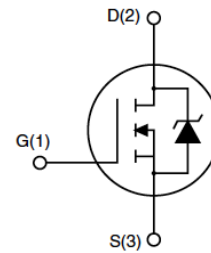


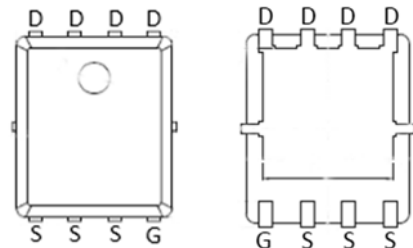
**Features**

- 30V,150A  
 $R_{DS(on)} < 1.7m\Omega @ V_{GS}=10V$  TYP:1.4m $\Omega$
- Super Trench
- Provide excellent RDS(on)
- Low gate charge



**Applications**

- Power faction correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible power supply (UPS)
- LED lighting power



PDFN5X6

**Package Marking and Ordering Information**

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G017N03G	APG017N03G	PDFN5X6	-	-	5000

**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (T <sub>c</sub> =25°C)	I <sub>D</sub>	150	A
Continuous Drain Current (T <sub>c</sub> =100°C)	I <sub>D</sub>	105	A
Pulsed Drain Current <sup>(1)</sup>	I <sub>DM</sub>	600	A
Single Pulsed Avalanche Energy <sup>(2)</sup>	E <sub>AS</sub>	120	mJ
Drain Power Dissipation (T <sub>c</sub> =25°C)	P <sub>D</sub>	81	W
Thermal Resistance from Junction to Case	R <sub>θJC</sub>	1.51	°C/W
Thermal Resistance- Junction to Ambient	R <sub>θJA</sub>	50.5	°C/W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55~ +150	°C

**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	30	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> = 0V	-	-	1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.75	2.2	V
Drain-source on-resistance <sup>(a)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	1.4	1.7	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A	-	2.1	2.8	mΩ
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f =1.0MHz	-	3670	-	pF
Output Capacitance	C <sub>oss</sub>		-	1850	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	112	-	
<b>Switching characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =20A, R <sub>G</sub> =3Ω, V <sub>G</sub> =10V	-	15.8	-	ns
Turn-on rise time	t <sub>r</sub>		-	85.3	-	
Turn-off delay time	t <sub>d(off)</sub>		-	55.8	-	
Turn-off fall time	t <sub>f</sub>		-	21.6	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V	-	51.6	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	16.4	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	5.1	-	
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage <sup>(a)</sup>	V <sub>SD</sub>	T <sub>J</sub> =25°C, V <sub>GS</sub> =0V, I <sub>S</sub> =20A	-	0.85	1.2	V
Diode Forward current	I <sub>S</sub>	T <sub>C</sub> =25°C	-	-	150	A
Body Diode Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> =25°C, I <sub>F</sub> =15A, di/dt=100A/us		50		ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	T <sub>J</sub> =25°C, I <sub>F</sub> =15A, di/dt=100A/us		42		uc

**Notes:**

- a) Pulse width limited by maximum junction temperature
- b) L=0.1mH, VDD=20V, VG=10V, RG=25Ω, starting T<sub>J</sub>=25°C
- c) Pulse Test: Pulse width ≤300μs, Duty cycle≤2%
- d) Essentially independent of operating temperature

