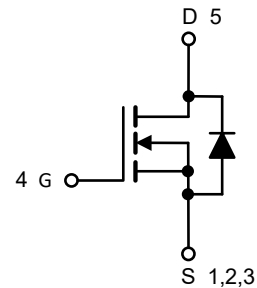
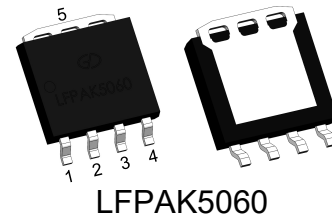


N-Channel 40V (D-S) Power MOSFET

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}	40	V
Gate Source Voltage	V_{GS}	± 20	V
Drain Current, Continuous $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	480
		$T_C=100^\circ\text{C}$	339
Drain Current, Pulsed (Note 1)	I_{DM}	1440	A
Single Avalanche Energy (Note 2)	E_{AS}	125	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	300
		$T_C=100^\circ\text{C}$	150
Operating Junction/ 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°C still air environment.

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A,$	40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.1	1.5	1.9	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Drain-Source On-state Resistance (Note 4)	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	--	0.6	0.8	$m\Omega$
		$V_{GS}=4.5V, I_D=10A$	--	1	1.3	
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=30V, I_D=20A$	--	157	--	nC
Gate-Source Charge	Q_{gs}		--	19	--	
Gate-Drain Charge	Q_{gd}		--	42	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=20V, R_L=0.75, R_G=3\Omega$	--	18	--	ns
Turn-on Rise Time	t_r		--	57	--	
Turn-off Delay Time	$t_{d(off)}$		--	131	--	
Turn-off Fall Time	t_f		--	133	--	
Gate Resistance	R_g	$V_{GS}=0V, f=1MHz, \text{open drain}$	--	2.7	--	Ω
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=40V, f=1MHz$	--	7845	--	μF
Output Capacitance	C_{oss}		--	1570	--	
Reverse Transfer Capacitance	C_{rss}		--	147	--	

Reverse Diode Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I_{SD}	$T_C=25^\circ\text{C}$	--	--	294	A
Diode Forward Voltage (Note 4)	V_{SD}	$I_F=20A, V_{GS}=0V$	--	--	1.2	V
Reverse Recovery Time	T_{rr}	$V_R = 20V, I_F = 20A, di/dt = 100 A/\mu s$	--	76	--	ns
Reverse Recovery Charge	Q_{rr}		--	94	--	nC

Note 4: Pulse test; pulse width $\leq 380\mu s$, duty cycle $\leq 1\%$.

Typical Characteristics Curves (T_J = 25°C unless otherwise noted)

