

APG082N01

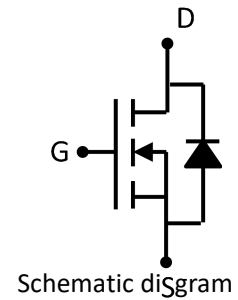
N-Channel Enhancement Mosfet

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DATA SHEET

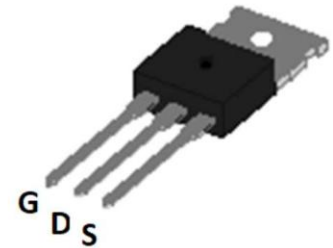
Feature

- 100V,100A
 $R_{DS(ON)} < 8.2m\Omega @ V_{GS}=10V$ (TYP:6.7m Ω)
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge



Application

- PWM applications
- Load Switch
- Power management



TO-220C

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G082N01	APG082N01	TO-220C		-	1000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current ($T_a=25^{\circ}C$)	I_D	100	A
Continuous Drain Current ($T_a=100^{\circ}C$)	I_D	70	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	320	A
Singel Pulsed Avalanche Energy ⁽²⁾	E_{AS}	300	mJ
Power Dissipation	P_D	155	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.05	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

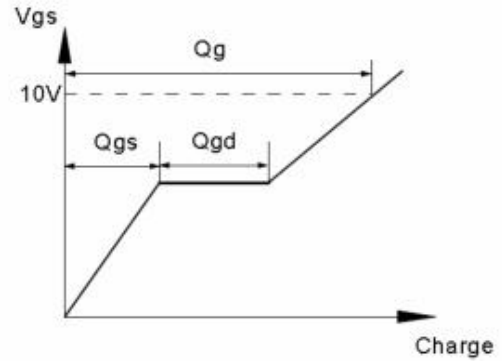
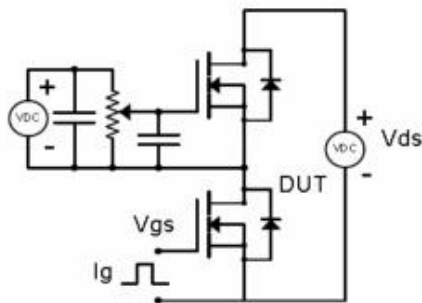
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage ⁽³⁾	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.0	4.0	V
Drain-source on-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 40A$	-	6.7	8.2	m Ω
Forward Threshold Voltage	g_{fs}	$V_{DS} = 10V, I_D = 40A$	-	60	-	S
Gate Resistance	R_g	$V_{DS} = V_{GS} = 0V, f = 1MHz$	-	1.3	-	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$	-	2435	-	pF
Output Capacitance	C_{oss}		-	380	-	
Reverse Transfer Capacitance	C_{rss}		-	11	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 50V, I_D = 40A,$ $V_{GS} = 10V, R_G = 3\Omega$	-	13	-	ns
Turn-on rise time	t_r		-	35	-	
Turn-off delay time	$t_{d(off)}$		-	20	-	
Turn-off fall time	t_f		-	15	-	
Total Gate Charge	Q_g	$V_{DS} = 50V, I_D = 40A,$ $V_{GS} = 10V$	-	47	-	nC
Gate-Source Charge	Q_{gs}		-	9	-	
Gate-Drain Charge	Q_{gd}		-	24	-	
Reverse Recovery Charge	Q_{rr}	$I_F = 40A, di/dt = 100A/\mu s$	-	50	-	nC
Reverse Recovery Time	T_{rr}	$I_F = 40A, di/dt = 100A/\mu s$	-	48	-	ns
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V_{DS}	$V_{GS} = 0V, I_S = 20A$	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I_S		-	-	75	A

Notes:

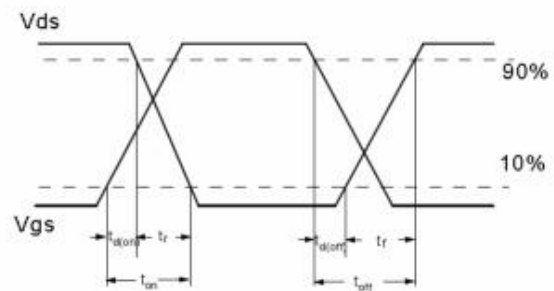
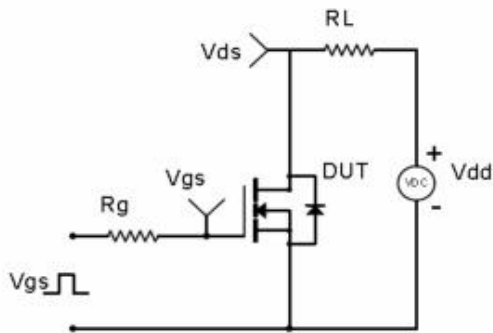
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: $T_J = 25^{\circ}\text{C}, V_{DD} = 50V, R_G = 25\Omega, L = 0.5\text{Mh}, I_{AS} = 35A$
3. Pulse Test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
4. Surface Mounted on FR4 Board, $t \leq 10\text{ sec}$