Typical Performance Characteristics

Figure 1. On-Region Characteristics

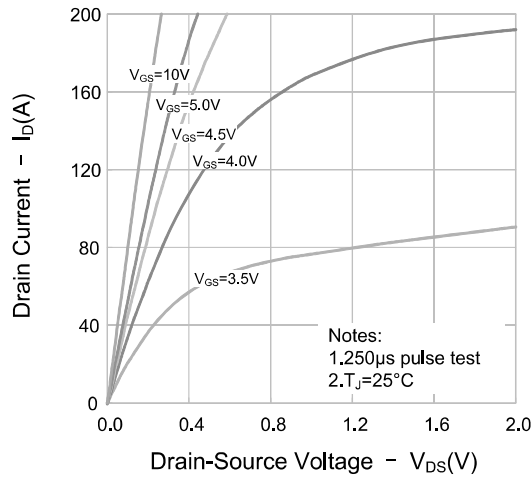


Figure 2. Transfer Characteristics

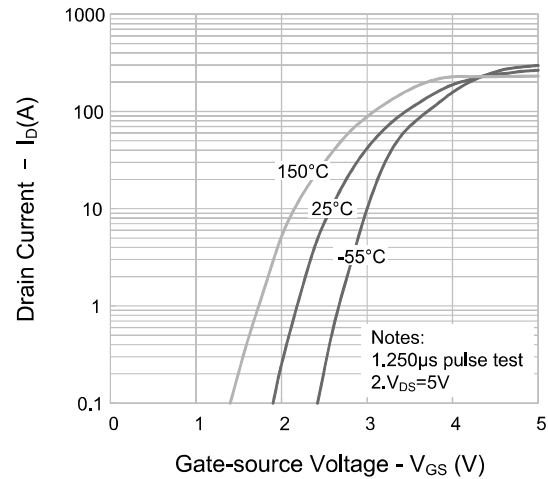


Figure 3. On-resistance vs. Drain Current

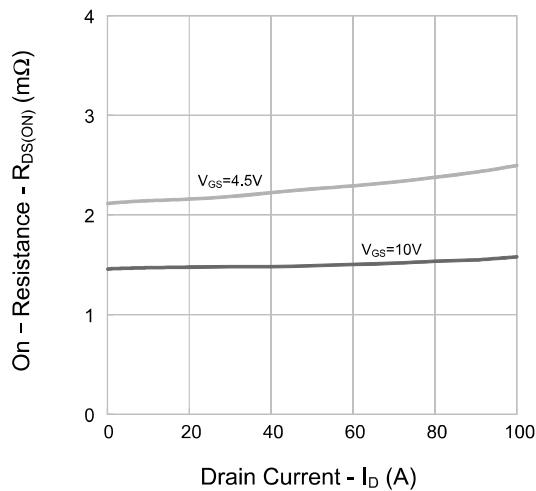


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

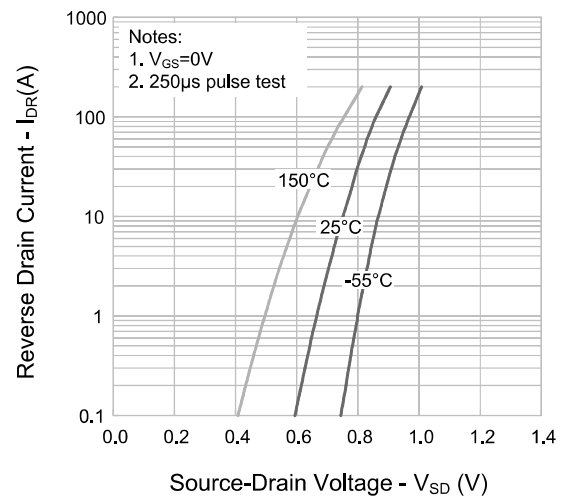


Figure 5. Capacitance Characteristics

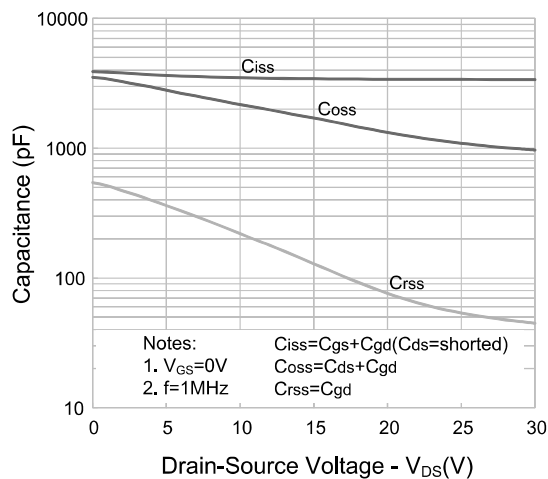
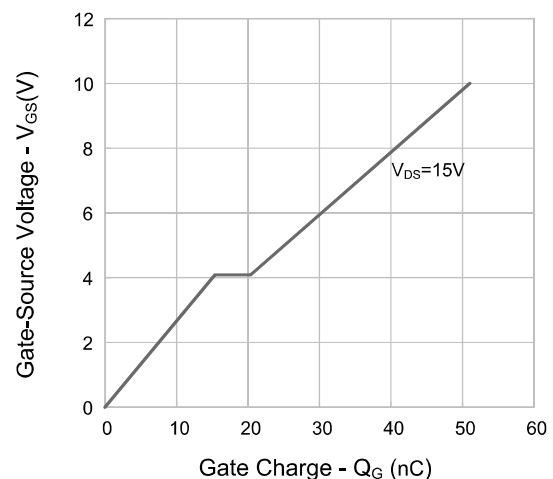


