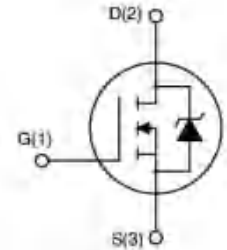


APG050N85G

N-Channel Shielding-Gate Mosfet

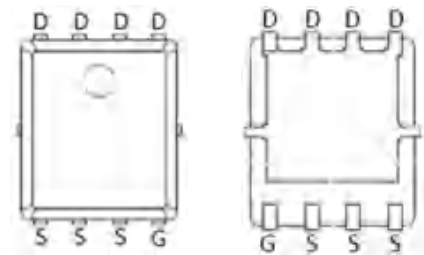
Feature

- 85V,100A
 $R_{DS(ON)} < 5.5 \text{ m}\Omega @ V_{GS}=10\text{V}$
- Advanced Trench Power MOSFET
- Provide Excellent $R_{DS(ON)}$ And Low Gate Charge



Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch
- Rectifier



PDFN5X6-8L

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G050N85G	APG050N85G	PDFN5*6	13 inch	-	5000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_a=25^\circ\text{C}$)	I_D	100	A
Continuous Drain Current ($T_a=100^\circ\text{C}$)	I_D	60	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	320	A
Singel Pulsed Avalanche Energy ⁽²⁾	E_{AS}	238	mJ
Power Dissipation	P_D	46	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.74	$^\circ\text{C}/\text{W}$
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)

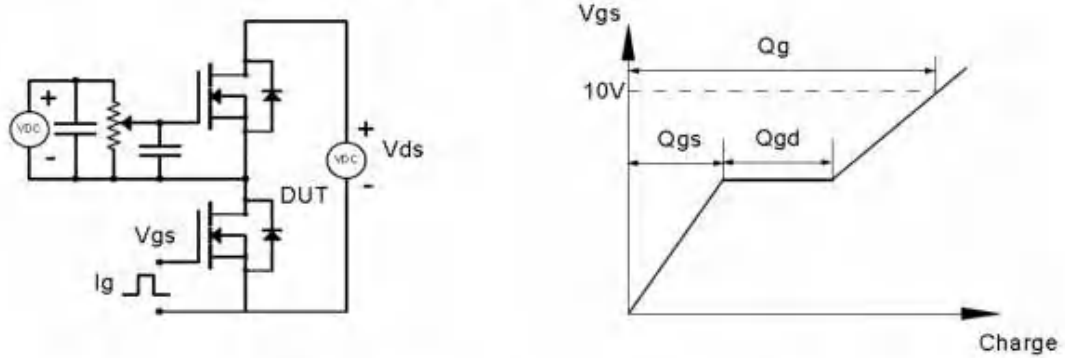
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	85	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =85V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =50A	-	4.7	5.5	mΩ
Forward tranconductance ⁽³⁾	g _{FS}	V _{DS} =10V, I _D =50A	-	15	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V, f =1MHz	-	3060	-	pF
Output Capacitance	C _{oss}		-	680	-	
Reverse Transfer Capacitance	C _{rss}		-	12	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =40V, I _D =50A, V _{GS} =10V, R _G =25Ω	-	19	-	ns
Turn-on rise time	t _r		-	29	-	
Turn-off delay time	t _{d(off)}		-	32	-	
Turn-off fall time	t _f		-	12.5	-	
Total Gate Charge	Q _g	V _{DS} =40V, I _D =50A, V _{GS} =10V	-	46	-	nC
Gate-Source Charge	Q _{gs}		-	15	-	
Gate-Drain Charge	Q _{gd}		-	11.8	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =50A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	100	A
Reverse recovery time	T _{rr}	I _S =60A, V _{GS} =0V, dI _F /dt=100A/us		48.5		ns
Reverse recovery charge	Q _{rr}	I _S =60A, V _{GS} =0V, dI _F /dt=100A/us		59		nC

Notes:

