APG060N15D
N-Channel Enhancement Mosfet
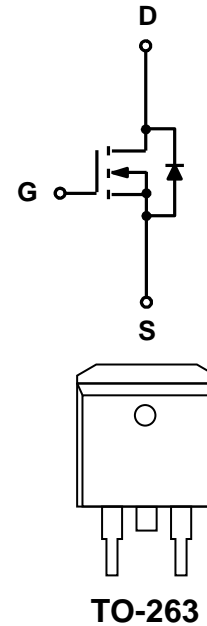
AllPOWER

DATA SHEET

Features

- 150V,100A
  $R_{DS(ON)} < 6.0m\Omega @ V_{GS}=10V$ TYP:5.4 mΩ
  $R_{DS(ON)} < 7.0m\Omega @ V_{GS}=6V$ TYP:6.0mΩ

- Surface-mounted package
- Super Trench
- Advanced trench cell design

Applications

- LCD TV appliances
- LCDM appliances
- High power inverter system

D

G

S

TO-263

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G060N15D	APG060N15D	TO-263	-	-	800

ABSOLUTE MAXIMUM RATINGS (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	$\pm$25	V
Continuous Drain Current (T$_C$ =25℃) [1,3]	I_D	100	A
Continuous Drain Current (T$_C$=100℃) [1,3]	I_D	66	A
Pulsed Drain Current [1,2,3]	I_{DM}	180	A
Single Pulsed Avalanche Energy （V$_{DD}$=50V, L=1.0mH）	E_{AS}	1250	mJ
Drain Power Dissipation	P_D	156	W
Thermal Resistance from Junction to Case[2]	$R_{\theta JC}$	0.8	℃/W
Thermal Resistance- Junction to Ambient[2]	$R_{\theta JA}$	40	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Notes：

1. Pulse width $\leq$ 300 μs, duty cycle $\leq$ 2 %

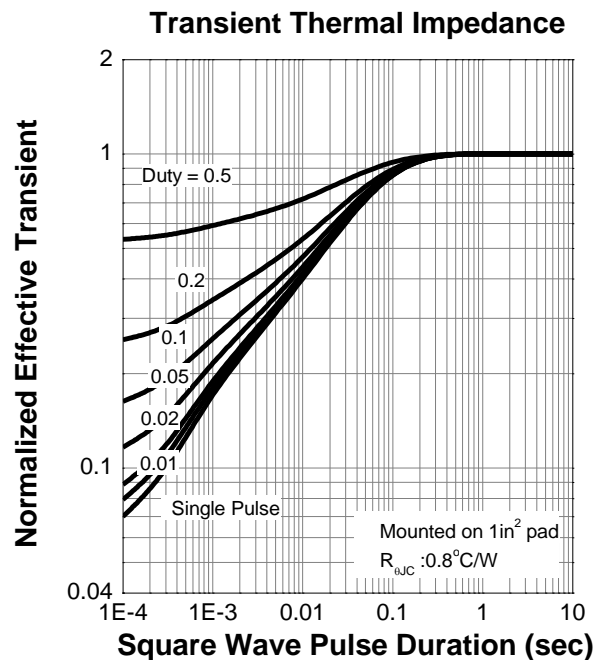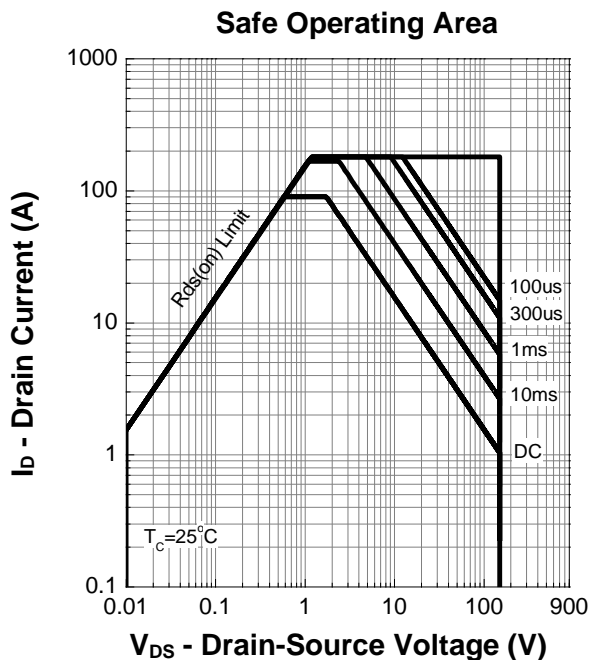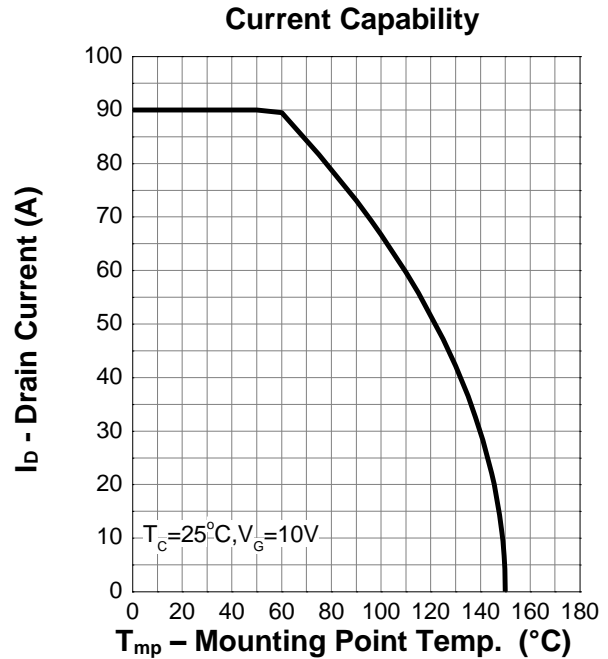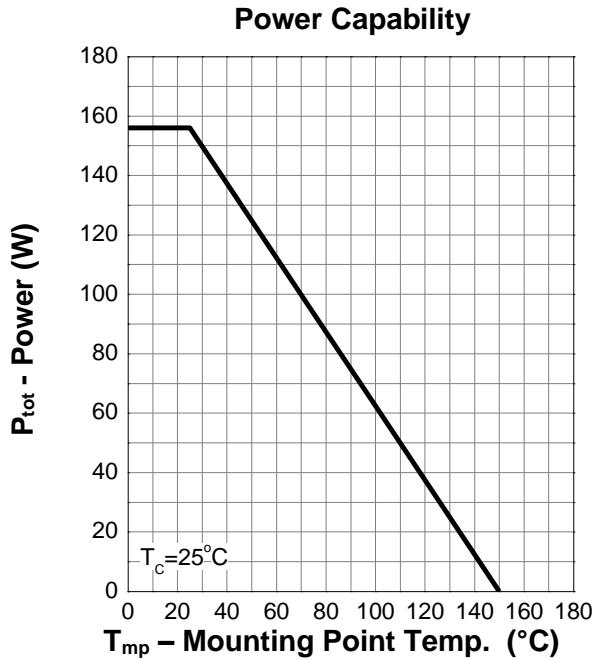2. Surface Mounted on minimum footprint pad area.