Figure 6. Gate Charge



Typical Performance Characteristics

Figure 7. Breakdown Voltage Variation vs. Temperature

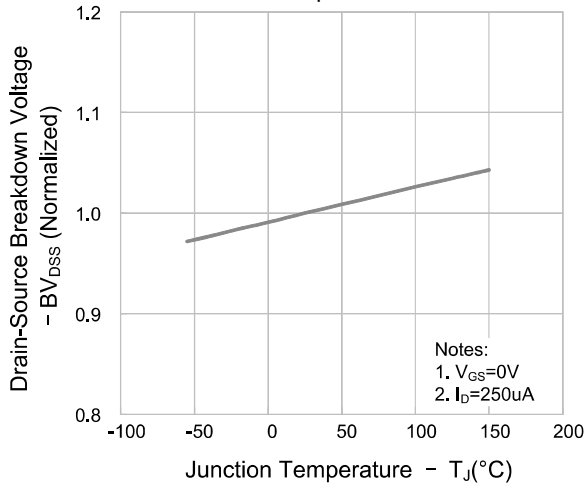


Figure 8. On-resistance Variation vs. Temperature

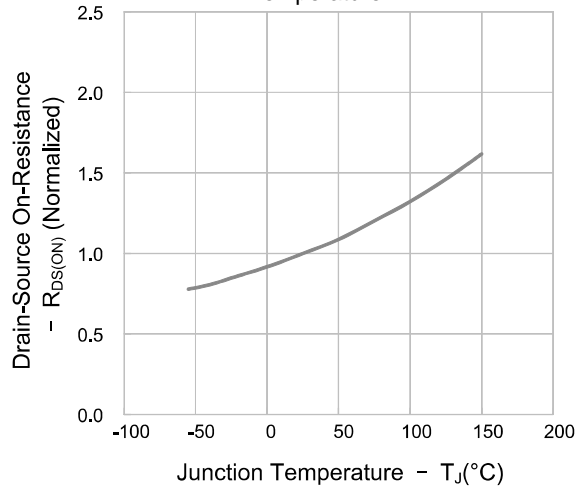
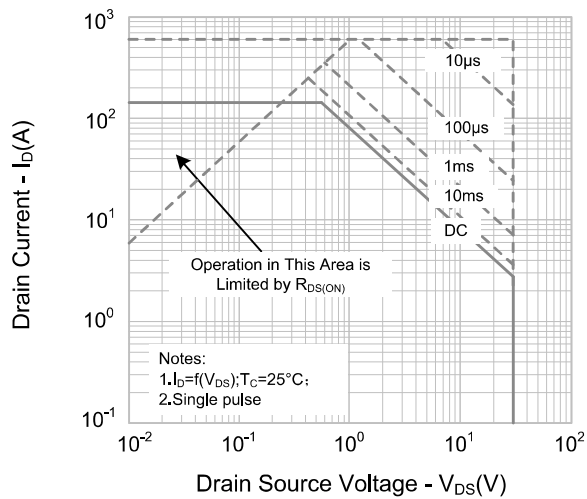
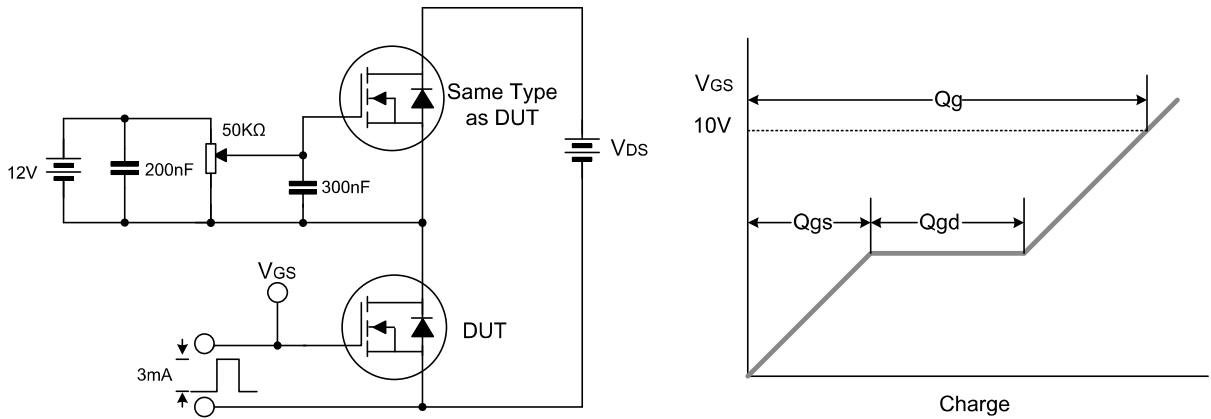


