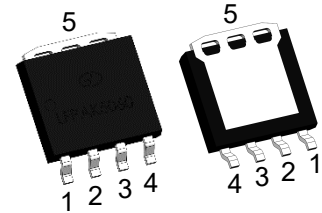


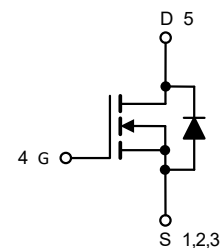
N-Channel 40V (D-S) Power MOSFET

Features

- 100% Avalanche Tested
- Extremely Low Losses Due to Very Low FOM $R_{ds(on)} \cdot Q_g$.
- High-Speed Switching.
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21
- AEC-Q101 qualified



LFPAK5060



Applications

- Automotive systems
- High-Frequency Switching
- Motor Drivers
- High-Efficiency DC-DC Converters

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

Parameter	Symbol	Ratings	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	$T_C=25^\circ\text{C}$	78
		$T_C=100^\circ\text{C}$	55
Drain Current Pulse <i>(Note 1)</i>	I_{DM}	312	A
Single Pulse Avalanche Energy <i>(Note 2)</i>	E_{AS}	180	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	93
		$T_C=100^\circ\text{C}$	47
Operating Temperature/ Storage Temperature	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}	1.6	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient <i>(Note 3)</i>	R_{thJA}	50	$^\circ\text{C/W}$

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°C unless otherwise noted)

