

APG035N06

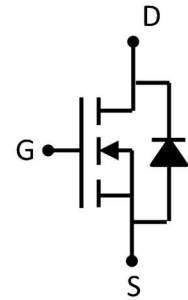
N-Channel Enhancement Mosfet

AIPOWER

DATA SHEET

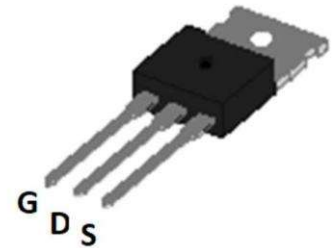
Feature

- 60V,184A
 $R_{DS(ON)} < 3.5m\Omega @ V_{GS}=10V$ TYP:2.6 m 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)
G035N06	APG035N06	TO-220C	-	-	1000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c = 25^\circ\text{C}$)	I_D	184	A
Continuous Drain Current ($T_c = 100^\circ\text{C}$)	I_D	116	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	736	A
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	352	mJ
Power Dissipation	P_D	208	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.6	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	42	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

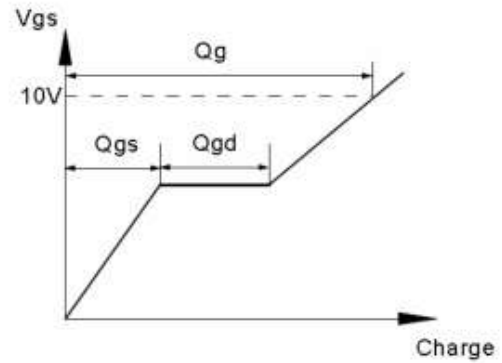
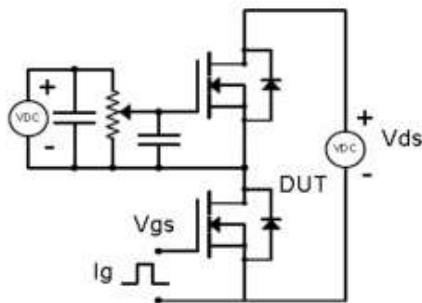
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	60	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =40A	-	2.6	3.5	mΩ
Forward tranconductance ⁽³⁾	g _{FS}	V _{DS} =5V, I _D =40A	-	89	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz	-	5425	-	pF
Output Capacitance	C _{oss}		-	1080	-	
Reverse Transfer Capacitance	C _{rss}		-	26	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _D =20A, R _L =2Ω V _{GS} =10V, R _G =3Ω	-	26.5	-	ns
Turn-on rise time	t _r		-	15	-	
Turn-off delay time	t _{d(off)}		-	72	-	
Turn-off fall time	t _f		-	18	-	
Total Gate Charge	Q _g	V _{DS} =30V, I _D =20A, V _{GS} =10V	-	72	-	nC
Gate-Source Charge	Q _{gs}		-	20	-	
Gate-Drain Charge	Q _{gd}		-	14	-	
Reverse Recovery Chrage	Q _{rr}	I _F =20A, di/dt=100A/us	-	90	-	nC
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt=100A/us	-	25	-	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		-	-	184	A

Notes:

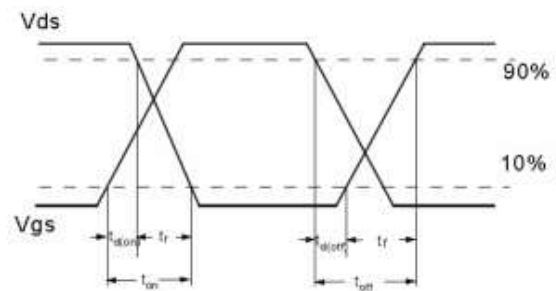
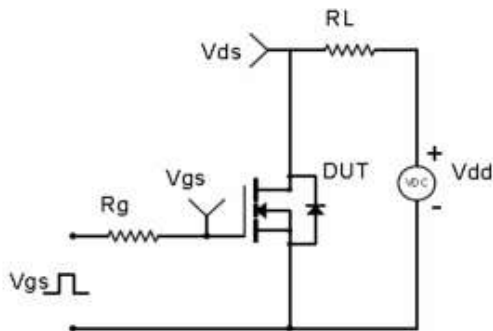
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T_J=25°C, V_{DD}=50V, R_G=25 Ω, L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board, t≤10 sec

