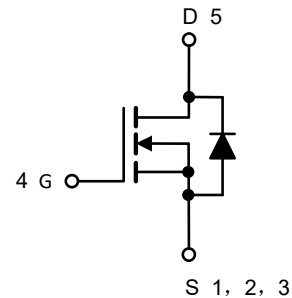
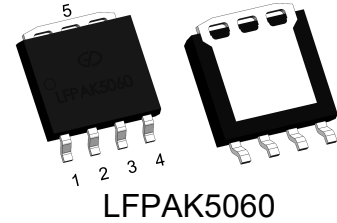


## N-Channel 100V (D-S) Power MOSFET

### Features

- 100% Avalanche Tested
- Extremely Low Losses with Low FOM  $R_{ds(on)} \cdot Q_g$
- RoHS Compliant, Halogen Free, Pb-Free
- AEC-Q101 Qualified
- MSL 1



### Applications

- Automotive systems
- Motors, lamps and solenoid control
- Ultra high performance power switching

### Absolute Maximum Ratings ( $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	$V_{DS}$	100	V
Gate Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current, Continuous $V_{GS}=10\text{V}$	$I_D$	$T_C=25^\circ\text{C}$	112
		$T_C=100^\circ\text{C}$	79
Drain Current, Pulsed (Note 1)	$I_{DM}$	448	A
Single Avalanche Energy (Note 2)	$E_{AS}$	105	mJ
Power Dissipation	$P_D$	$T_C=25^\circ\text{C}$	300
		$T_C=100^\circ\text{C}$	150
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +175	$^\circ\text{C}$

Note 1: Single pulse;  $t_p \leq 1\mu\text{s}$ .

Note 2:  $V_{DD} = 20\text{V}$ ,  $V_{GS} = 10\text{V}$ ,  $L = 0.5\text{mH}$ ,  $R_G = 25\Omega$ , starting  $T_J = 25^\circ\text{C}$ .

### Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{thJC}$	0.5	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 3)	$R_{thJA}$	62.5	$^\circ\text{C/W}$

Note 3: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a  $25^\circ\text{C}$  still air environment.

### Electrical Characteristics (T<sub>J</sub> =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
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> =100V, V <sub>GS</sub> =0V	--	--	1	uA
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250uA	2	2.9	4	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
Drain-Source On-state Resistance (Note 4)	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	--	6.2	8.5	mΩ
Total Gate Charge	Q <sub>g</sub>	V <sub>GS(off)</sub> =0V, V <sub>GS(on)</sub> =10V, V <sub>DD</sub> =50V, I <sub>D</sub> =20A	--	206	--	nC
Gate Source Charge	Q <sub>gs</sub>		--	53	--	
Gate Drain Charge	Q <sub>gd</sub>		--	38	--	
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V, R <sub>L</sub> =0.75Ω, R <sub>G</sub> =3Ω	--	38	--	ns
Turn-on Rise Time	t <sub>r</sub>		--	81	--	
Turn-off Delay Time	t <sub>d(off)</sub>		--	114	--	
Turn-off Fall Time	t <sub>f</sub>		--	105	--	
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, f=1MHz, open drain	--	1.6	--	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =100V, f=1MHz	--	1410	--	pF
Output Capacitance	C <sub>oss</sub>		--	236	--	
Reverse Transfer Capacitance	C <sub>rss</sub>		--	185	--	

### Reverse Diode Characteristics (T<sub>J</sub> =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I <sub>SD</sub>	T <sub>C</sub> =25°C	--	--	112	A
Diode Forward Voltage (Note 4)	V <sub>SD</sub>	I <sub>F</sub> =20A, V <sub>GS</sub> =0V	--	--	1.2	V
Reverse Recovery Time	T <sub>rr</sub>	V <sub>R</sub> =50V, I <sub>F</sub> =5A, di/dt=100A/μs	--	60	--	ns
Reverse Recovery Charge	Q <sub>rr</sub>		--	111	--	nC