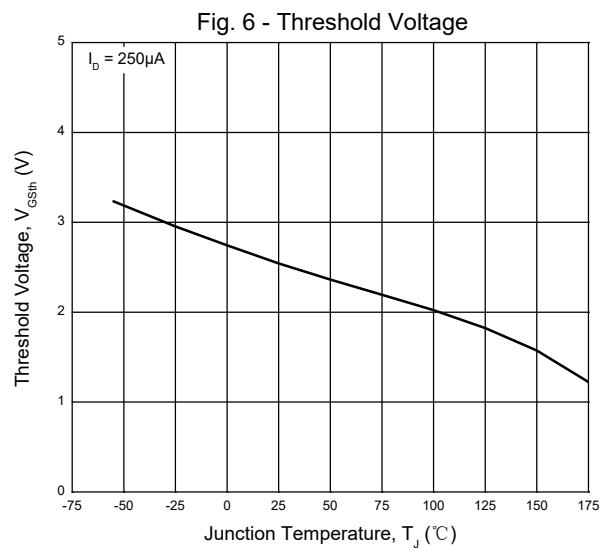
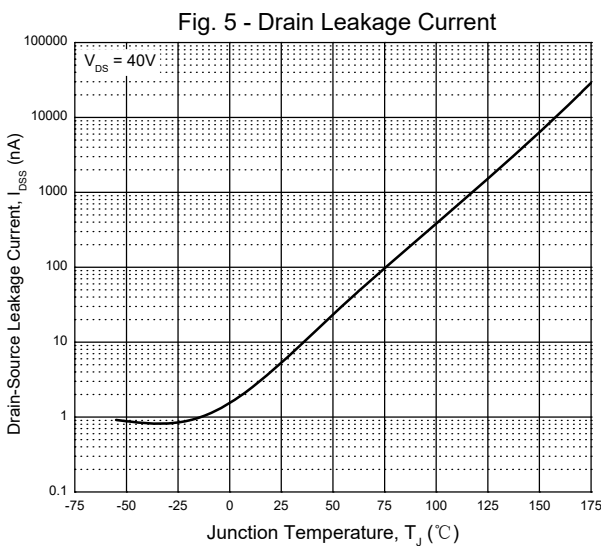
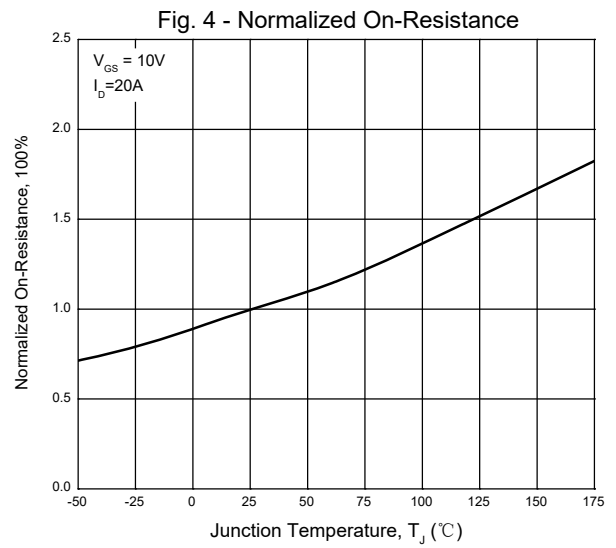
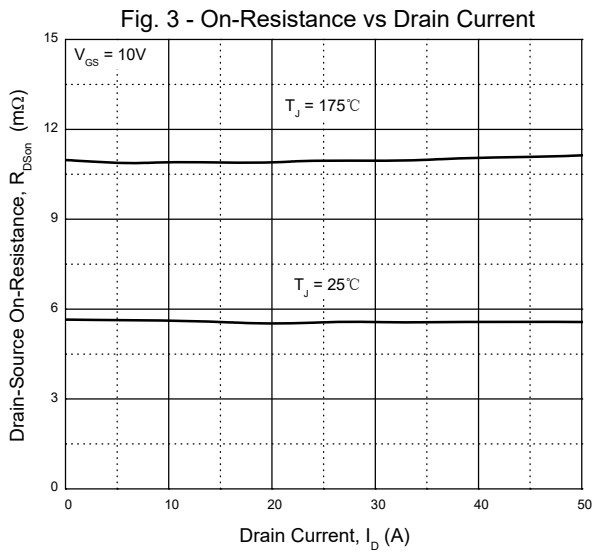
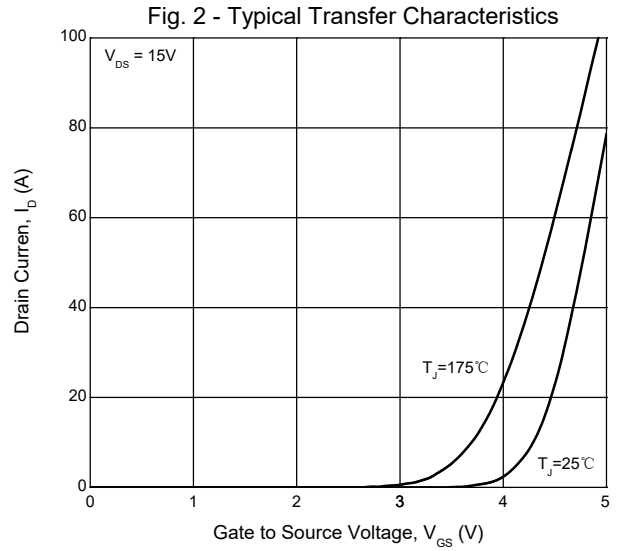
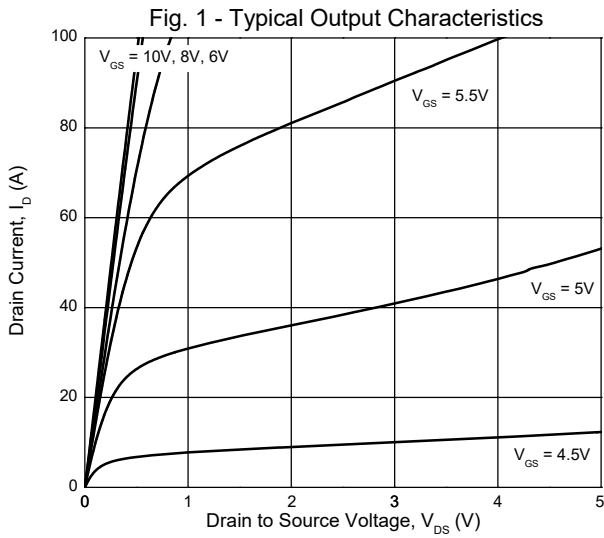
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0, I _D =250μA	40	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	--	--	1	uA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =250μA	2	2.7	4	V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance (Note 4)	R _{DS(on)}	V _{GS} =10V, I _D =20A	--	5.6	6.8	mΩ
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =32V, I _D =20A	--	35	--	nC
Gate-Source Charge	Q _{gs}		--	7.5	--	nC
Gate-Drain Charge	Q _{gd}		--	11	--	nC
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =30V, I _D =40A, R _G =3Ω	--	15	--	ns
Turn-on Rise Time	t _r		--	280	--	ns
Turn-off Delay Time	t _{d(off)}		--	17	--	ns
Turn-off Fall Time	t _f		--	56	--	ns
Gate Resistance	R _g	V _{GS} =0V, f=1MHz, open drain	--	2.7	--	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =40V, f=1MHz	--	2530	--	pF
Output Capacitance	C _{oss}		--	275	--	pF
Reverse Transfer Capacitance	C _{rss}		--	159	--	pF

