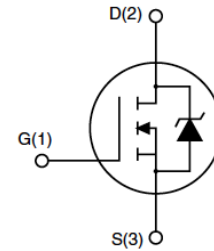


# APG060N10G

## N-Channel Enhancement Mosfet

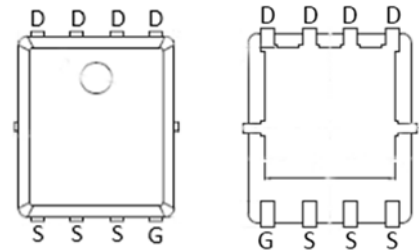
### Features

- 100V,84A  
 $R_{DS(ON)} < 6.0m\ \Omega @ V_{GS}=10V$  TYP:5.5m  $\Omega$   
 $R_{DS(ON)} < 8.8m\ \Omega @ V_{GS}=4.5V$  TYP:7.9m  $\Omega$
- Low Thermal Resistance
- Super Trench



### Applications

- Motor drivers
- DC - DC Converter



PDFN5X6

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G060N10G	APG060N10G	PDFN5X6	-	-	5000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current ( $T_C=25^\circ\text{C}$ ) <sup>(1)</sup>	$I_D$	84	A
Continuous Drain Current ( $T_C=100^\circ\text{C}$ ) <sup>(1)</sup>	$I_D$	52	A
Pulsed Drain Current <sup>(1,2,3)</sup>	$I_{DM}$	320	A
Single Pulsed Avalanche Energy ( $V_{DD}=50V, L=1.0mH$ )	$E_{AS}$	220	mJ
Drain Power Dissipation	$P_D$	96	W
Thermal Resistance from Junction to Case <sup>(2)</sup>	$R_{\theta JC}$	1.3	$^\circ\text{C}/\text{W}$
Thermal Resistance- Junction to Ambient <sup>(3)</sup>	$R_{\theta JA}$	42.6	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$

#### Notes:

1. Pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\ \%$
2. Surface Mounted on minimum footprint pad area.
3. Limited by bonding wire

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

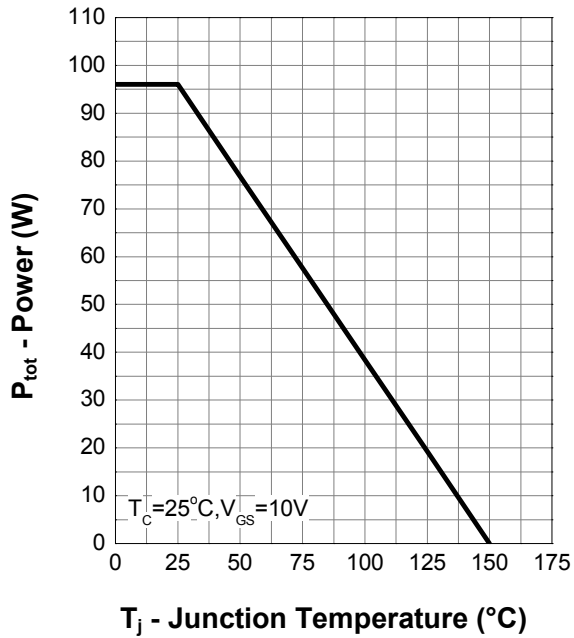
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	100	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> = 0V	-	-	1	μA
Gate-body 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	1.0	-	3.0	V
Drain-source on-resistance <sup>(a)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	5.5	6.0	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		7.9	8.8	mΩ
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f =1.0MHz	-	2876	-	pF
Output Capacitance	C <sub>oss</sub>		-	516	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	37	-	
<b>Switching characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, I <sub>D</sub> =20A, R <sub>G</sub> =3.9Ω, R <sub>L</sub> =2.5Ω, V <sub>G</sub> =10V	-	11	-	ns
Turn-on rise time	t <sub>r</sub>		-	23	-	
Turn-off delay time	t <sub>d(off)</sub>		-	48	-	
Turn-off fall time	t <sub>f</sub>		-	34	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V	-	62	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	12	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	18	-	
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage <sup>(a)</sup>	V <sub>SD</sub>	T <sub>C</sub> =25°C, V <sub>GS</sub> =0V, I <sub>S</sub> =20A	-	-	1.3	V
Diode Forward current	I <sub>S</sub>	T <sub>C</sub> =25°C	-	-	84	A
Body Diode Reverse Recovery Time	t <sub>rr</sub>	T <sub>C</sub> =25°C, I <sub>F</sub> =20A, di/dt=100A/us		70		ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	T <sub>C</sub> =25°C, I <sub>F</sub> =20A, di/dt=100A/us		91		nc