Note 4: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

## Typical Characteristics Curves (T<sub>J</sub> = 25°C unless otherwise noted)

Fig. 1 - Output Characteristics

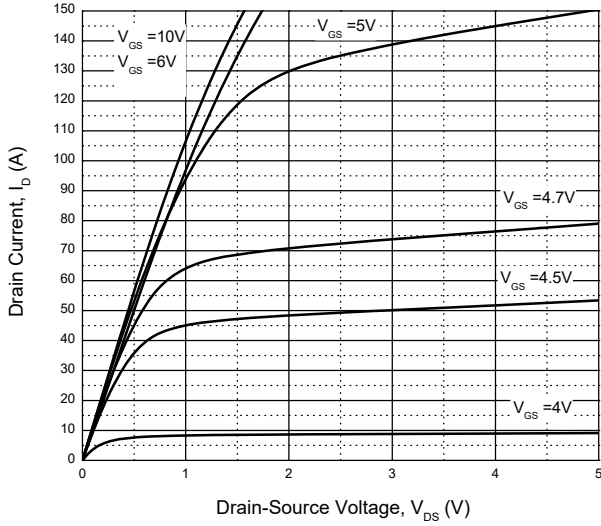


Fig. 2 - Transfer Characteristics

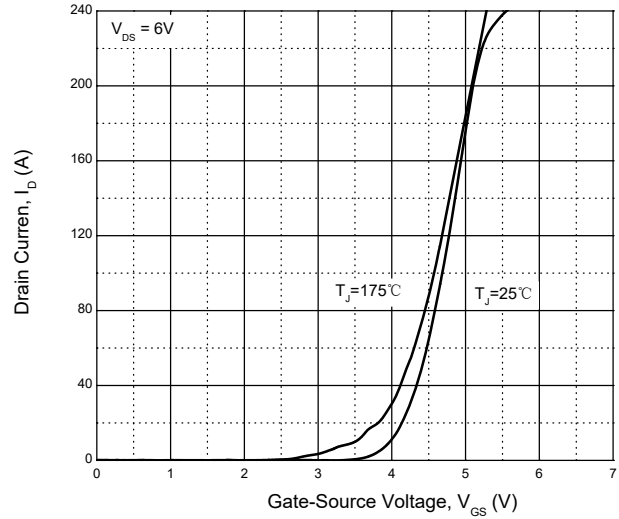