Test Circuit & Waveform

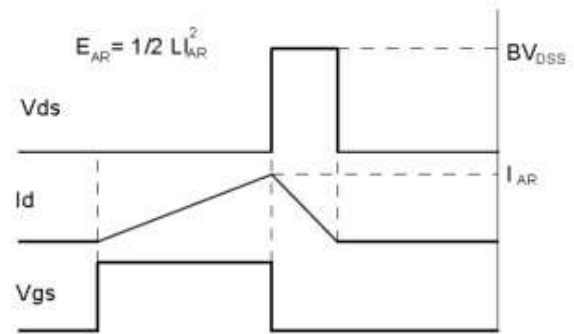
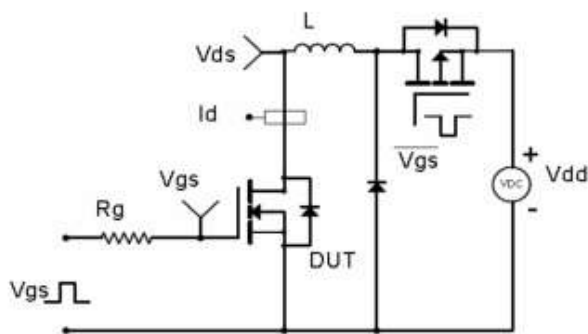
Gate Charge Test Circuit & Waveform



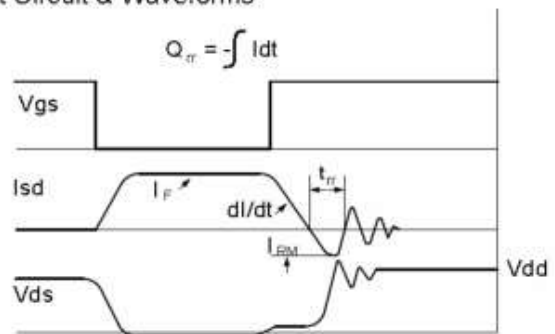
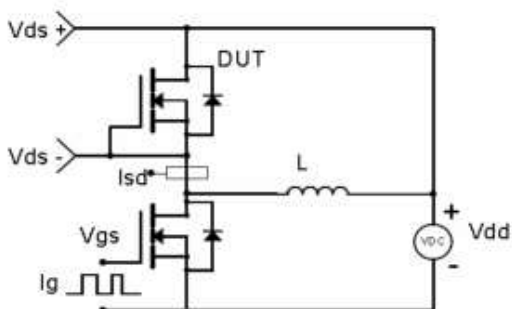
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Characteristics