**Notes:**

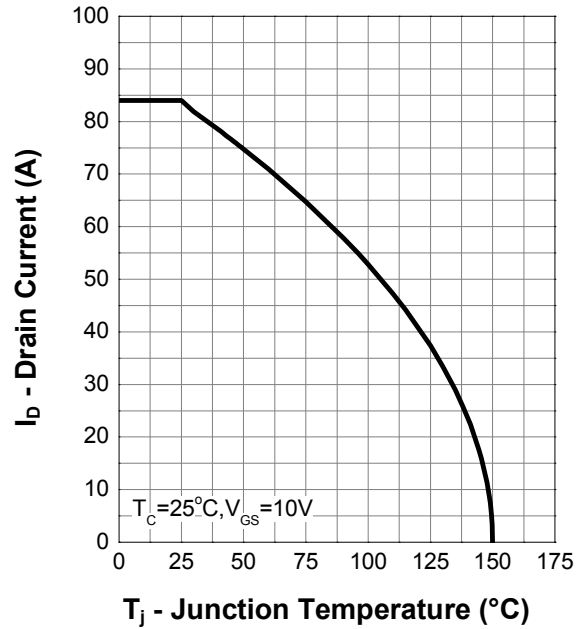
- a) Pulse width ≤ 300 μs, duty cycle ≤ 2%
- b) Guaranteed by design, not subject to production testing