Fig. 3 - Drain-Source On-Resistance

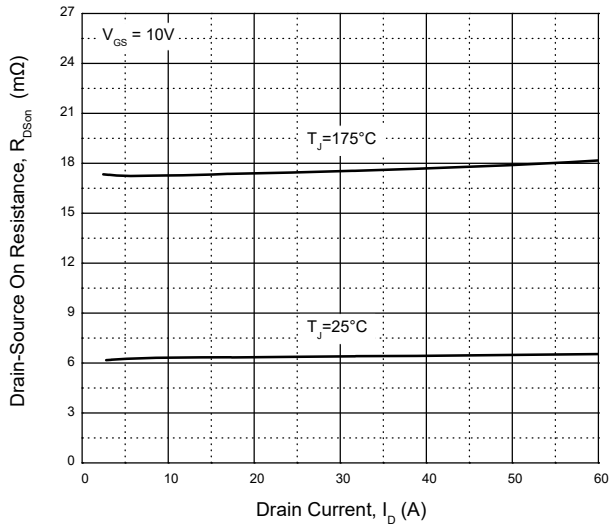


Fig. 4 - Normalized On-Resistance

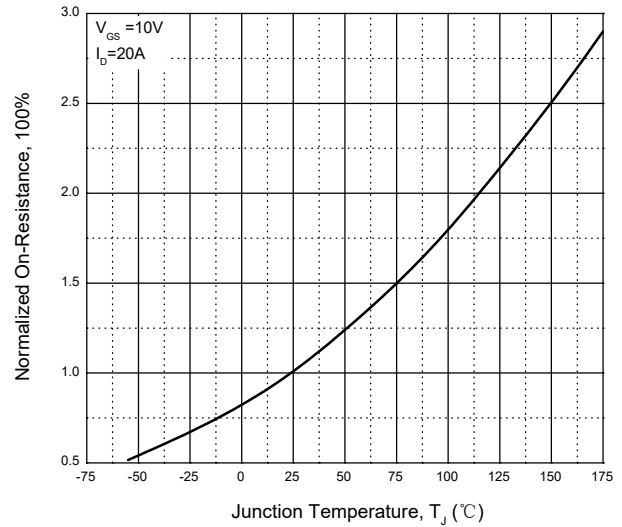


Fig. 5 - Drain-Source On-Resistance

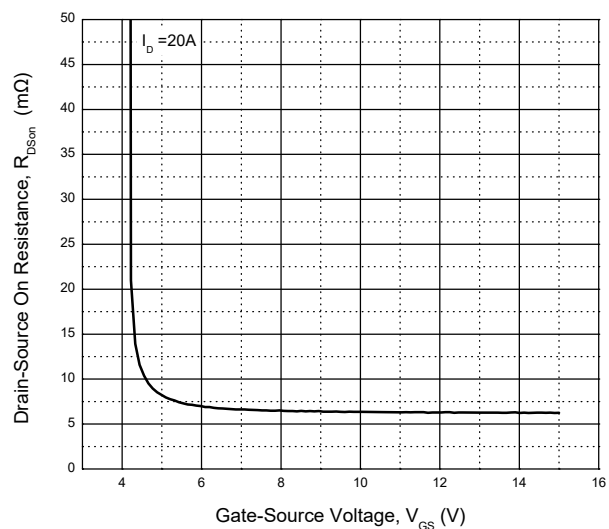
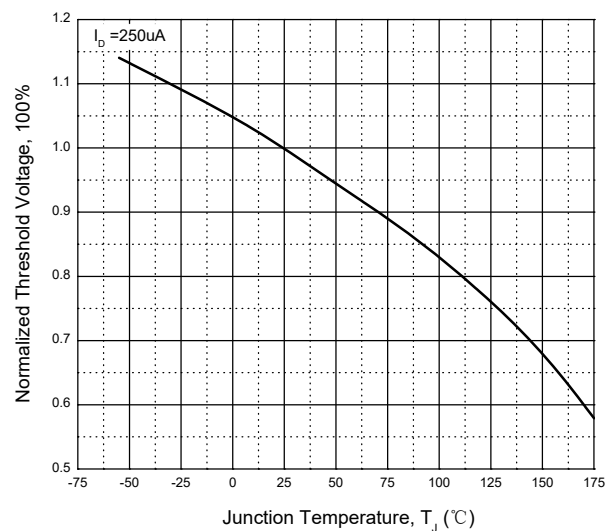