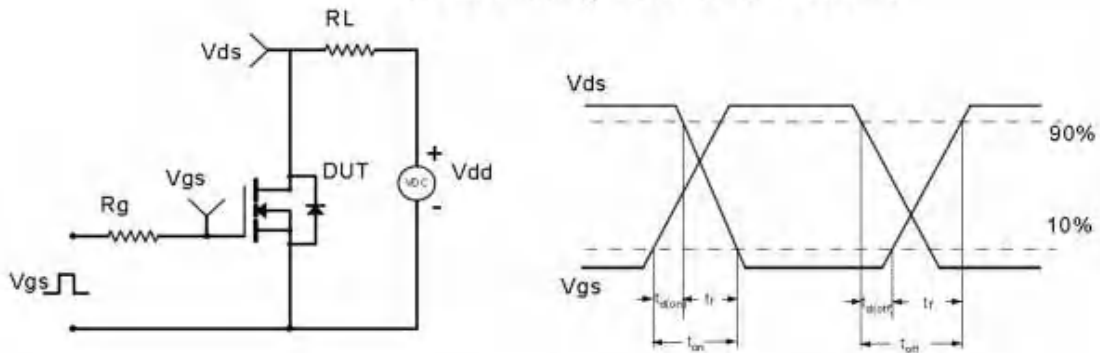
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T_J=25°C, V_{DD}=40V, R_G=25 Ω, L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board, t≤10 sec

Test Circuit & Waveform

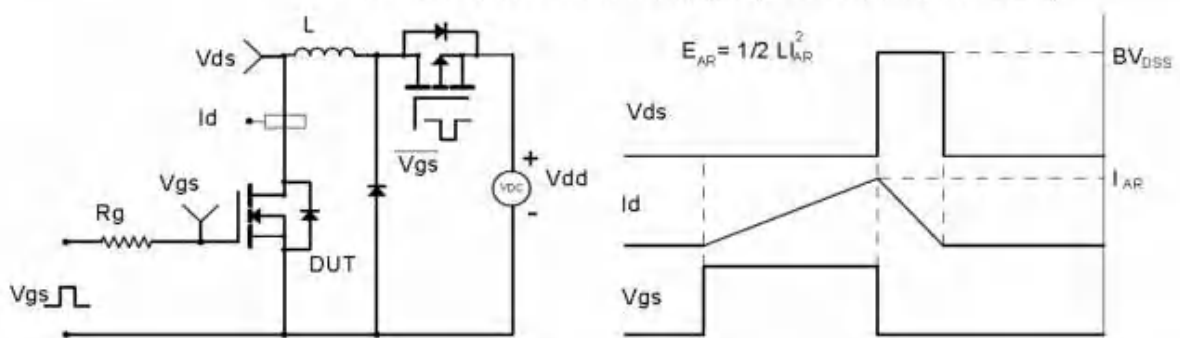
Gate Charge Test Circuit & Waveform



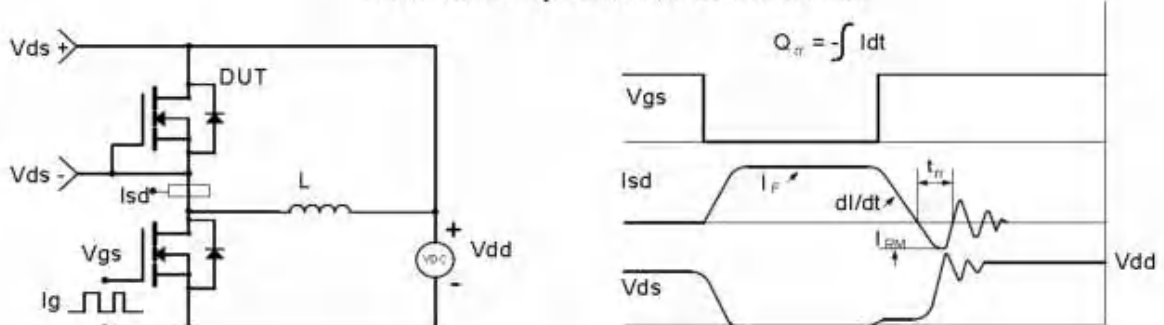
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Electronic and Thermal Characteristics