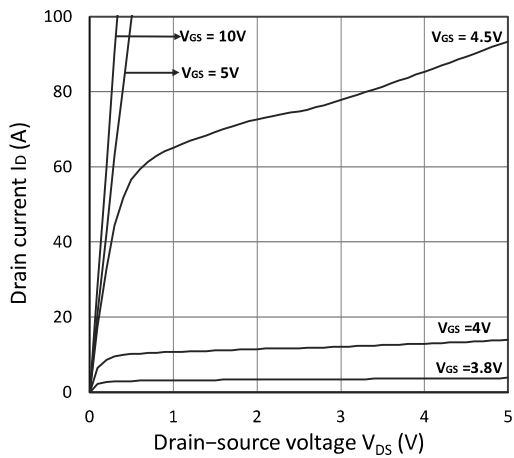


Figure 1. Output Characteristics

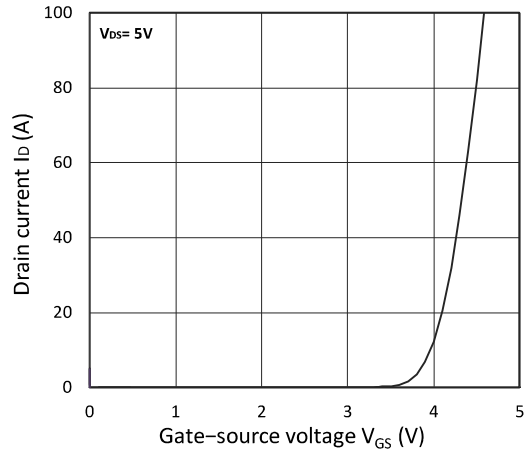


Figure 2. Transfer Characteristics

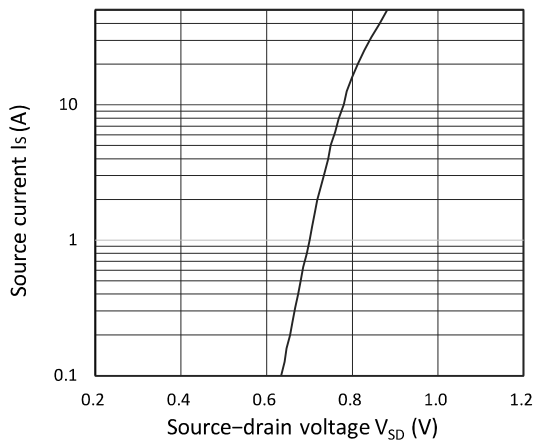


Figure 3. Forward Characteristics of Reverse

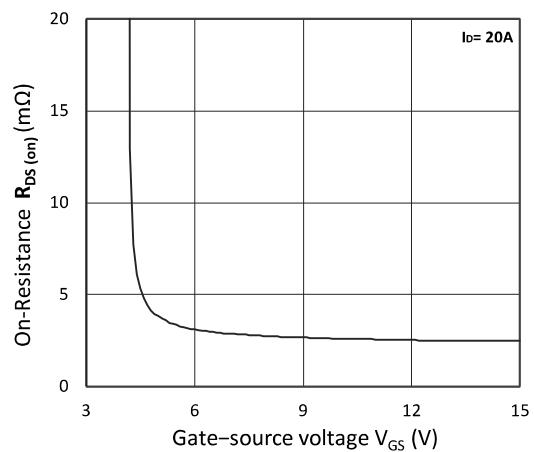


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