Fig. 6 - Normalized Threshold Voltage



## Typical Characteristics Curves (T<sub>J</sub> = 25°C unless otherwise noted)

Fig. 7 - Capacitance

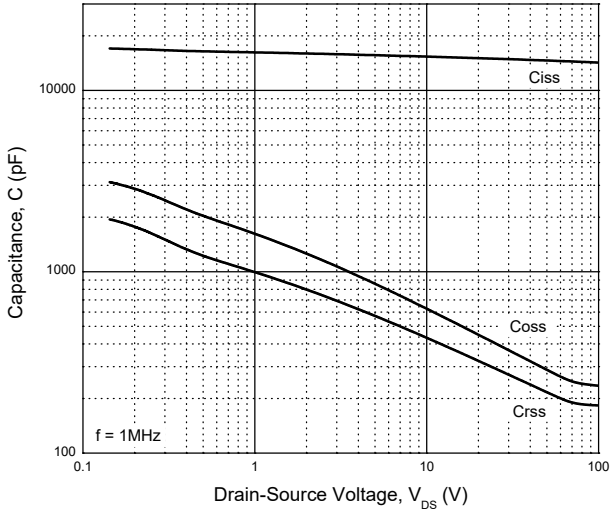


Fig. 8 - Gate Charge

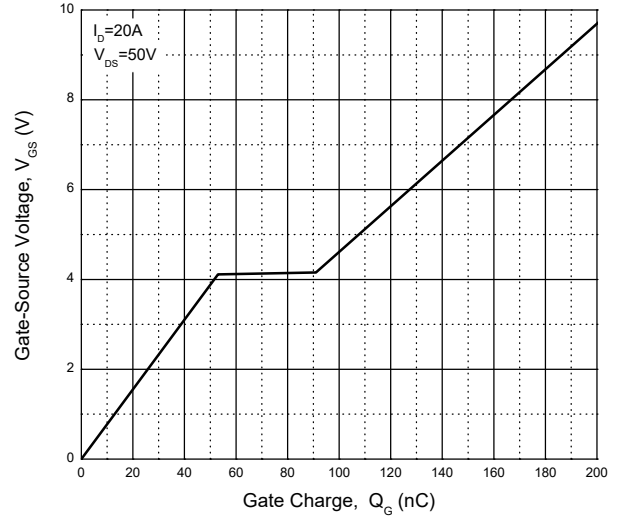


Fig. 9 - Forward Characteristic

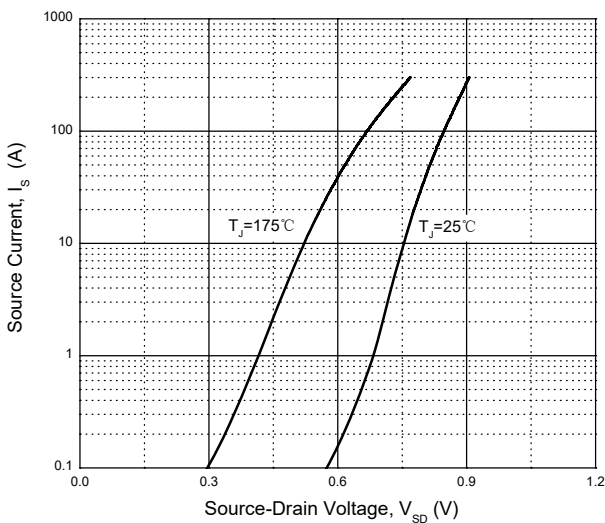


Fig. 10 - Safe Operating Area

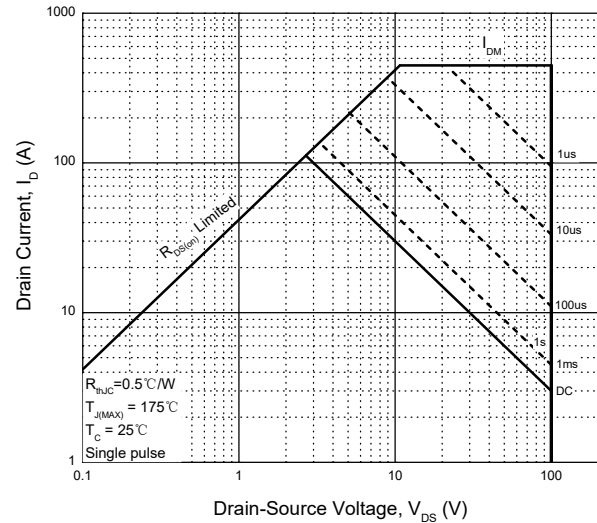
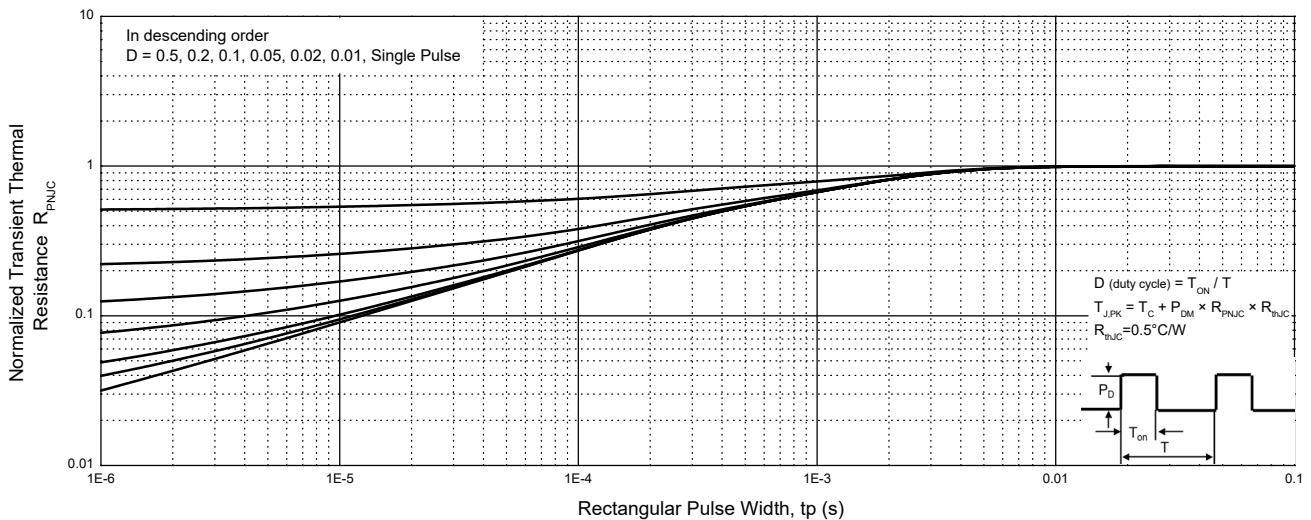