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

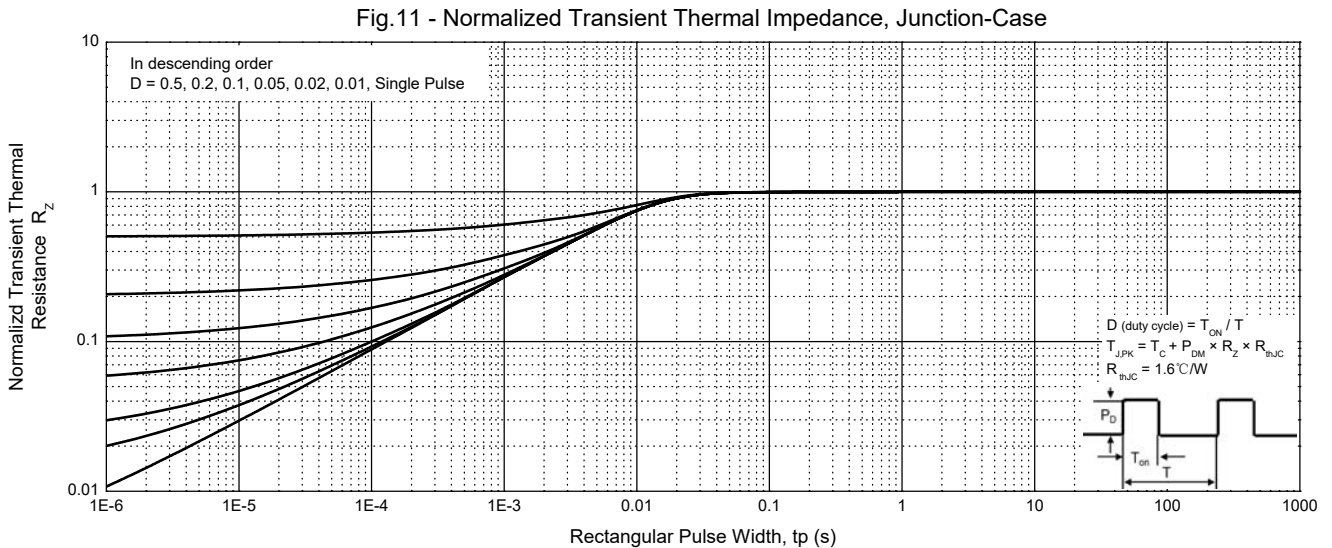
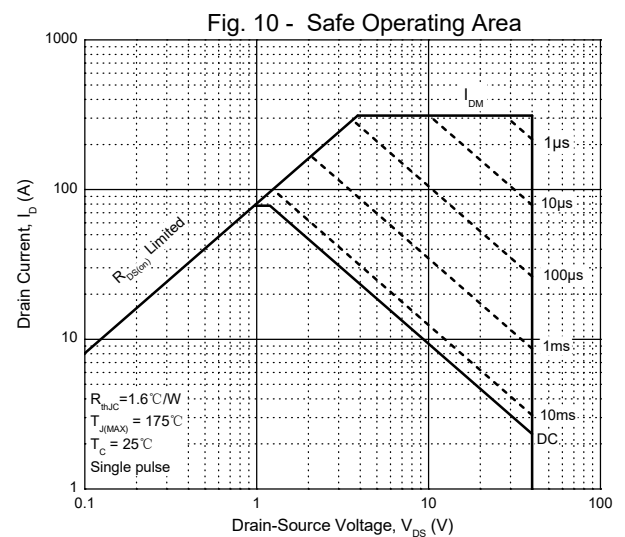
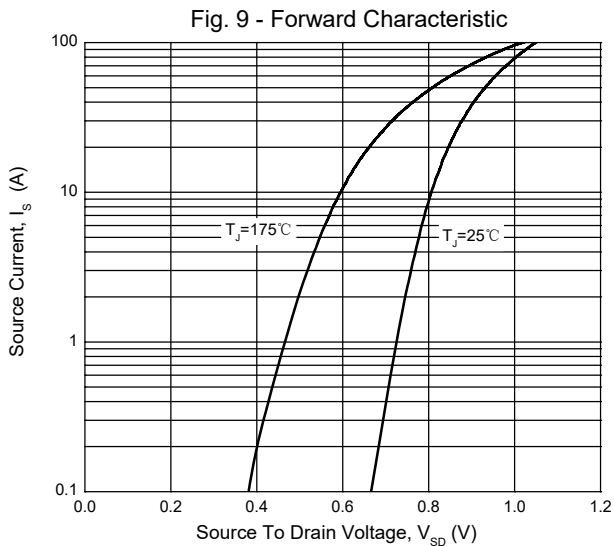
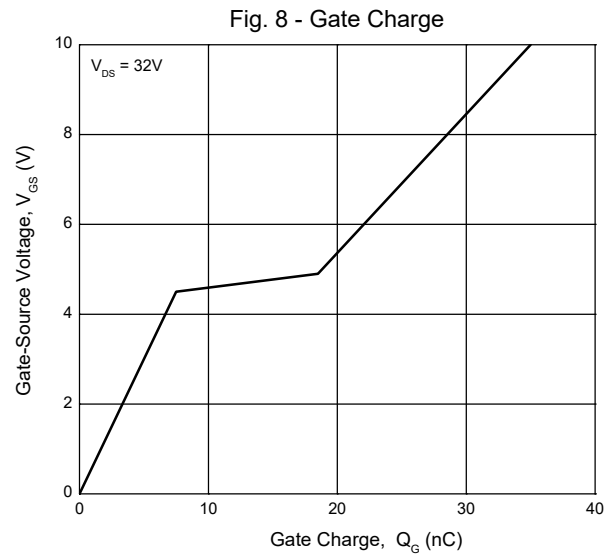
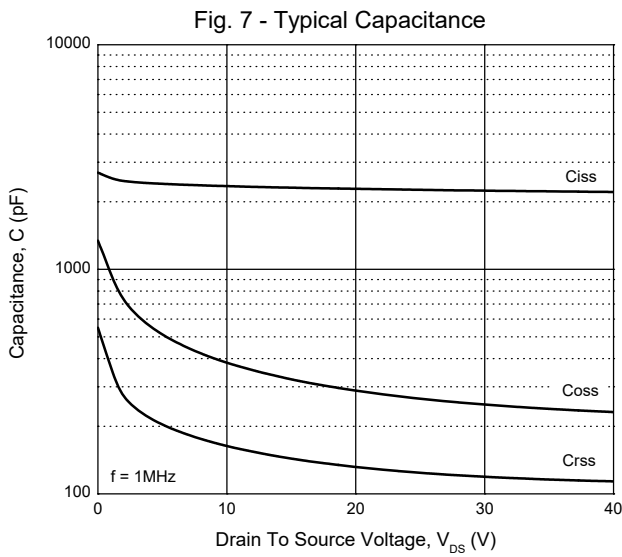
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I _{SD}	T _C =25°C	--	--	50	A
Diode Forward Voltage (Note 4)	V _{SD}	I _{SD} =20A, V _{GS} =0V	--	--	1.2	V
Reverse Recovery Time	T _{rr}	V _R =20V, I _F =20A, di/dt = 100 A/μs	--	21	--	ns
Reverse Recovery Charge	Q _{rr}		--	14	--	nC