### Typical Characteristics (Cont.)

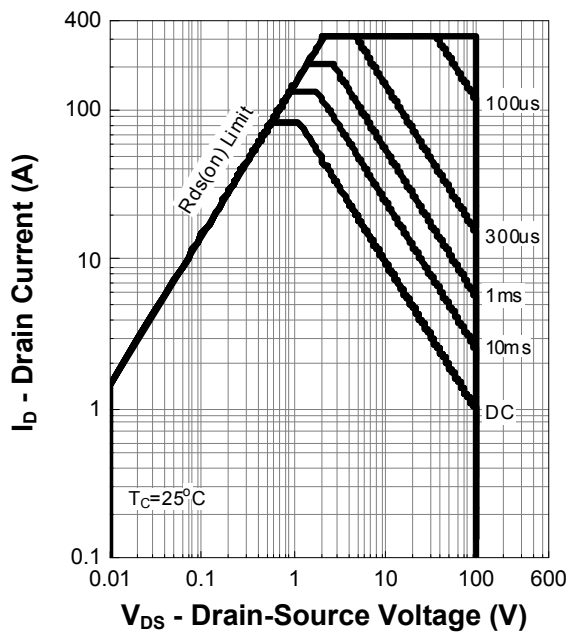
Power Capability



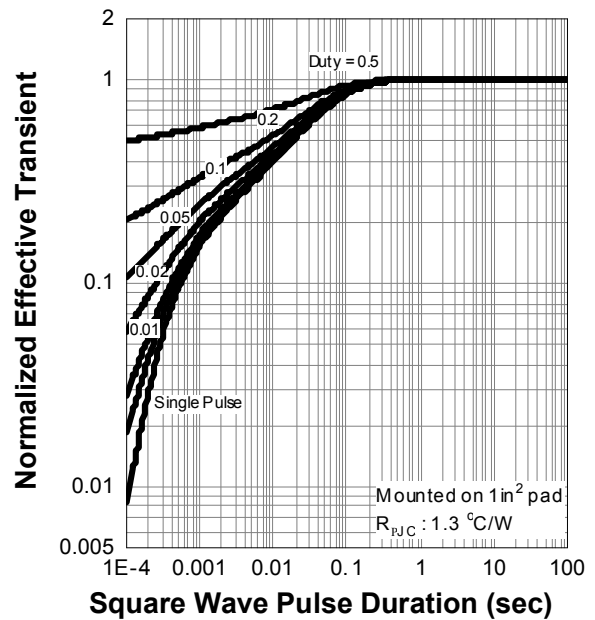
Current Capability



Safe Operation Area

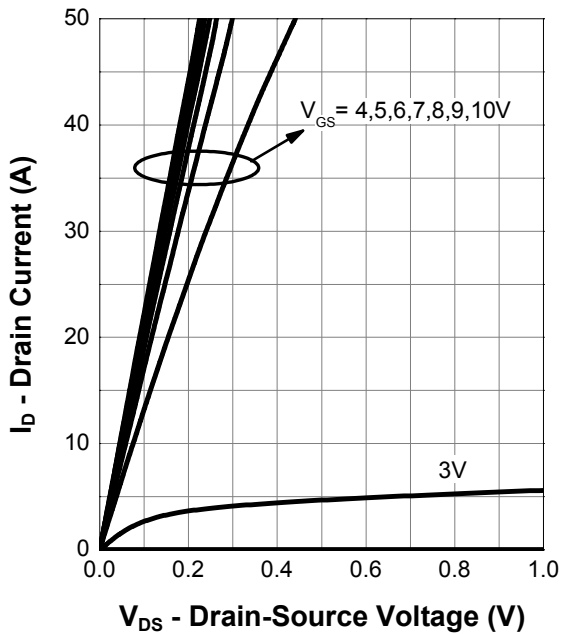


Transient Thermal Impedance

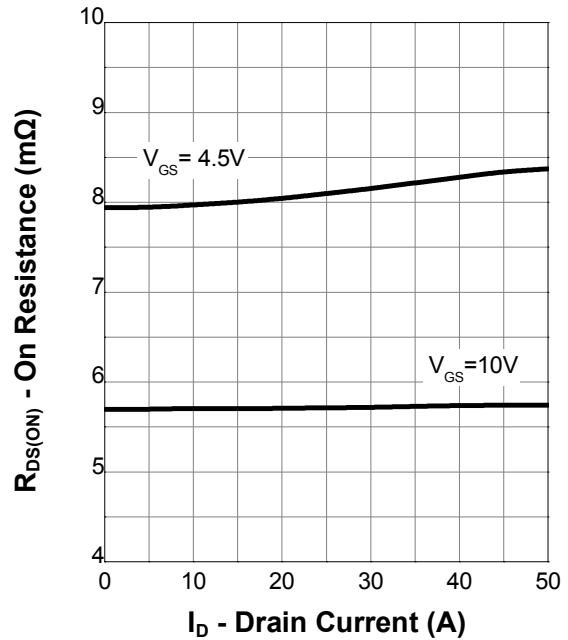


Typical Characteristics (Cont.)