Fig. 1 - Output Characteristics

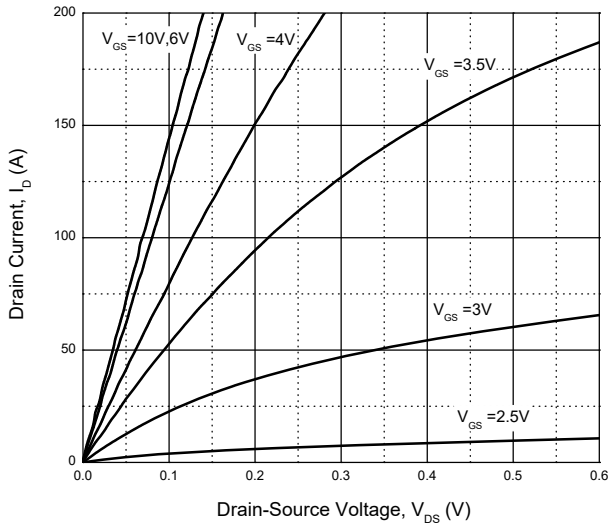


Fig. 2 - Transfer Characteristics

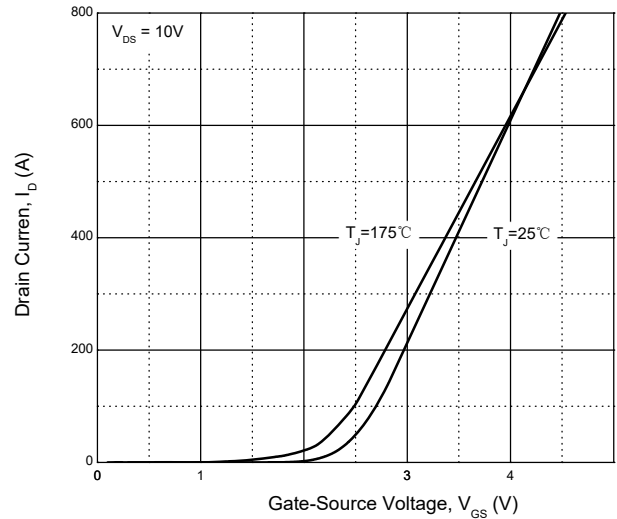


Fig. 3 - Drain-Source On-Resistance

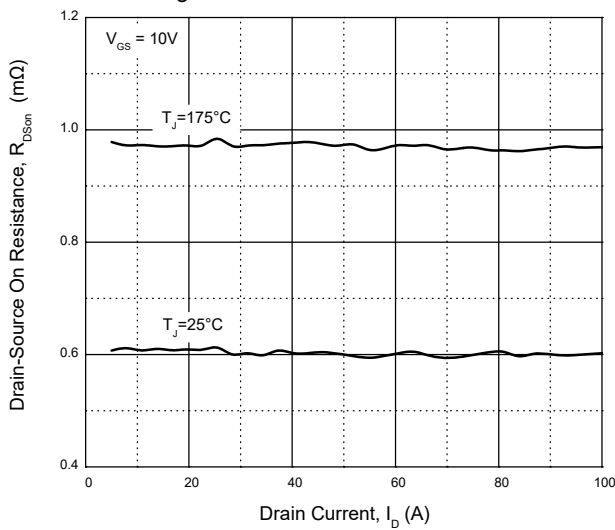


Fig. 4 - Normalized On-Resistance

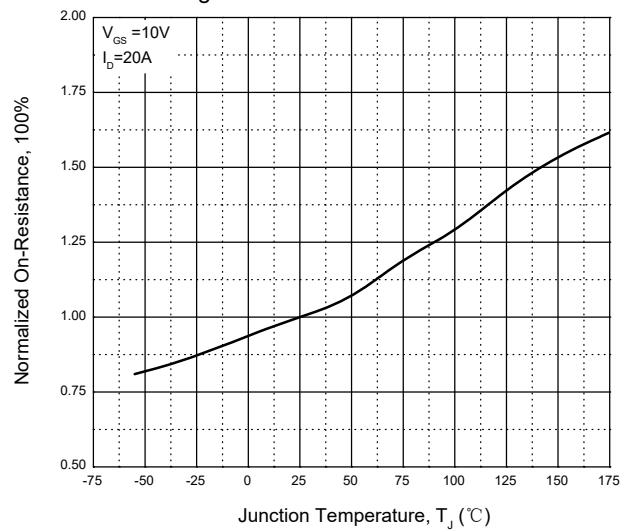


Fig. 5 - Drain-Source On-Resistance

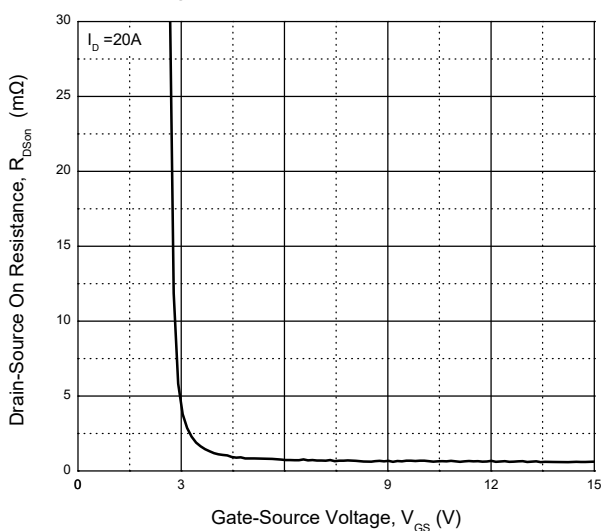
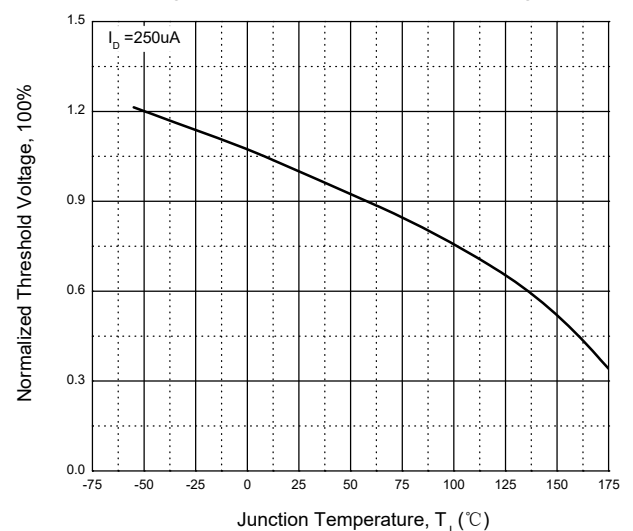


