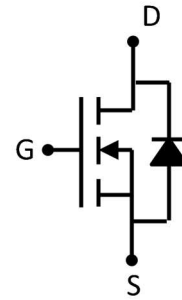


## Feature

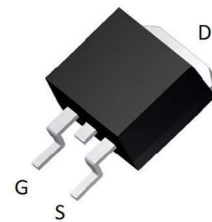
- 85V,120A  
 $R_{DS(ON)} < 6m\Omega @ V_{GS}=10V$
- Advanced Trench Power MOSFET
- Provide Excellent  $R_{DS(ON)}$  And Low Gate Charge



Schematic Diagram

## Application

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



TO-263 top view

## Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G060N85D	APG060N85D	TO-263		-	800

## 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	$V_{GS}$	$\pm 20$	V
Continuous Drain Current ( $T_a = 25^\circ\text{C}$ )	$I_D$	120	A
Continuous Drain Current ( $T_a = 100^\circ\text{C}$ )	$I_D$	85	A
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	360	A
Singel Pulsed Avalanche Energy <sup>(2)</sup>	$E_{AS}$	176	mJ
Power Dissipation	$P_D$	180	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.65	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$

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

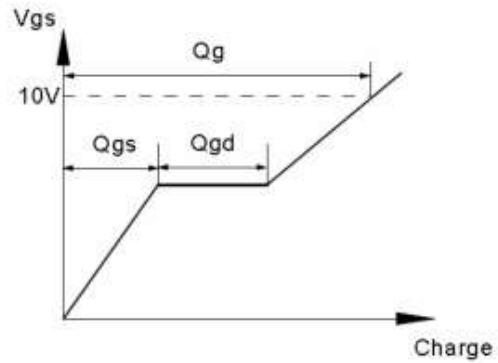
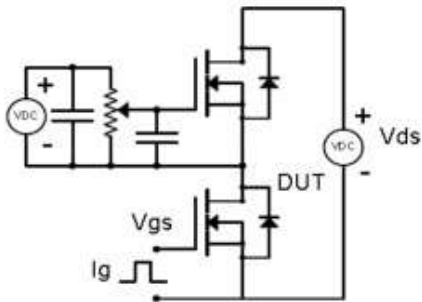
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	85	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =85V, V <sub>GS</sub> = 0V	-	-	1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
Gate threshold voltage <sup>(3)</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2	3	4	V
Drain-source on-resistance <sup>(3)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =60A	-	5.5	6	mΩ
Forward tranconductance <sup>(3)</sup>	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =60A	-	90	-	S
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f =1MHz	-	2448	-	pF
Output Capacitance	C <sub>oss</sub>		-	628	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	15	-	
<b>Switching characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, I <sub>D</sub> =60A, V <sub>GS</sub> =10V, R <sub>G</sub> =25Ω	-	15	-	ns
Turn-on rise time	t <sub>r</sub>		-	29	-	
Turn-off delay time	t <sub>d(off)</sub>		-	25	-	
Turn-off fall time	t <sub>f</sub>		-	18	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =60A, V <sub>GS</sub> =10V	-	37	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	25	-	
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage <sup>(3)</sup>	V <sub>DS</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =120A	-	-	1.2	V
Diode Forward current <sup>(4)</sup>	I <sub>S</sub>		-	-	120	A
Reverse recovery time	T <sub>rr</sub>	I <sub>S</sub> =60A, V <sub>GS</sub> =0V, dI <sub>F</sub> /dt=100A/us		50		ns
Reverse recovery charge	Q <sub>rr</sub>	I <sub>S</sub> =60A, V <sub>GS</sub> =0V, dI <sub>F</sub> /dt=100A/us		57		nC