Test Circuit & Waveform

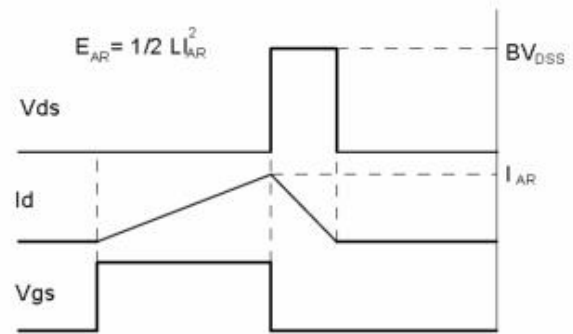
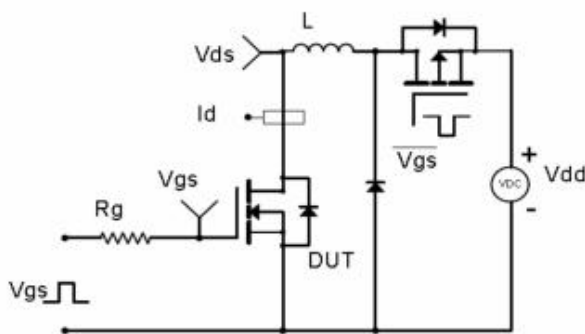
Gate Charge Test Circuit & Waveform



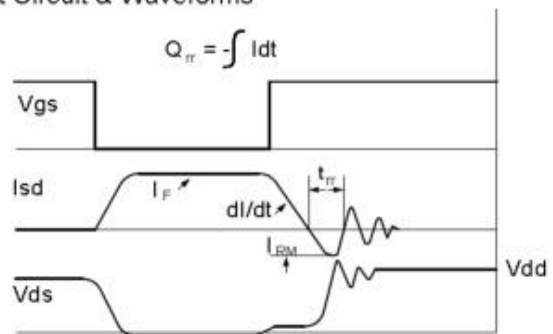
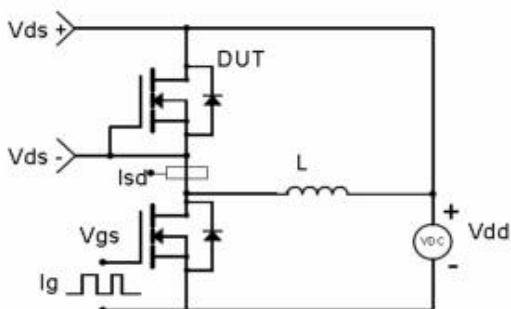
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Electronic and Thermal Characteristics