Fig. 6 - Normalized Threshold Voltage



Typical Characteristics Curves (T_J = 25°C unless otherwise noted)

Fig. 7 - Capacitance

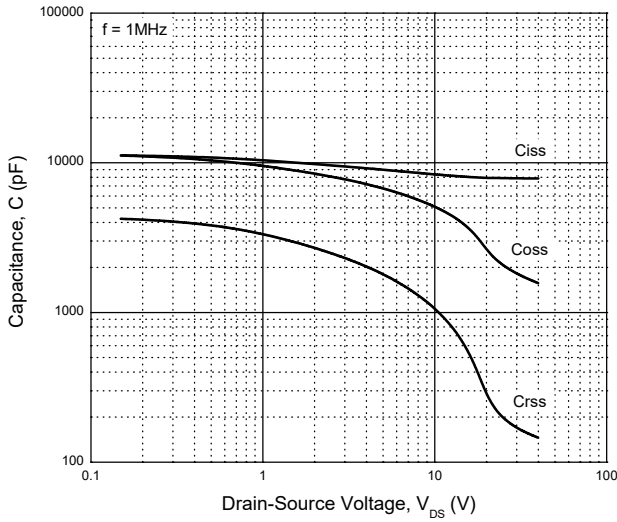


Fig. 8 - Gate Charge

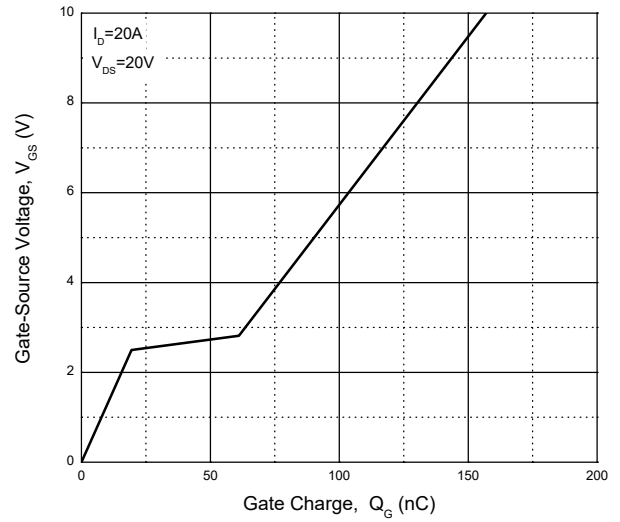


Fig. 9 - Forward Characteristic