**Notes:**

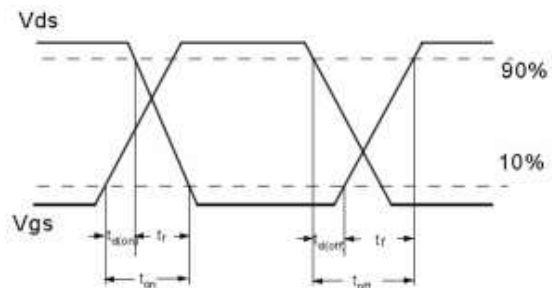
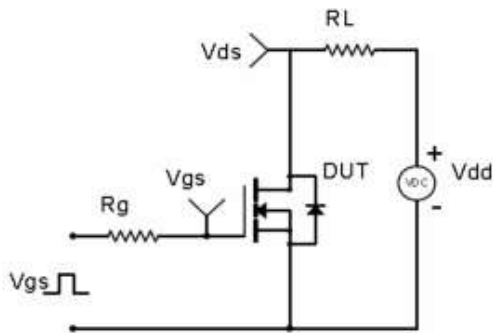
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=10V, R<sub>G</sub>=20 Ω, L=0.5mH, I<sub>AS</sub>=28A
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board, t≤10 sec

**Test Circuit & Waveform**

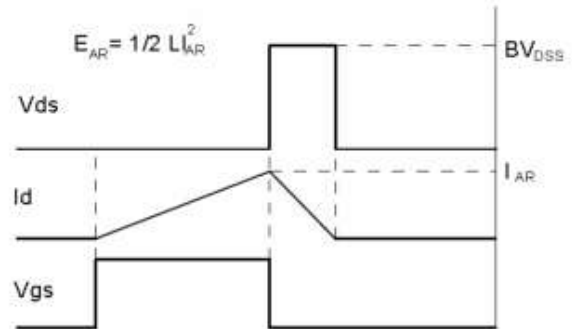
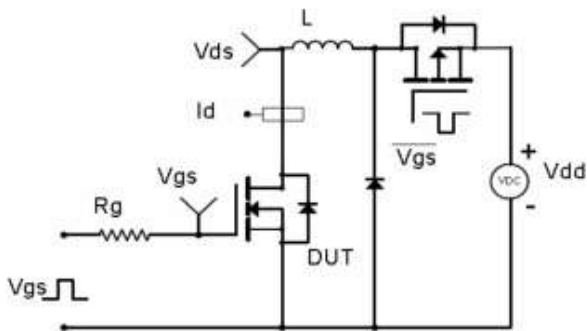
Gate Charge Test Circuit & Waveform



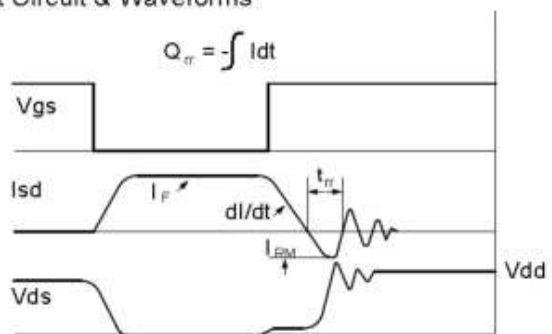
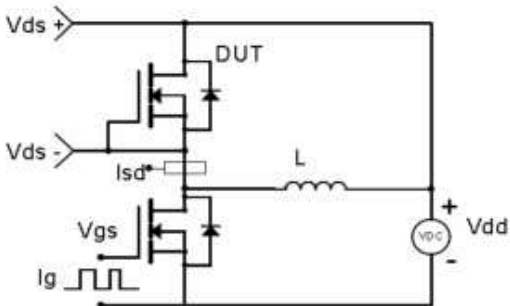
Resistive Switching Test Circuit & Waveforms