Fig.11 - Normalized Thermal Impedance, Junction-Case



## Typical Characteristics Curves ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Fig. 12 - Power Derating

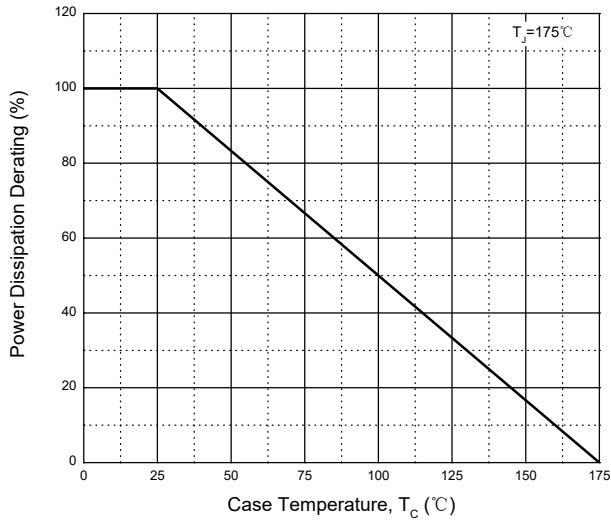
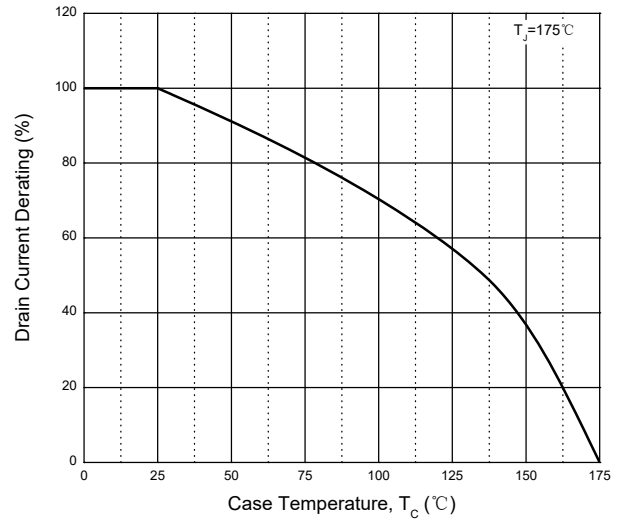
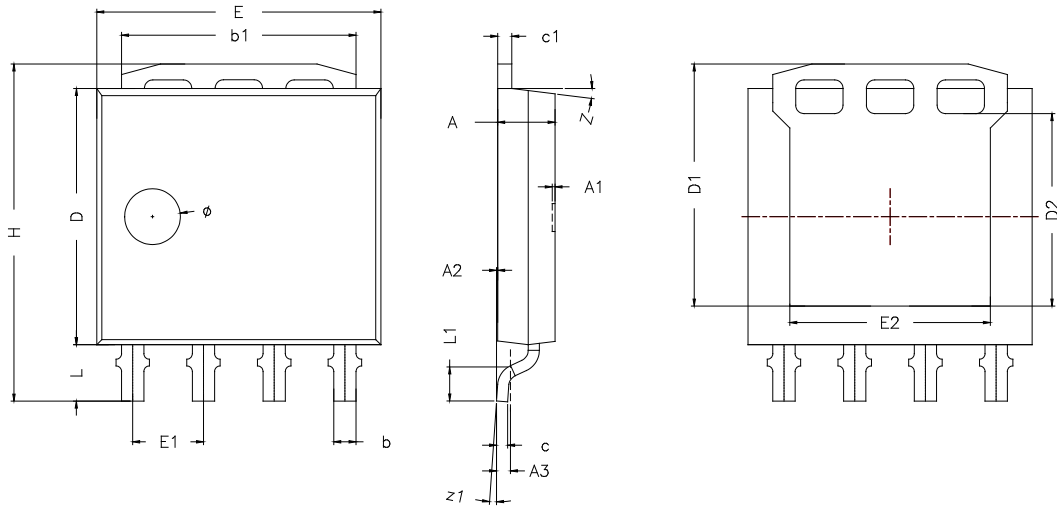


Fig. 13 - Drain Current Derating



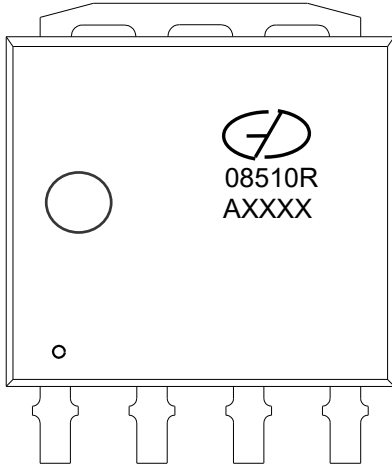
## Package Outline Dimensions (Unit: millimeters)

### LFPAK5060



LFPAK5060							
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	0.980	1.030	1.080	A2	0	-	0.1
A1	-	0.050	-	A3	-	0.254	-
b	0.300	0.400	0.500	E	5.000	5.100	5.200
b1	4.110	4.210	4.310	E1	1.170	1.270	1.370
c	0.190	0.200	0.250	E2	3.450	3.600	3.750
c1	0.240	0.254	0.300	L	0.800	1.010	1.300
D	4.490	4.590	4.690	L1	0.300	0.510	0.750
D1	-	4.338	4.800	Z	-	7°	-
D2	-	3.450	-	H	5.940	6.040	6.240
Z1	0°	-	8°	-	-	-	-

## Marking Outline



Part Name: AGMN08510R

1. Logo Mark: 
2. P/N Mark: 08510R
3. Date Code: AXXXX
4. Pin 1#: 

## Revision History

Version	Date	Major Changes
Rev.A	2025.01.08	Official Release

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