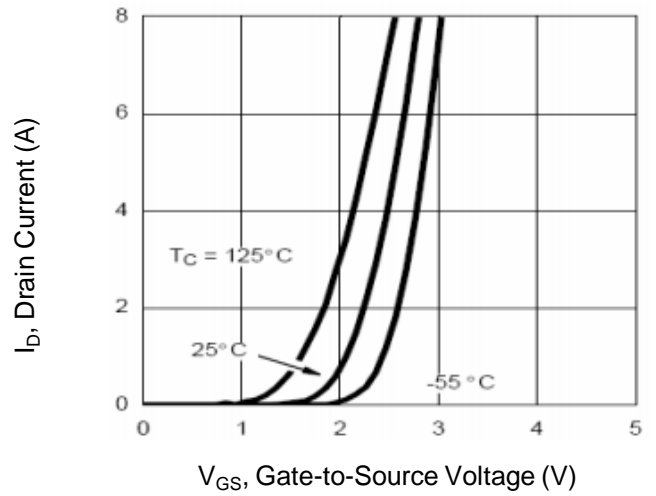


Figure 3. Drain Source On Resistance

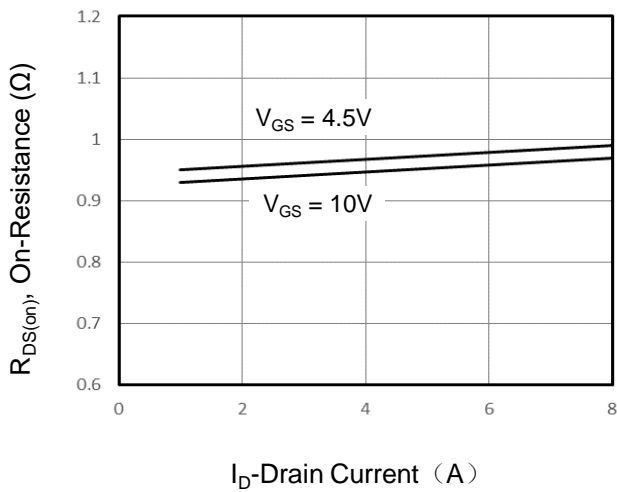


Figure 4. Gate Charge

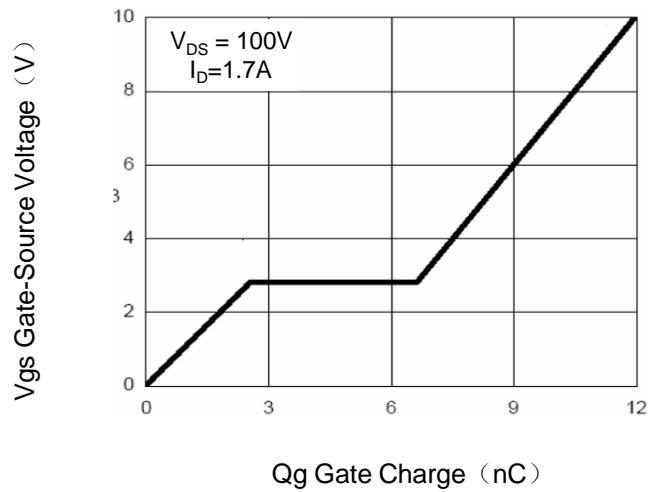


Figure 5. Capacitance vs Vds

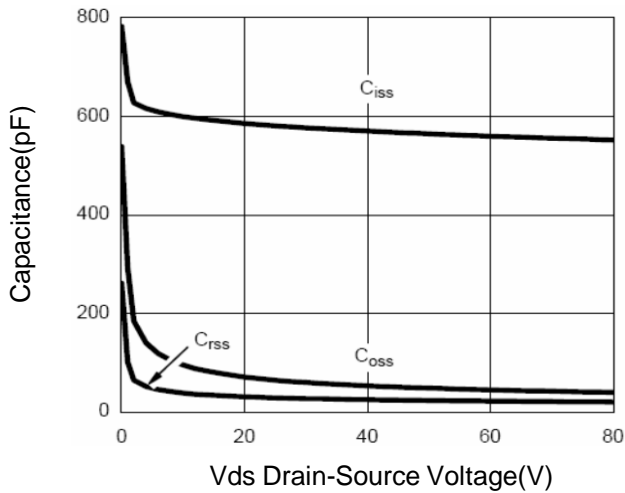
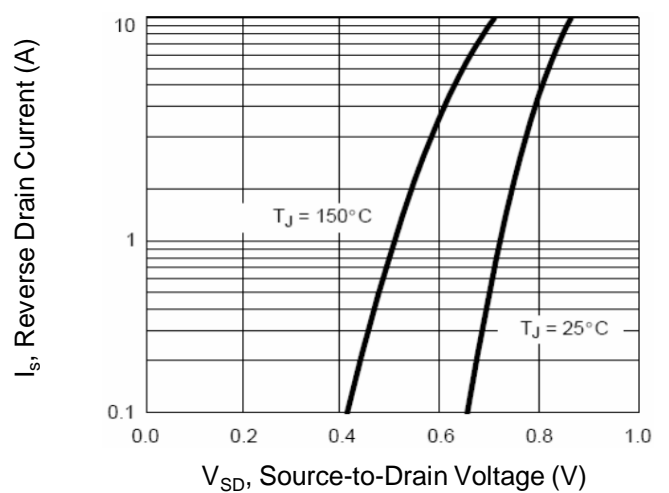