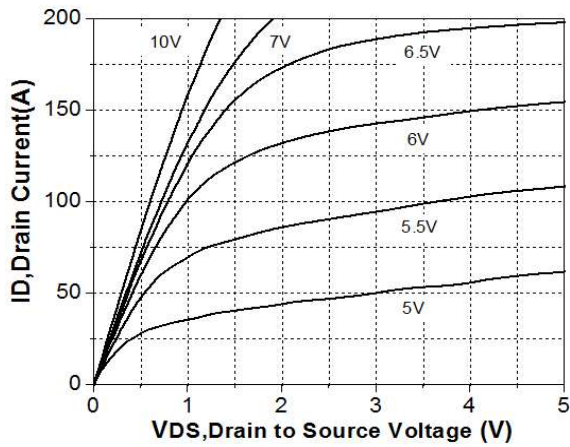
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



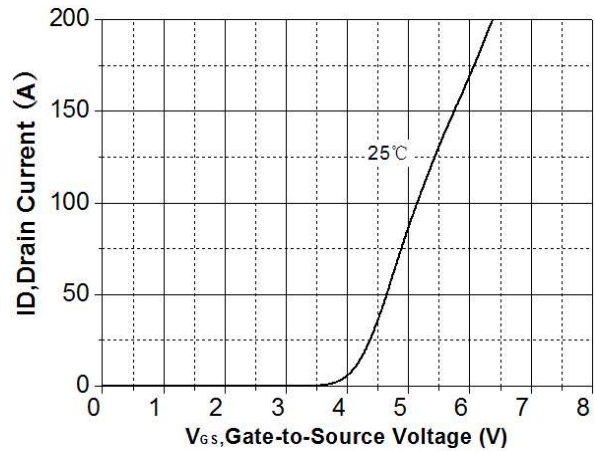
Diode Recovery Test Circuit & Waveforms



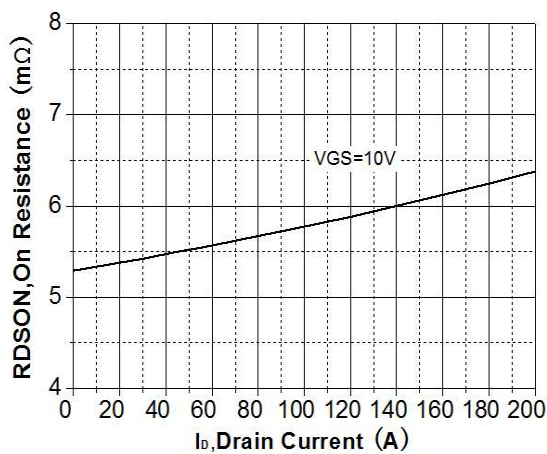
**Typical Electronic and Thermal Characteristics**