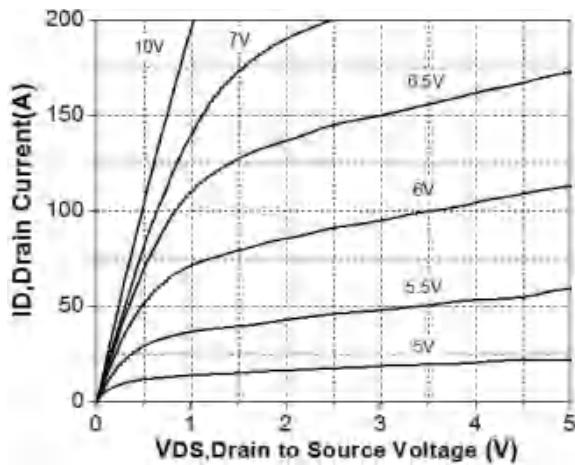


Figure 1. On-Region Characteristics

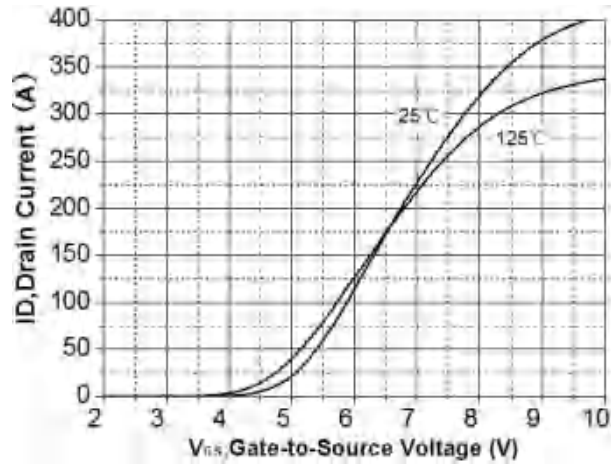


Figure 2. Transfer Characteristics

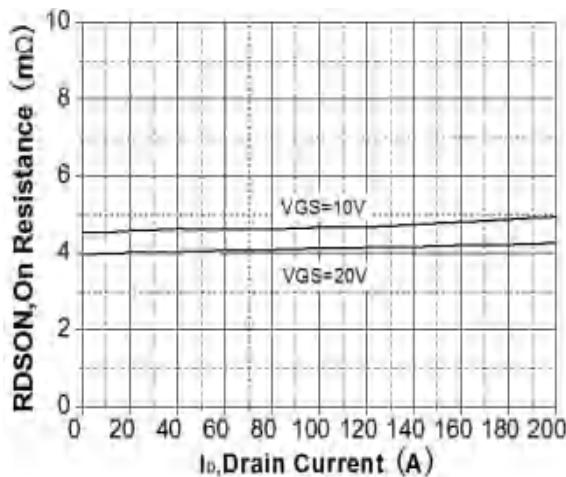


Figure 3. On-Resistance Variation vs Drain Current

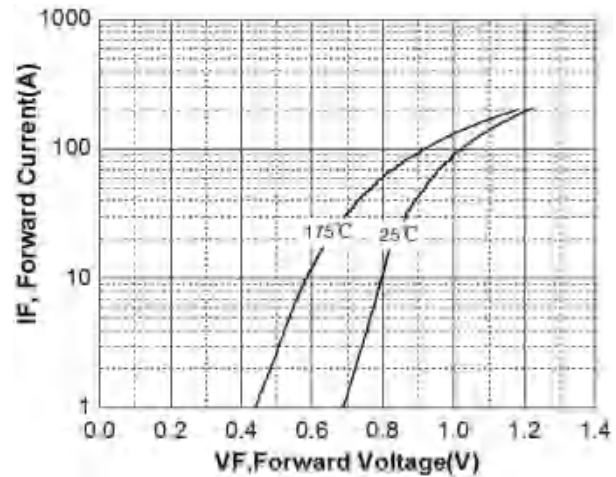


Figure 4. Body Diode Forward Voltage Vs Reverse Drain Current

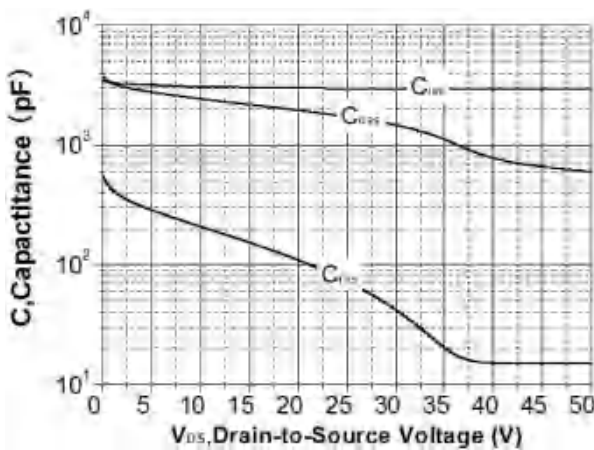


Figure 5. Capacitance Characteristics