Figure 6. Source-Drain Diode Forward



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Drain-Source On-Resistance

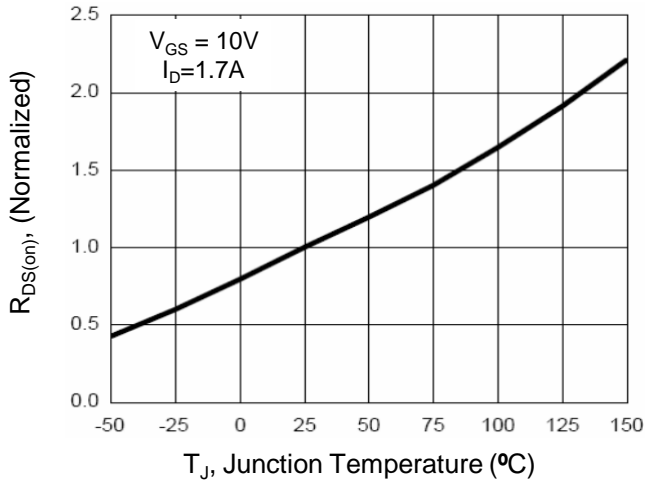


Figure 8. Safe Operation Area

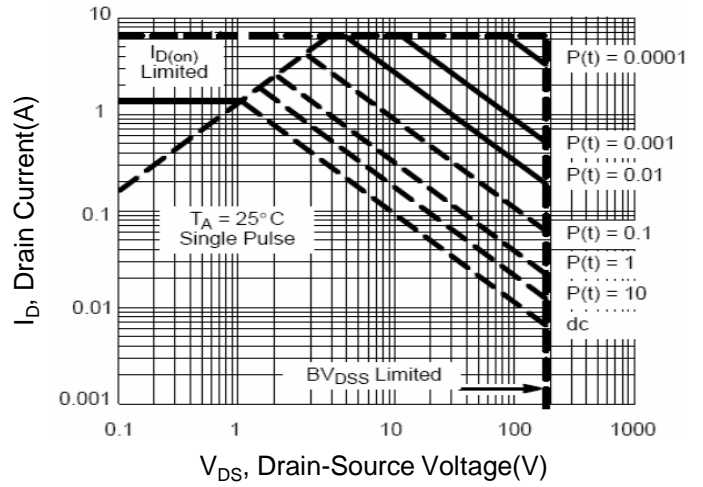
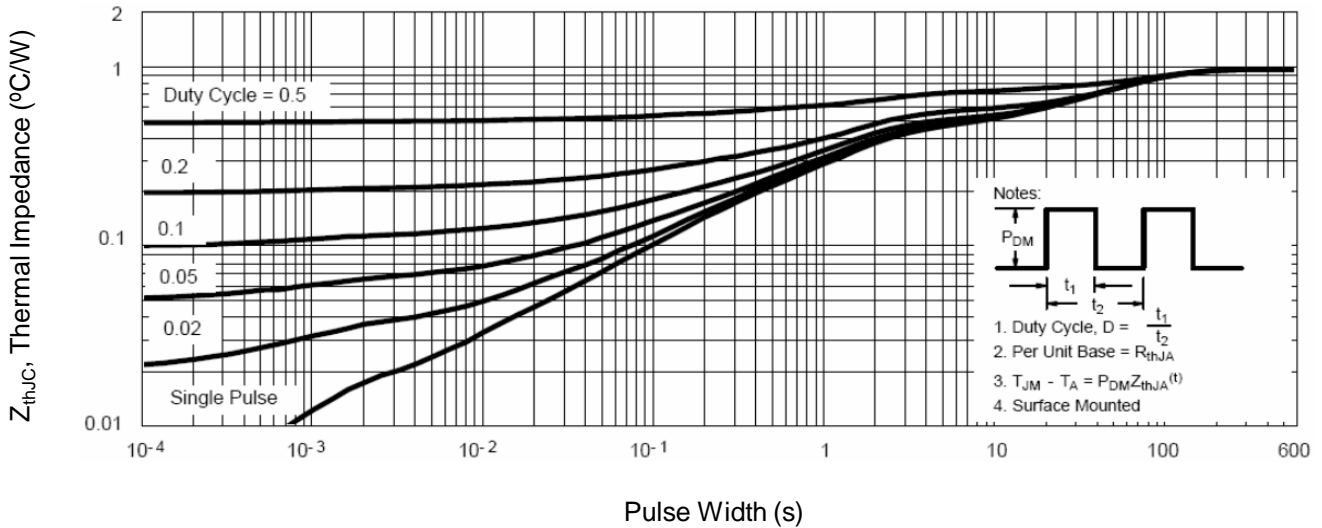
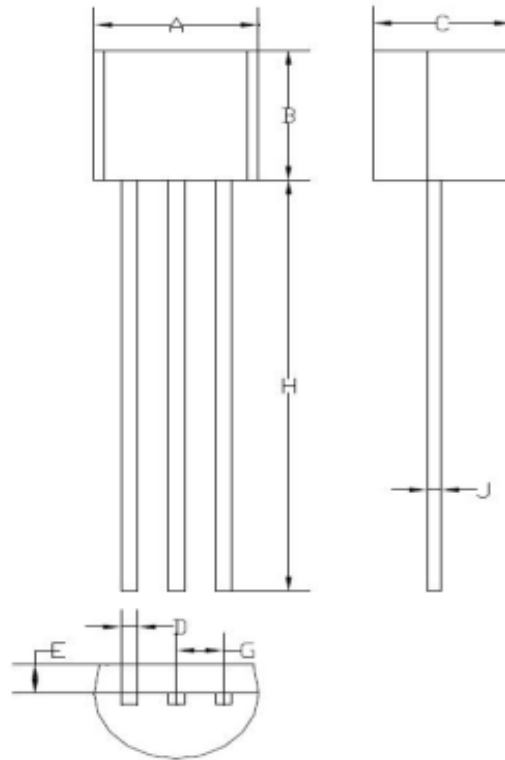


Figure 9. Normalized Maximum Transient Thermal Impedance



TO-92 Package Information



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	4.59	4.60	--
B	4.58	4.60	4.62
C	3.50	3.55	3.60
D	2.50	2.55	2.60
E	--	1.25	1.30
G	1.24	1.27	1.30
H	14.28	14.30	14.32
J	0.38		
All Dimensions in mm			

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