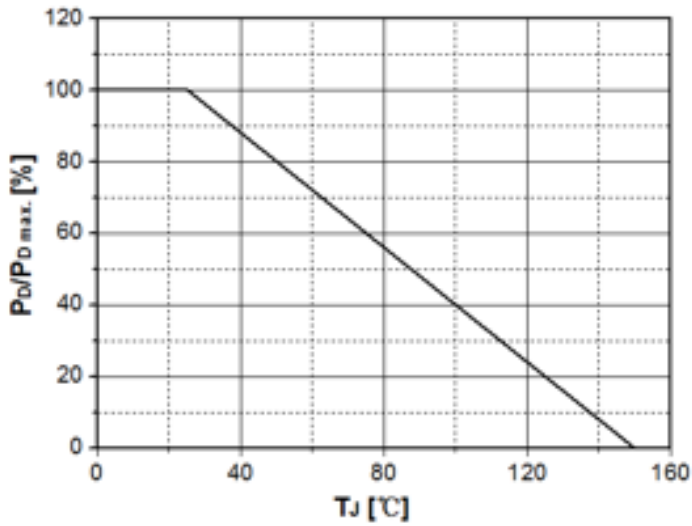


Figure 1. Power Dissipation Derating Curve

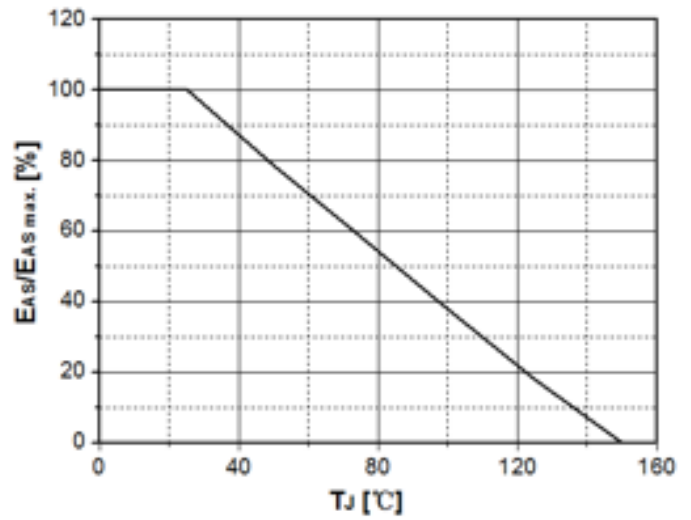


Figure 2. Avalanche Energy Derating Curve vs. Junction Temperature

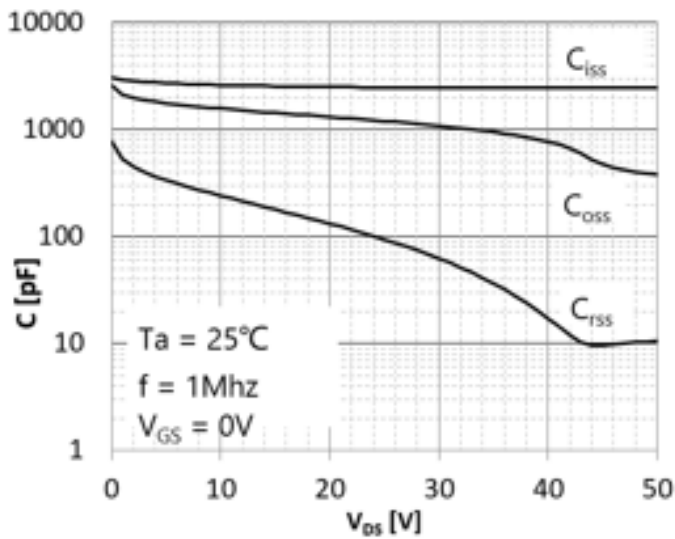


Figure 3. Capacitance Characteristics

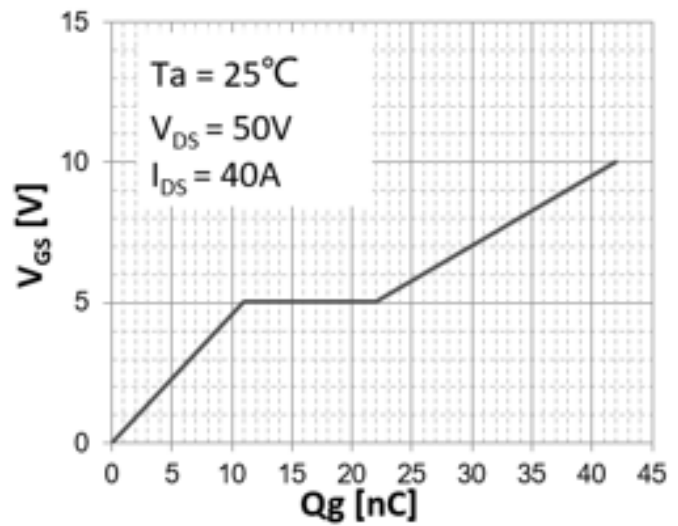


Figure 4. Gate Charge Characteristics

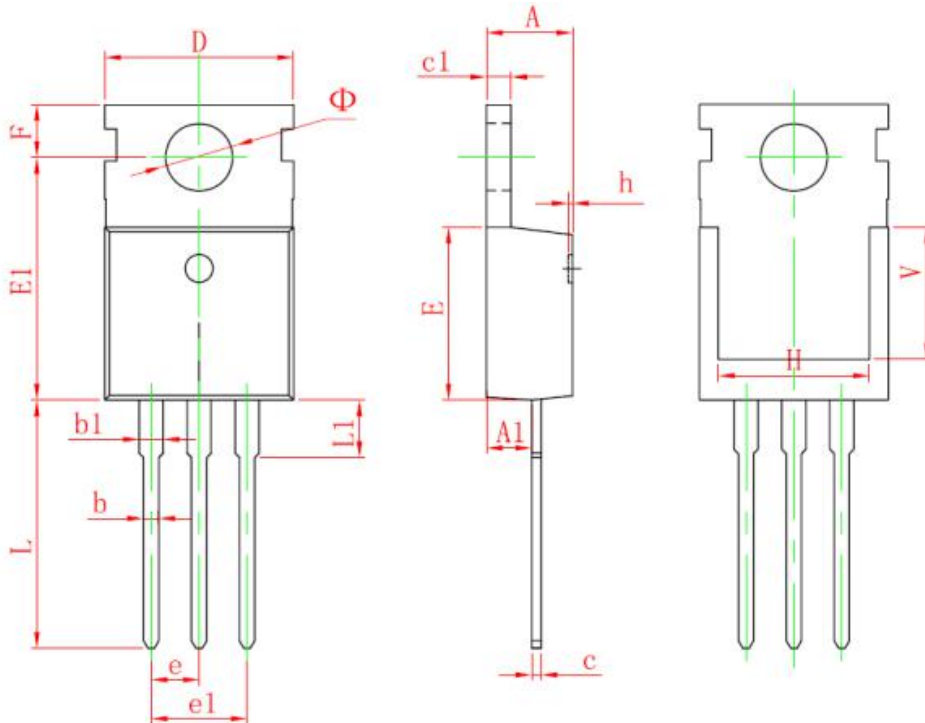
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TO220C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150