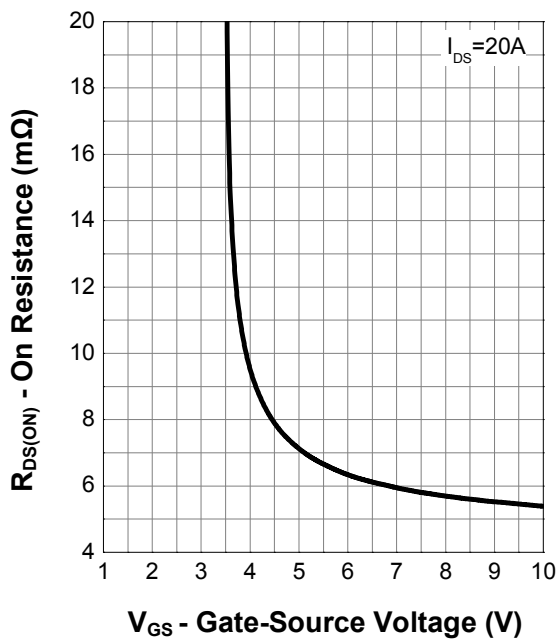
Output Characteristics



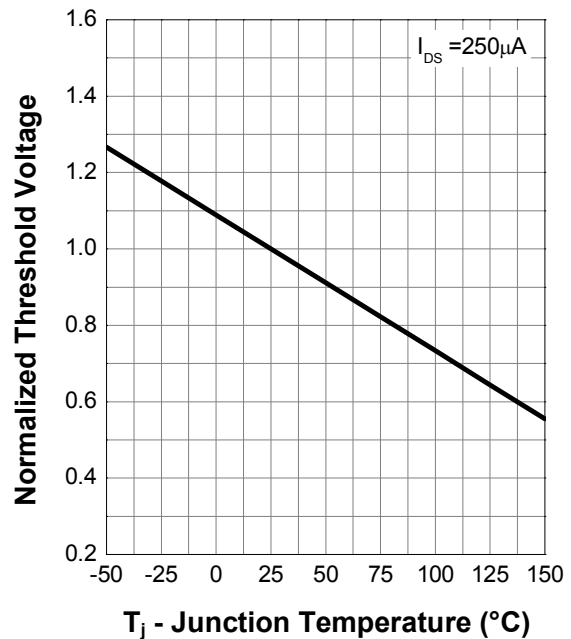
On Resistance



Transfer Characteristics

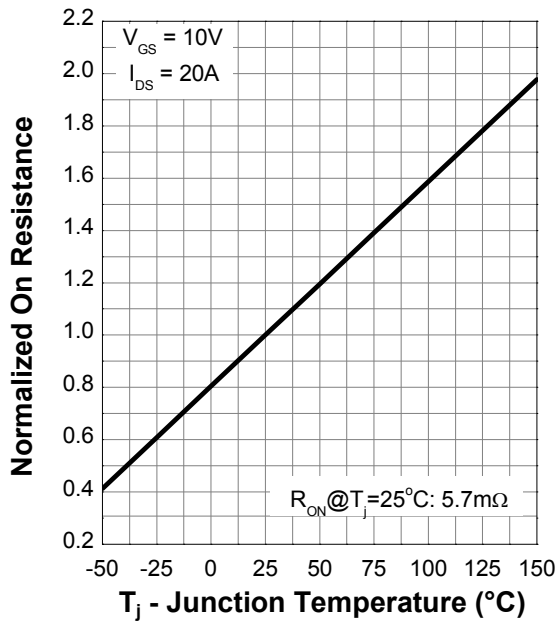


Normalized Threshold Voltage

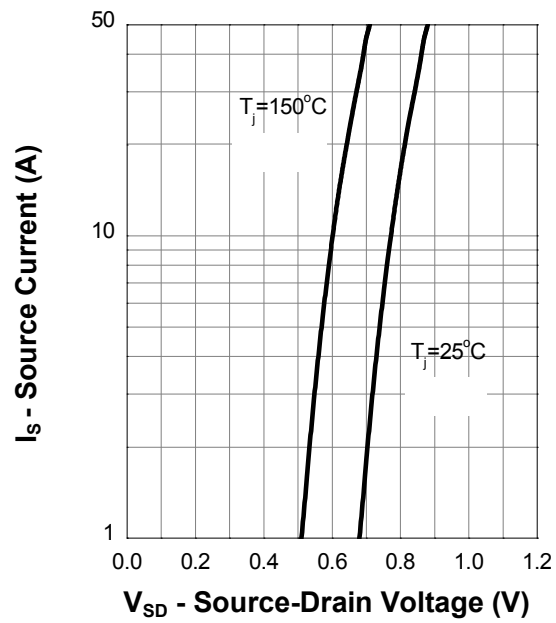


**Typical Characteristics (Cont.)**

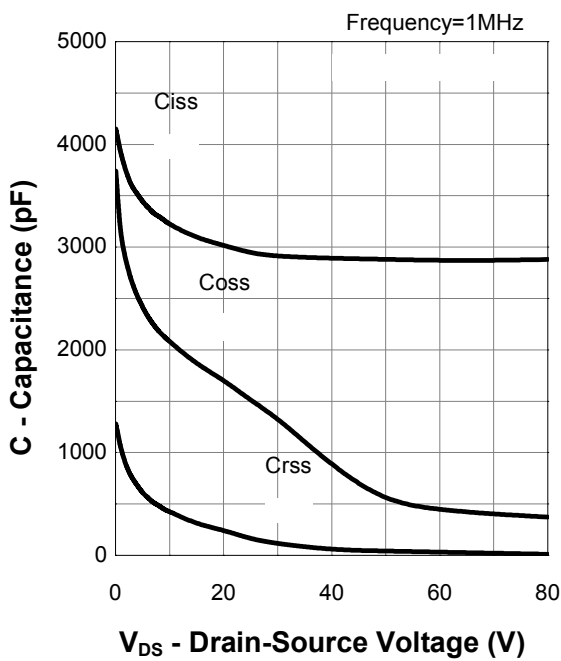