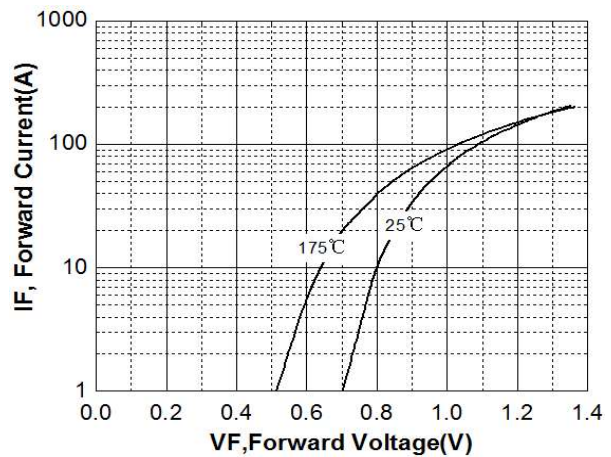
**Figure 1. On-Region Characteristics**



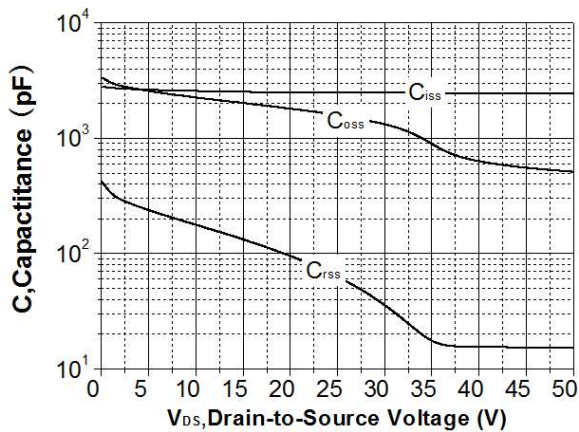
**Figure 2. Transfer Characteristics**



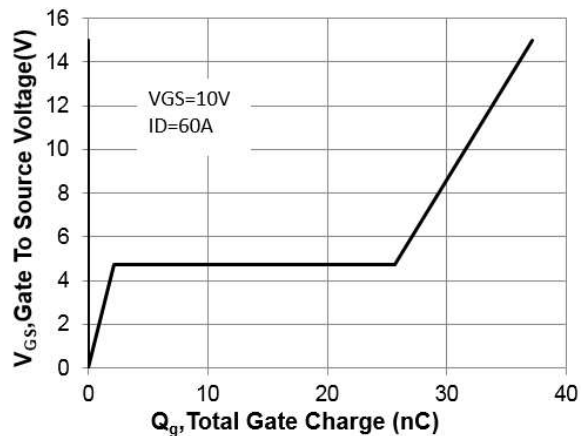
**Figure 3. On-Resistance Variation vs Drain Current**



**Figure 4. Body Diode Forward Voltage Vs Reverse Drain Current**

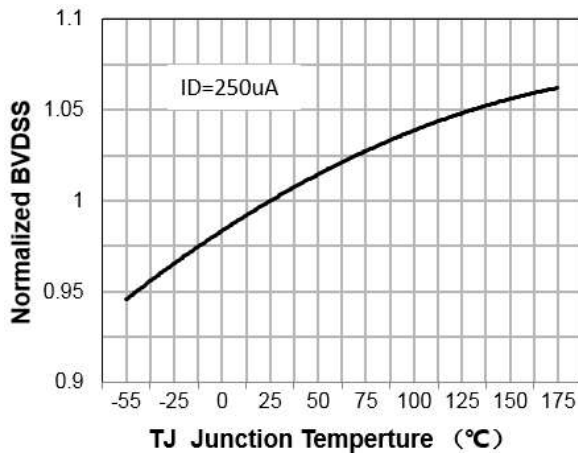


**Figure 5. Capacitance Characteristics**

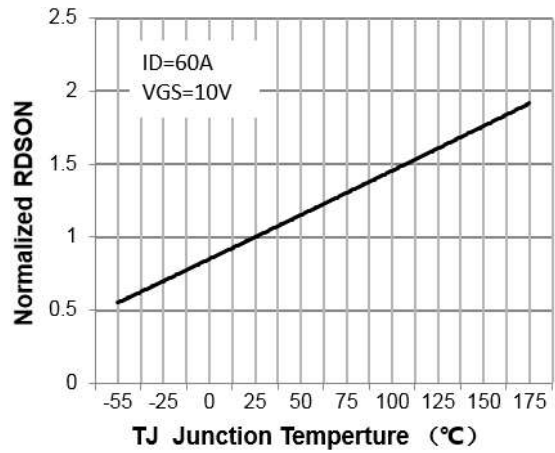


**Figure 6. Gate Charge Characteristics**

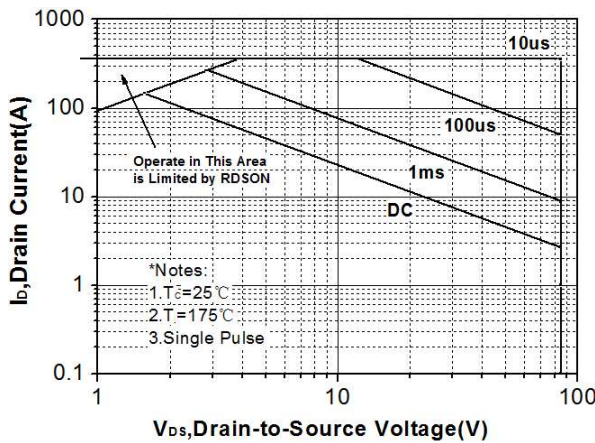
**Typical Electronic and Thermal Characteristics**