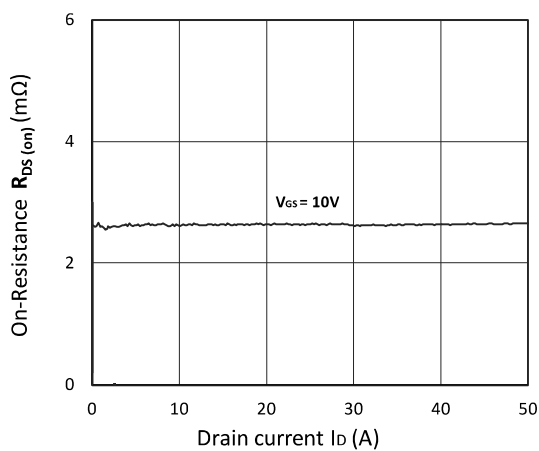


Figure 5. $R_{DS(ON)}$ vs. I_D

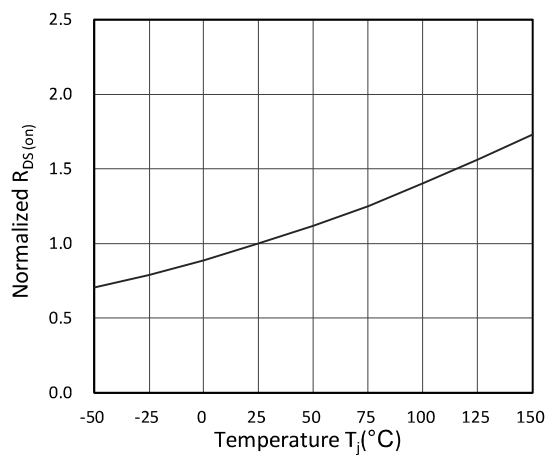


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

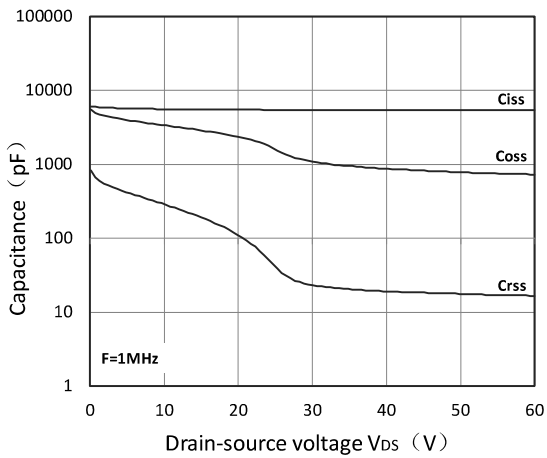


Figure 7. Capacitance Characteristics

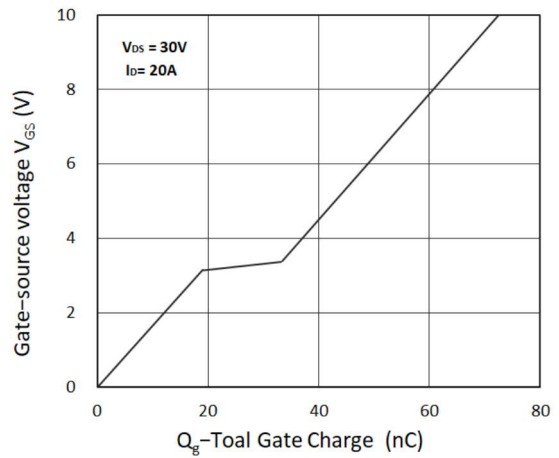


Figure 8. Gate Charge Characteristics

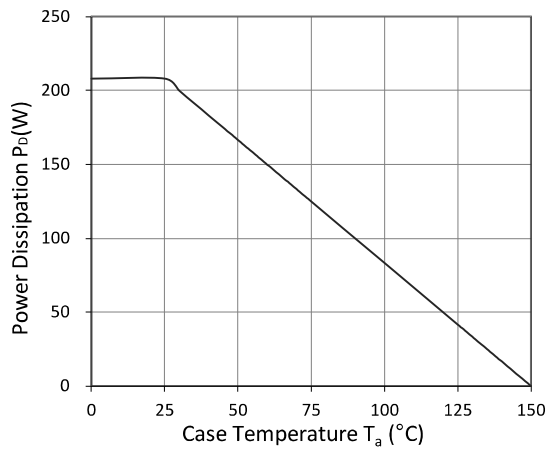