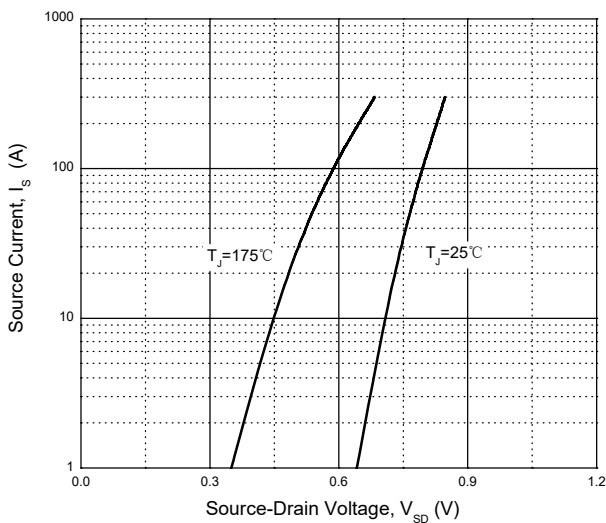


Fig. 10 - Safe Operating Area

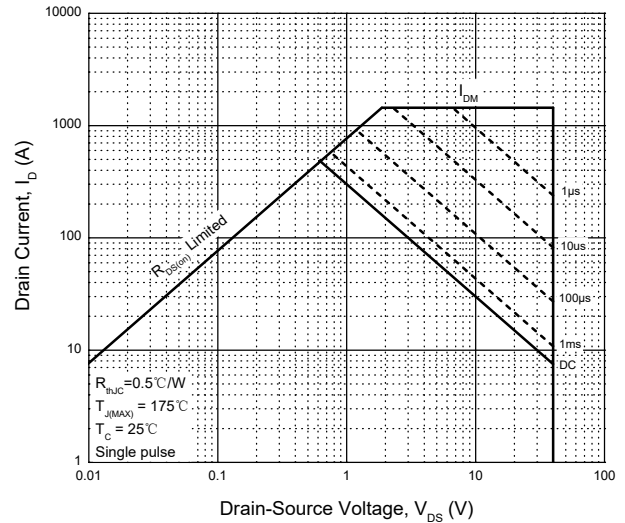
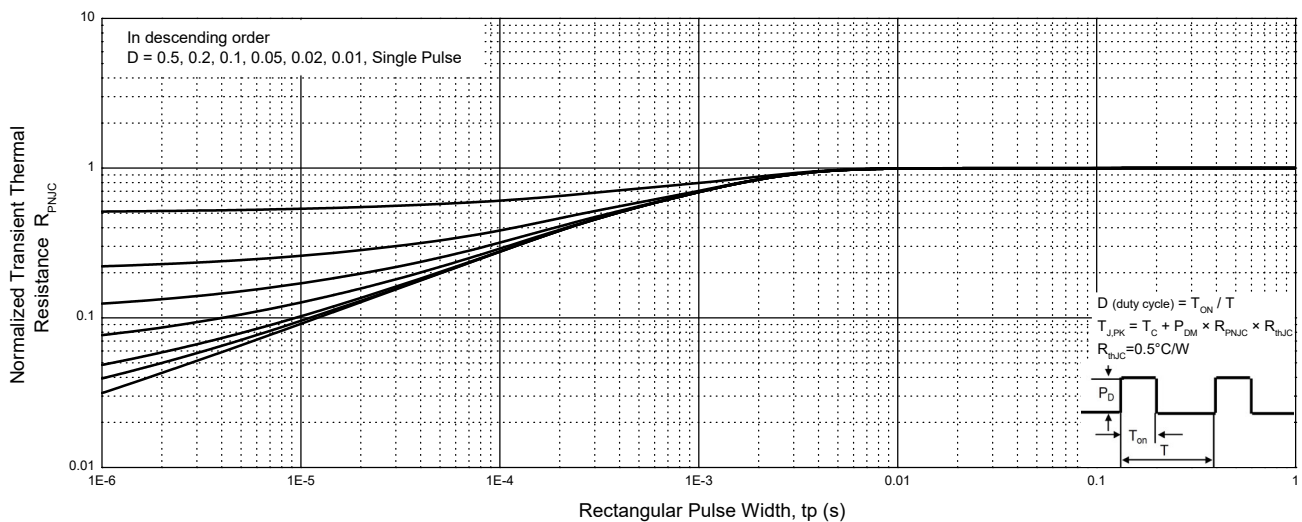


Fig.11 - Normalized Thermal Impedance, Junction-Case



Typical Characteristics Curves (T_J = 25°C unless otherwise noted)