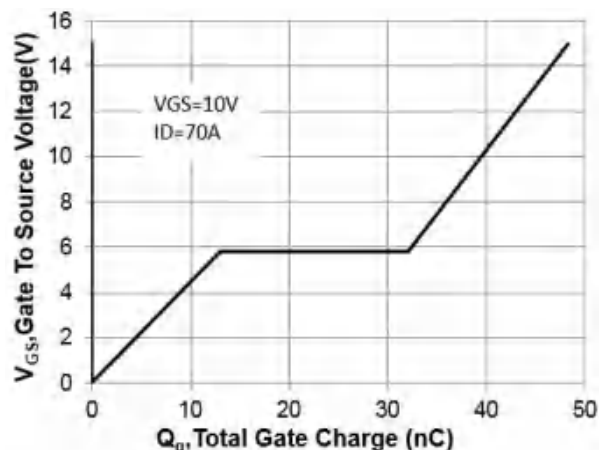


Figure 6. Gate Charge Characteristics

Typical Electronic and Thermal Characteristics

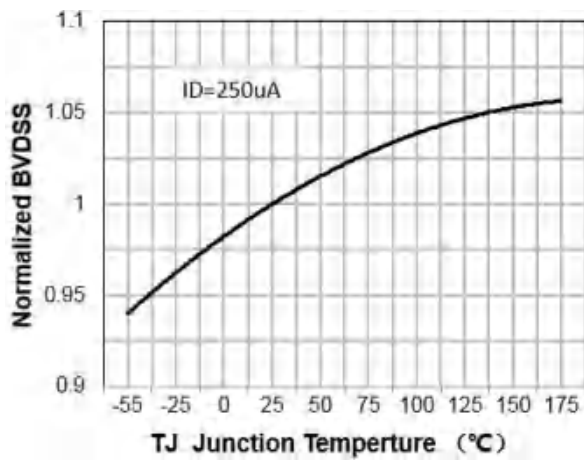


Figure 7. Breakdown Voltage Variation vs Temperature

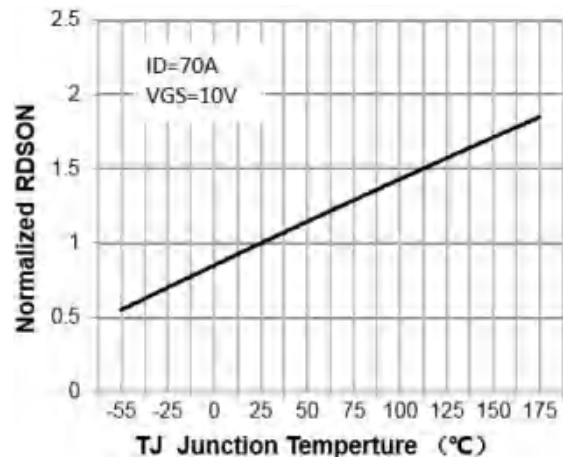


Figure 8. On-Resistance Variation vs Temperature

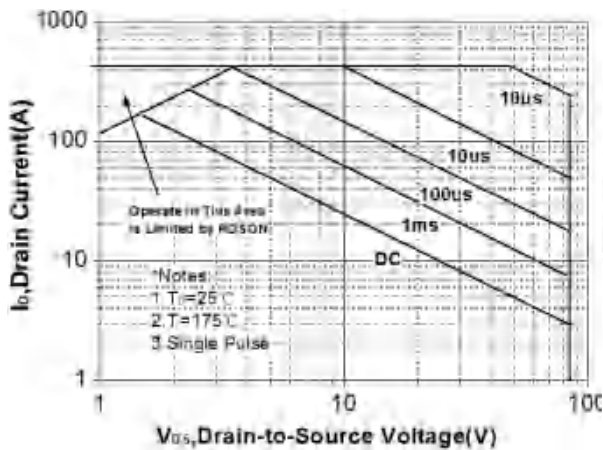


Figure 9. Maximum Safe Operating Area

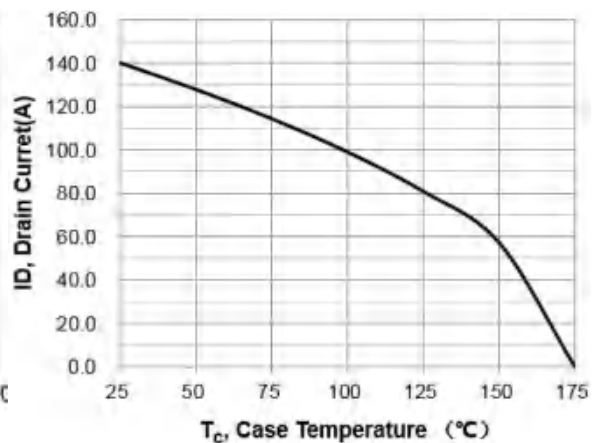


Figure 10. Maximum Drain Current vs Case Temperature