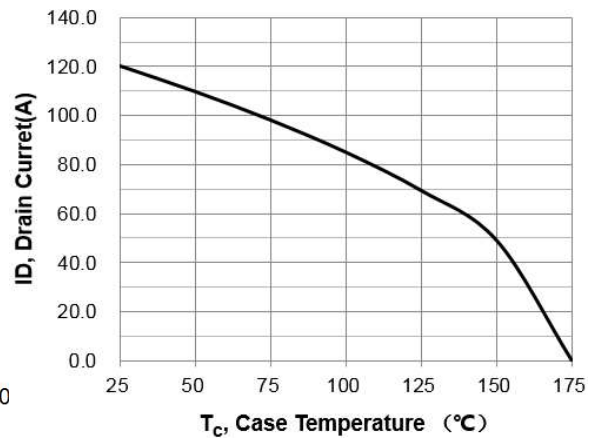
**Figure 7. Breakdown Voltage Variation vs Temperature**



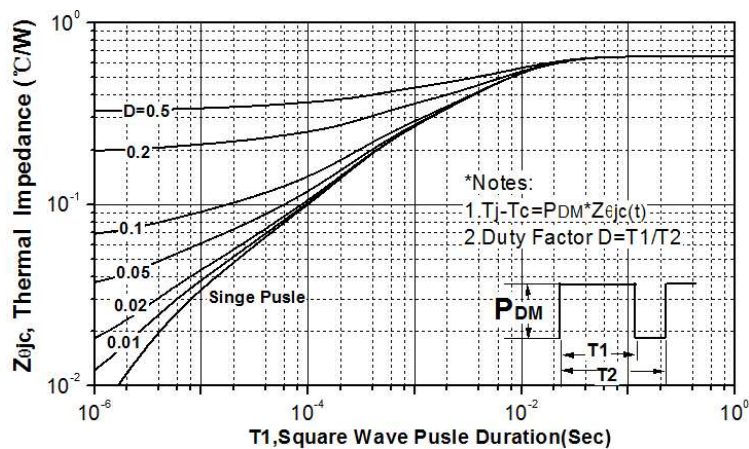
**Figure 8. On-Resistance Variation vs Temperature**



**Figure 9. Maximum Safe Operating Area**

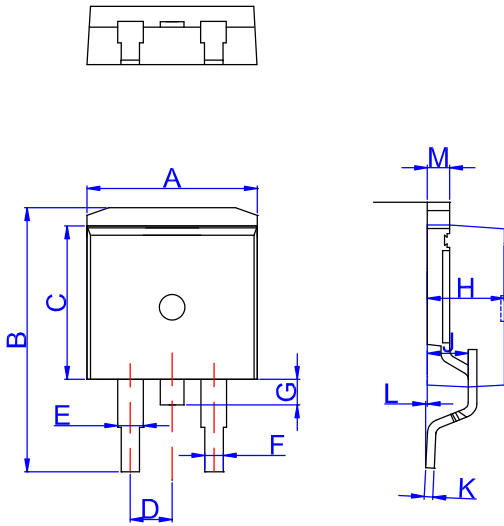


**Figure 10. Maximum Drain Current vs Case Temperature**



**Figure 11. Transient Thermal Response Curve**

**TO-263 Package Information**



TO-263

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
J	2.30		2.70	0.091		0.106
K	0.38		0.55	0.015		0.022
L	0	0.10	0.25	0	0.004	0.010
M	1.25		1.35	0.049		0.053



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