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

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



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



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

Fig. 12 - Power Derating

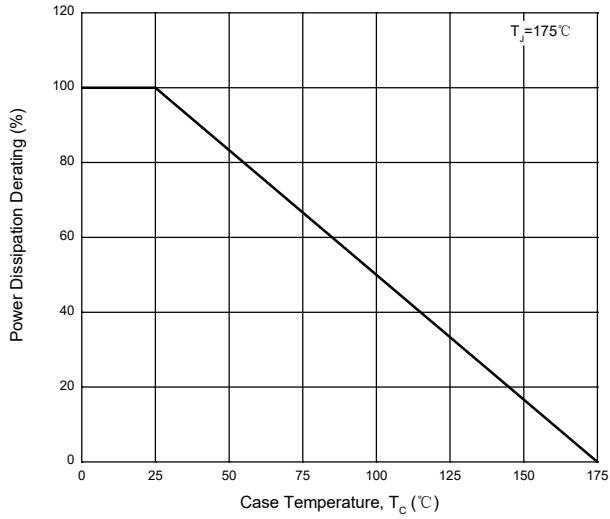
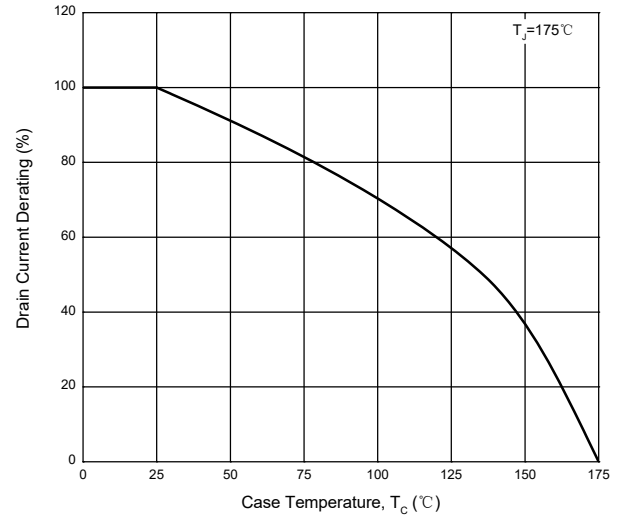
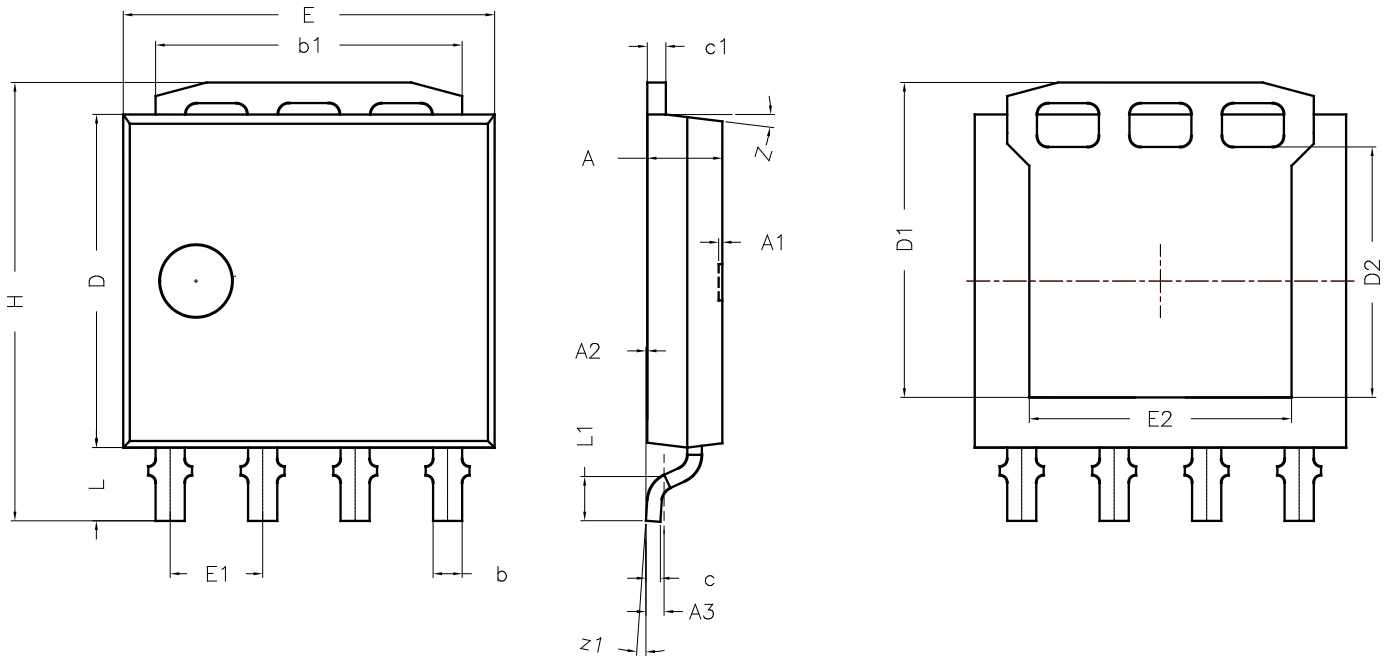


Fig. 13 - Drain Current Derating



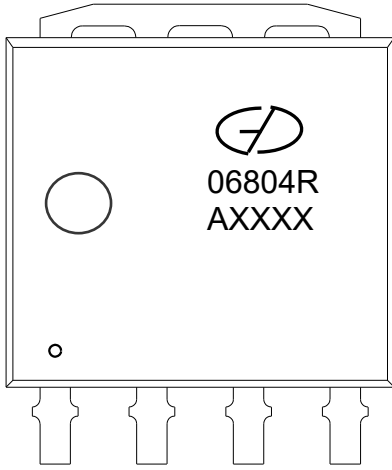
Package Outline Dimensions (Unit: millimeters)

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: AGMN06804R

1. Logo Mark: 
2. P/N Mark: 06804R
3. Date Code: AXXXX
4. Pin 1#: 

Revision History

Document Version	Date of release	Description of changes
Rev.A	2024.08.12	Official Release

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