Figure 9. Power Dissipation

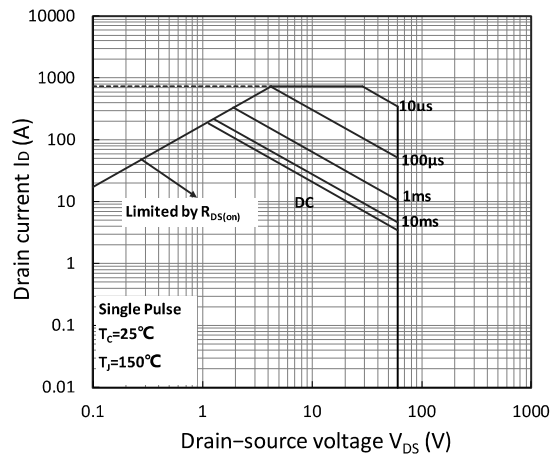


Figure 10. Safe Operating Area

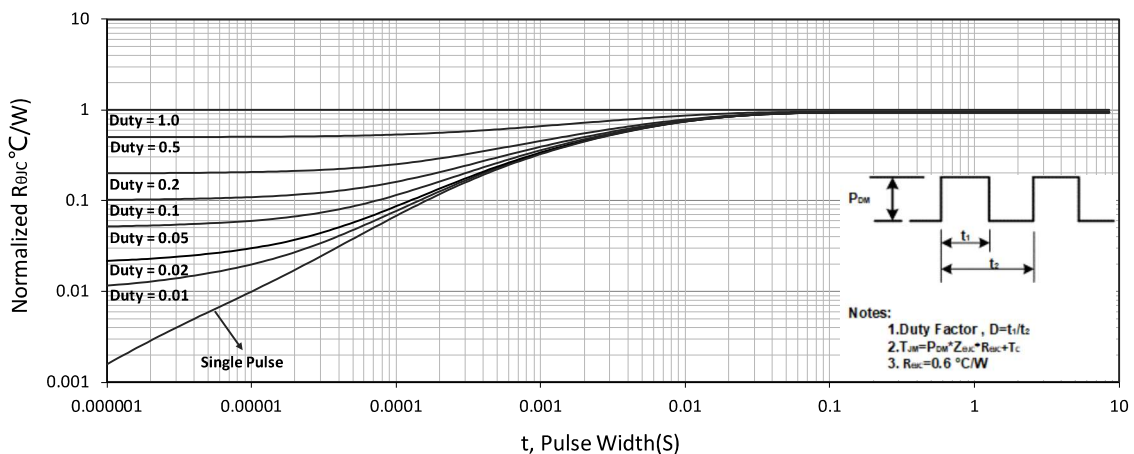
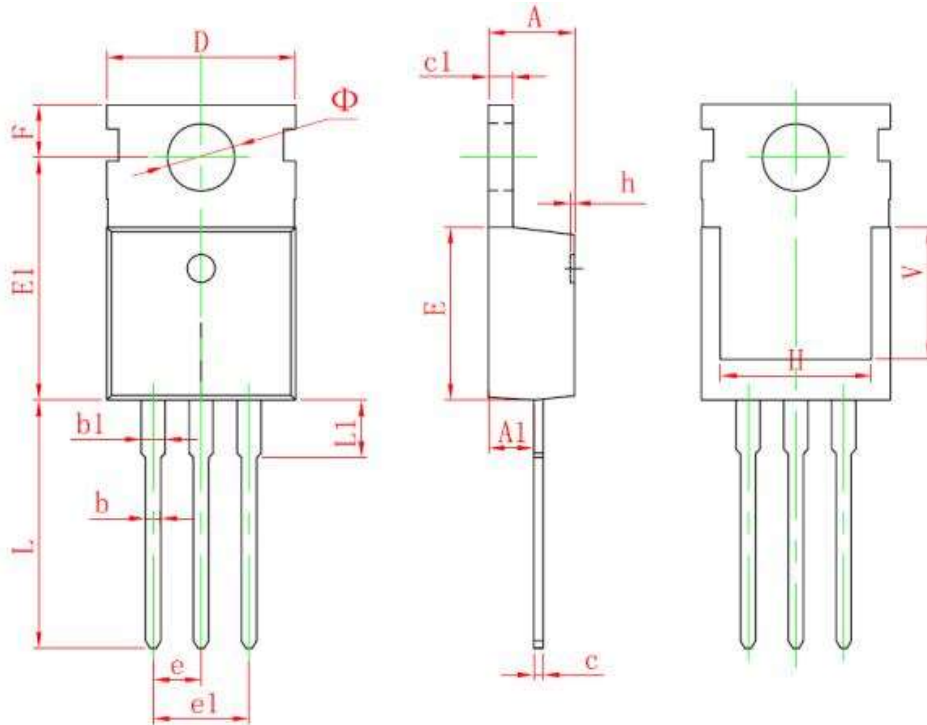


Figure 11. Normalized Maximum Transient Thermal Impedance

APG035N06

N-Channel Enhancement Mosfet

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