Fig. 12 - Power Derating

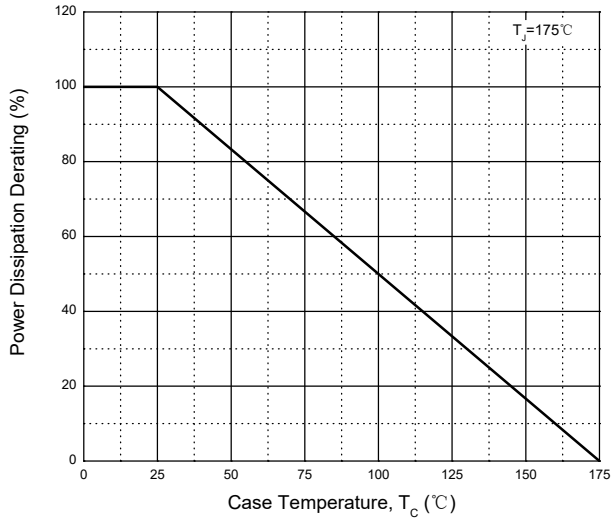
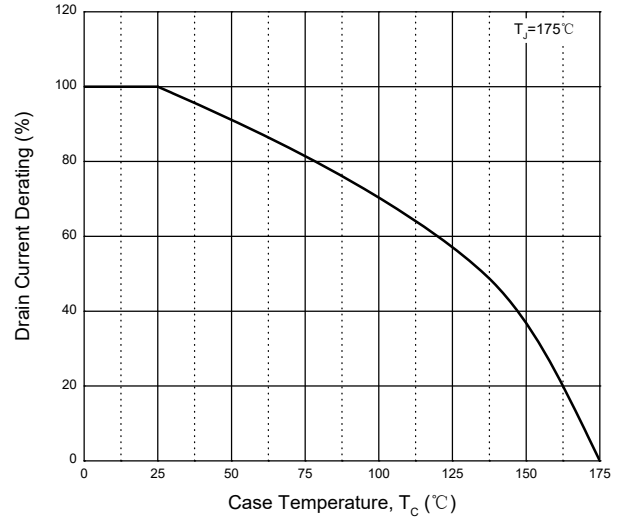
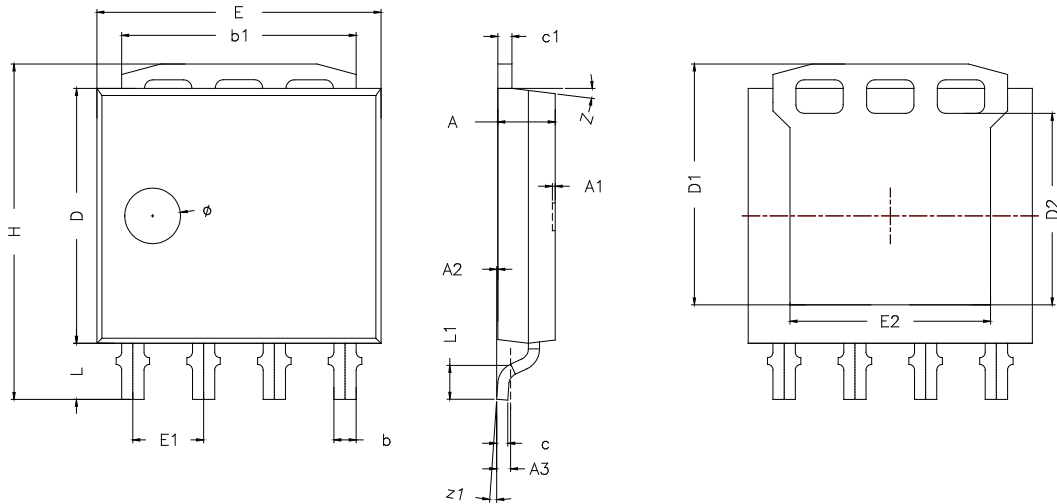


Fig. 13 - Drain Current Derating



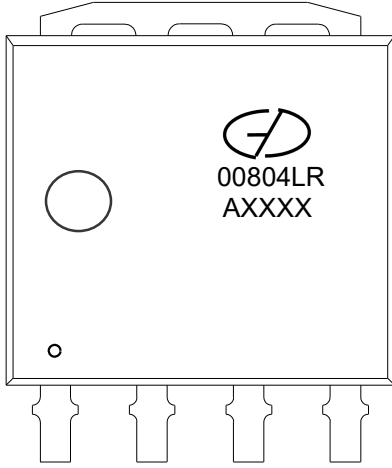
Package Outline Dimensions (Unit: millimeters)

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: AGMN00804LR

1. Logo Mark: 
2. P/N Mark: 00804LR
3. Date Code: AXXXX
4. Pin 1#: ○

Revision History

Version	Date	Major Changes
Rev.A	2024.12.26	Official Release

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