3. Limited by bonding wire

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

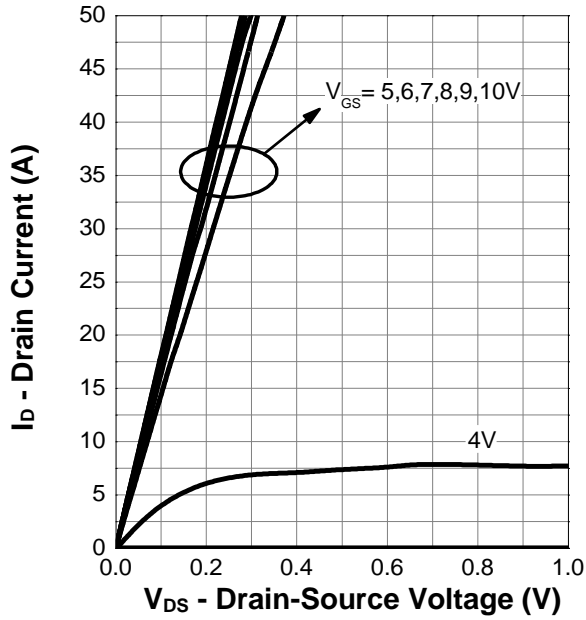| Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	150	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =120V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±25V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0	-	4.0	V
Drain-source on-resistance[a]	$R_{DS(on)}$	V_{GS} =10V, I_D =50A	-	5.4	6.0	mΩ
		V_{GS}=6V, ID=30A	-	6.0	7.0	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =75V, V_{GS} =0V, f =1.0MHz	-	9019	-	pF
Output Capacitance	C_{oss}		-	583	-	
Reverse Transfer Capacitance	C_{rss}		-	63	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=75V, I_D=50A, R_G=3.9Ω, V_G=10V	-	23	-	ns
Turn-on rise time	t_r		-	66	-	
Turn-off delay time	$t_{d(off)}$		-	89	-	
Turn-off fall time	t_f		-	70	-	
Total Gate Charge	Qg	V_{DS}=75V, I_D=50A, V_{GS}=10V	-	131	-	nC
Gate-Source Charge	Qgs		-	47	-	
Gate-Drain Charge	Qgd		-	24	-	
Source-Drain Diode characteristics						
Diode Forward voltage[a]	V_{SD}	T_C=25℃, V_{GS} =0V, I_S=50A	-	-	1.3	V
Diode Forward current	I_S	T_C=25℃	-	-	104	A
Body Diode Reverse Recovery Time	trr	T_C=25℃，IF=50A,di/dt=100A/us		112		ns
Body Diode Reverse Recovery Charge	Qrr	T_C=25℃，IF=50A,di/dt=100A/us		475		nc

