

NXP Automotive LFPAK56D MOSFETs

High Reliability Dual Power-S08 for Automotive Applications

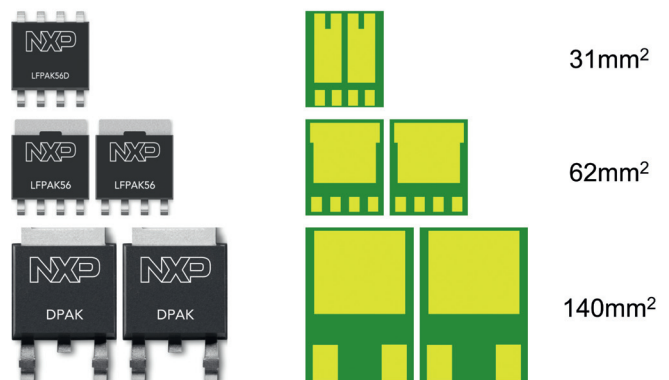
LFPAK56D takes the initiative to further reduce the footprint size of the typical automotive electronics module. The migration from DPAK to LFPAK56 (Power-S08) now continues to LFPAK56D (dual Power-S08). With LFPAK56D the designer has the opportunity to reduce the footprint size per MOSFET channel by 77% compared to DPAK and 56% compared to LFPAK56.

Key Features

- ▶ Wire bond free – Cu clip design
- ▶ High I_D max rating
- ▶ Low package resistance and inductance
- ▶ Low thermal resistance
- ▶ Cost effective solution
- ▶ Footprint compatible with other Power-S08 packages
- ▶ High current transient robustness
- ▶ 100% avalanche tested
- ▶ Automotive AEC-Q101 qualified to 175°C
- ▶ Extensive product range

Package footprint size comparison

	L (mm)	W (mm)	Area (mm ²)	Area / ch.(mm ²)	Area compared to DPAK (%)
DPAK (SOT428)	6.73	10.4	70.0	70.0	100%
LFPAK56 (SOT669)	5	6.2	31.0	31.0	44%
LFPAK56D (SOT1205)	5.3	6.2	32.9	16.4	23%



- ▶ Engine and transmission controllers
- ▶ Braking solenoid and motor drives
- ▶ General-purpose automotive switching where space is at a premium

- ▶ RC thermal models
- ▶ Spice electrical models
- ▶ Flotherm thermal models

The diagram illustrates a four-quadrant motor drive circuit. It features a central PMDC motor with terminals 1 and 2. The motor is connected to a 14V battery. The circuit uses four MOSFETs, each with its own GATE DRIVE block. The MOSFETs are arranged in a half-bridge configuration to drive the motor in both directions and provide regenerative braking. The battery is connected to the common return of the MOSFETs.

Types in **bold red italic underline** represent products in development
Types in **bold red** represent new products

R _{DSon} [max] @ 10 V [mΩ]	R _{DSon} [max] @ 5 V [mΩ]	I _D [max] @ 25°C [A]	R _{th} (j-mb) [max] [K/W]	Body 5 x 4.8 x 1mm with leads 5 x 6 x 1mm				
				Voltage Grade				
				30 V	40 V	60 V	80 V	100 V
4.2	5.0	40	2.2	BUK9K5R1-30E				
4.6	5.5	40	2.4	BUK9K5R6-30E				
5.1		40	2.2	BUK7K5R1-30E				
5.6		40	2.4	BUK7K5R6-30E				
5.9		40	2.2		BUK7K6R2-40E			
6.0	6.2	40	2.2		BUK9K6R2-40E			
6.1	6.9	40	2.4		BUK9K6R8-40E			
6.8		40	2.4		BUK7K6R8-40E			
7.8	8.9	30	2.8		BUK9K8R7-40E			
8.5		30	2.8		BUK7K8R7-40E			
11	12	40	2.2			BUK9K12-60E		
11		40	2.2			BUK7K12-60E		
12	13	40	2.4			BUK9K13-60E		
13		40	2.4			BUK7K13-60E		
16	20	30	4.0		BUK9K18-40E			
16	17	30	2.8			BUK9K17-60E		
17		30	2.8			BUK7K17-60E		
17		30	4.0		BUK7K18-40E			
18	19	38	2.2				BUK9K19-80E	
18		39	2.2				BUK7K19-80E	
20	21	35	2.4				BUK9K21-80E	
20		35	2.4				BUK7K21-80E	
23	27	24	4.7		BUK9K25-40E			
25		27	4.7		BUK7K25-40E			
27	29	29	2.2					BUK9K29-100E
27	29	27	2.8				BUK9K29-80E	
28		30	2.2					BUK7K29-100E
28		27	2.8				BUK7K29-80E	
31		27	2.4					BUK7K32-100E
32	35	22	4.0			BUK9K35-60E		
32	32	27	2.4					BUK9K32-100E
35		22	4.0			BUK7K35-60E		
42	45	21	2.8					BUK9K45-100E
44		21	2.8					BUK7K45-100E
49	55	16	4.7			BUK9K52-60E		
52		17	4.7			BUK7K52-60E		
56	59	16	4.0				BUK9K57-80E	
57		16	4.0				BUK7K57-80E	
84	89	12	4.7				BUK9K85-80E	
85	89	13	4.0					BUK9K89-100E
86		12	4.7				BUK7K85-80E	
88		12	4.0					BUK7K89-100E
134		9	4.7					BUK7K134-100E
139	139	9	4.7					BUK9K134-100E