**Normalized On Resistance**



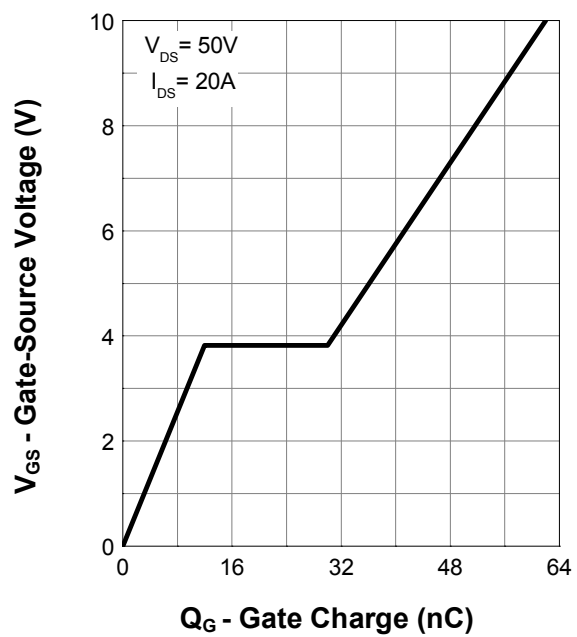
**Diode Forward Current**



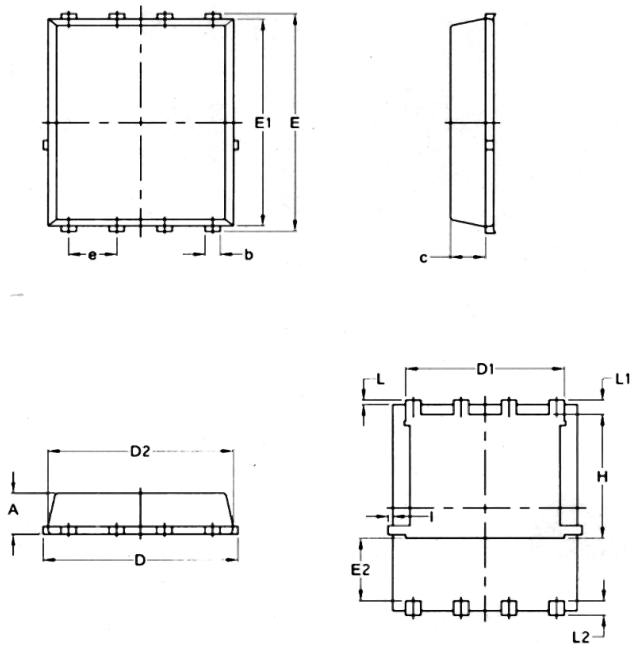
**Capacitance**



**Gate Charge**



**PDFN5X6 Package Information**



PDFN5X6

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