Notes:

a) : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

b) : Guaranteed by design, not subject to production testing
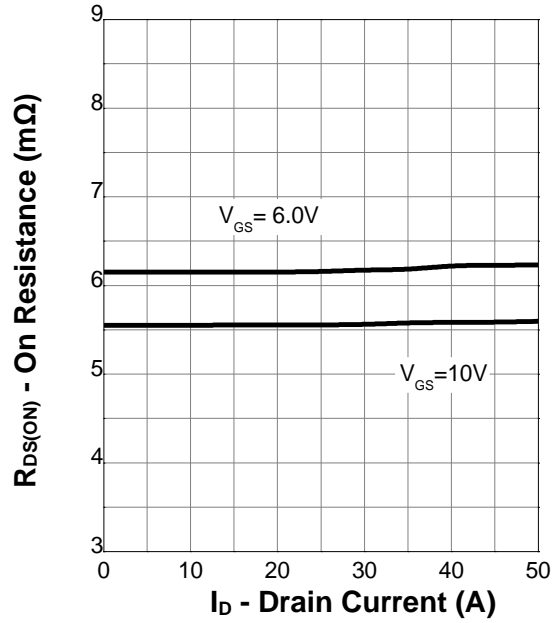
Typical Characteristics

Power Capability

P$_{tot}$ - Power (W) vs T$_{mp}$ – Mounting Point Temp. (°C), T$_C$=25°C

Current Capability

I$_D$ - Drain Current (A) vs T$_{mp}$ – Mounting Point Temp. (°C), T$_C$=25°C, V$_G$=10V

Safe Operating Area

I$_D$ - Drain Current (A) vs V$_{DS}$ - Drain-Source Voltage (V), Rds(on) Limit, 100us, 300us, 1ms, 10ms, DC, T$_C$=25°C

Transient Thermal Impedance

Normalized Effective Transient vs Square Wave Pulse Duration (sec), Duty = 0.5, 0.2, 0.1, 0.05, 0.02, 0.01, Single Pulse, Mounted on 1in² pad, R$_{θJC}$:0.8°C/W
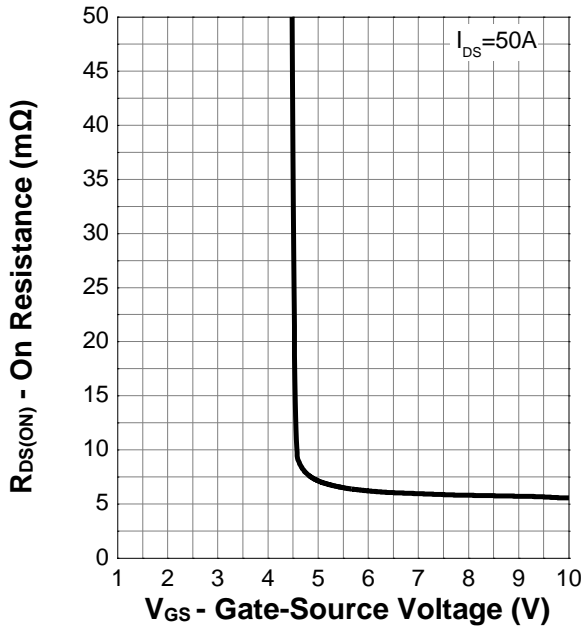
Typical Characteristics (cont.)
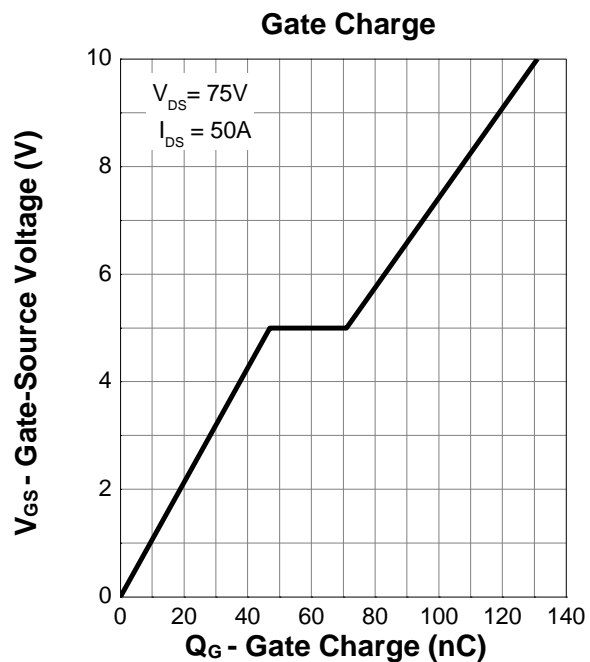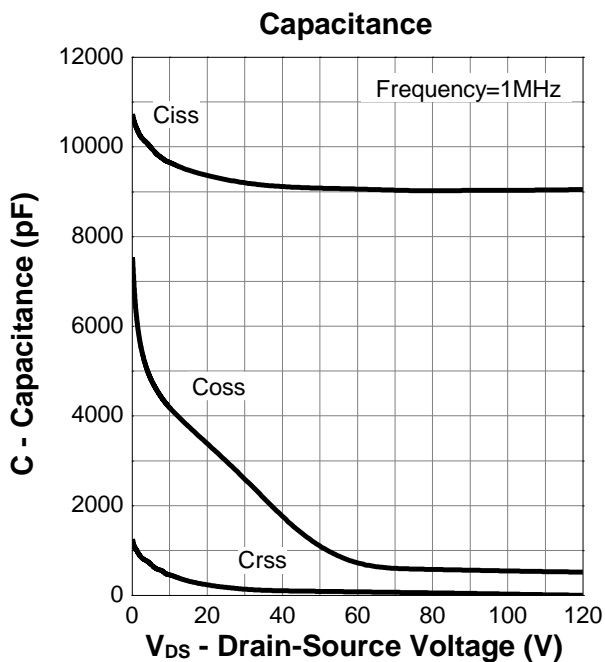
Output Characteristics