Figure 9. Max. Safe Operating Area

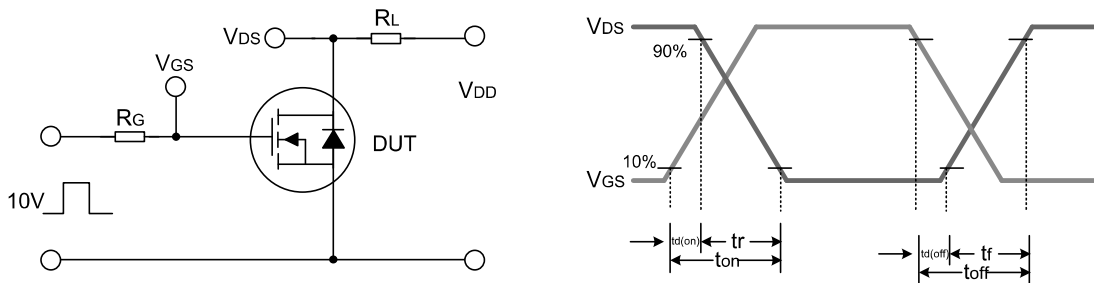


Test Circuit

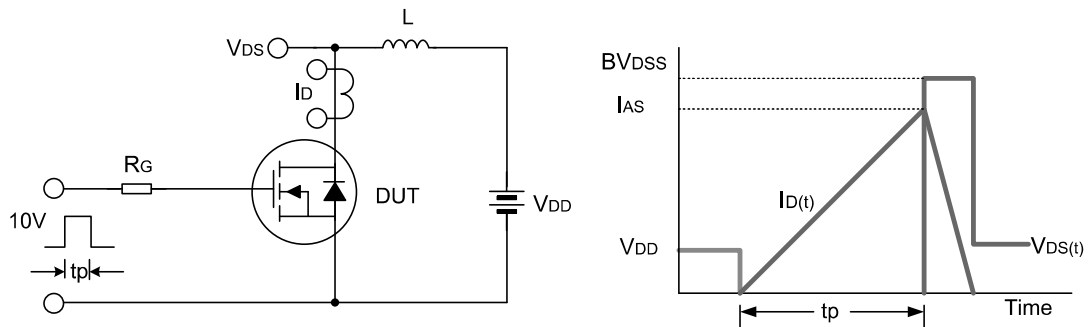
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



Undamped Inductive Switching Test Circuit & Waveform



**APG017N03G**  
**N-Channel Enhancement Mosfet**

Package Dimensions of PDFN5X6

Unit :mm