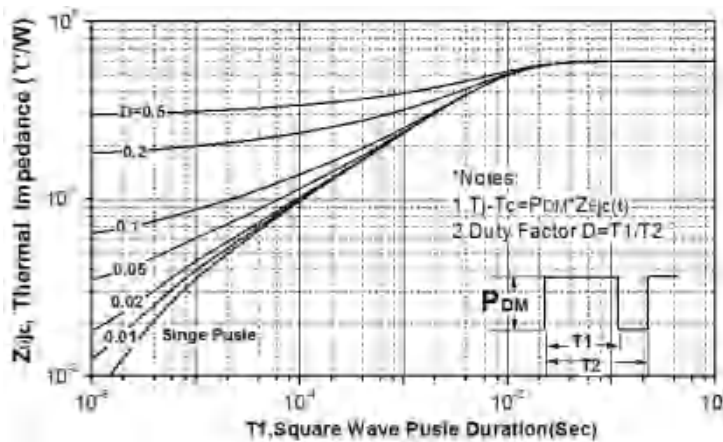
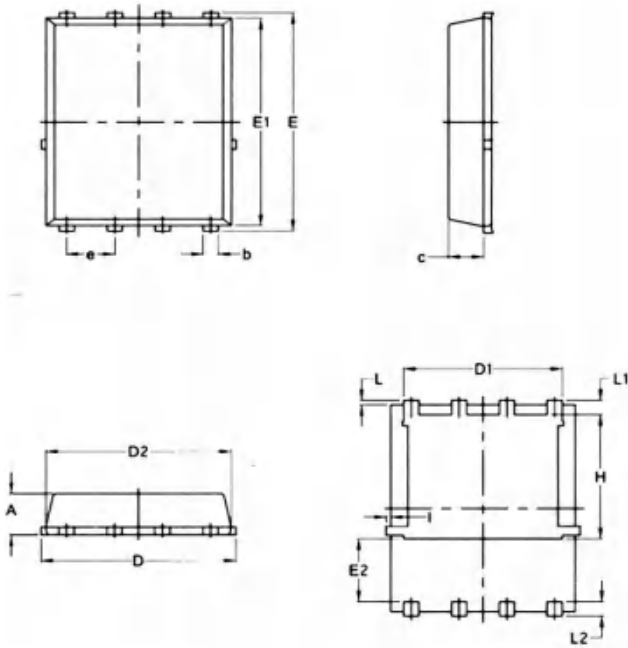


Figure 11. Transient Thermal Response Curve

APG050N85G
N-Channel Shielding-Gate Mosfet

PDFN5*6-8L Package Information



PDFN5X6-8L

SYMBOL	COMMON			
	MM		INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.970	0.0324	0.0382
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	—	0.0630	—
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	—	0.18	—	0.0070