On Resistance

Transfer Characteristics

Normalized Threshold Voltage

Typical Characteristics (cont.)

Normalized On Resistance

$V_{GS} = 10V$
$I_{DS} = 50A$

$R_{ON}@T_j=25^oC$: 5.4mΩ

Y-axis: **Normalized On Resistance**
X-axis: **T_j - Junction Temperature (°C)**

Diode Forward Current

$T_j=150^oC$

$T_j=25^oC$

Y-axis: **I_S - Source Current (A)**
X-axis: **V_{SD} - Source-Drain Voltage (V)**

Capacitance

Frequency=1MHz

Ciss

Coss

Crss

Y-axis: **C - Capacitance (pF)**
X-axis: **V_{DS} - Drain-Source Voltage (V)**

Gate Charge

$V_{DS} = 75V$
$I_{DS} = 50A$

Y-axis: **V_{GS} - Gate-Source Voltage (V)**
X-axis: **Q_G - Gate Charge (nC)**

Package Dimensions

TO-263
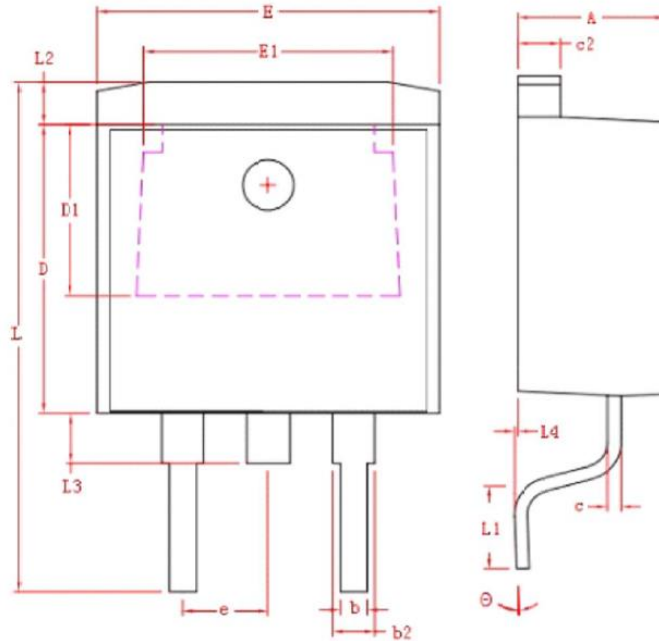
Symbol	Dimensions In Millimeters	
	MIN.	**MAX.**
A	4.40	4.80
b	0.76	1.00
L4	0.00	0.25
C	0.36	0.50
L3	1.50 REF	
L1	2.29	2.79
E	9.80	10.40
E1	7.40 REF	
c2	1.25	1.45
b2	1.17	1.47
D	8.60	9.00
D1	5.10 REF	
e	2.54 REF	
L	14.6	15.8
θ	$0° \pm 3°$	
L2	1.27 REF	