



# AEC-Q101 qualified MOSFETs, SMD packages in both small leadless and leadless DFN



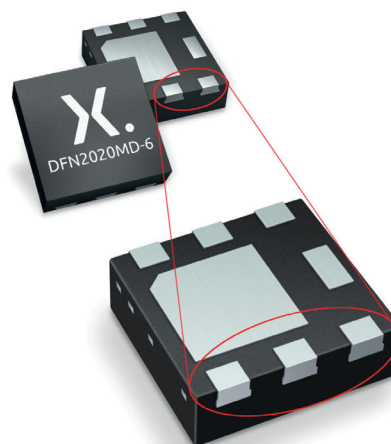
## Key features and benefits

- › Broad range of packages for optimum choice
- › Side-wettable flanks for optical solder inspection
  - Leadless packages contain tin plated side contacts for automatic optical inspection (AOI) and improved solder joint quality
- › Replacement of larger packages
  - Performance improvements in wafer technology and in package technology, especially leadless (DFN) packages enable higher electrical and thermal performance on a smaller footprint
- › Automotive compliant (AEC-Q101)
- › Key parameters
  - Most types with 2 kV ESD protection
  - $R_{DS(on)}$  down to 15 m $\Omega$  and up to 6 A max drain current
  - $V_{DS}$  voltages of 20 V, 30 V, 40 V, 60 V, 70 V, 80 V and 100 V
  - $R_{th}$  down to < 10 K/W for DFN2020
- › New 'BUK' devices qualified to 175°C

## Applications

- › Body control units
  - doors
  - window lift
  - seat control
- › Entertainment systems
  - car radio
  - navigation
- › Safety and control systems
  - air bag
  - LED lighting

## Leadless packages with side-wettable flanks for automatic optical inspection



## Small-signal MOSFETs automotive portfolio

### Low $R_{DS(on)}$ MOSFETs

Package											SOT457 (SC-74)	SOT23	DFN2020MD-6 (SOT1220)
Size (mm)											2.9 x 1.5 x 1.0	2.9 x 1.3 x 1.0	2.0 x 2.0 x 0.65
P <sub>tot</sub> (mW)											600	250	1250
Pol.	V <sub>DS</sub> (V)	V <sub>GS</sub> (V)	I <sub>D</sub> (A)	V <sub>GSth</sub> min. (V)	V <sub>GSth</sub> max. (V)	ESD (kV)	R <sub>DS(on)</sub> typ (mΩ) @ V <sub>GS</sub> =						
							10 V	4.5 V	2.5 V	1.8 V			
N	20	8	7	0.4	0.9	0.5	-	15	18	-		<b>PMV15UNEA</b>	
			4.7	0.45	1	2	-	24	29	40		PMV28UNEA	
			2.8	0.4	1	2	-	64	78	110		PMV65UNEA	
		12	12.9	0.4	0.9	2	-	10	-	-			PMPB10XNEA
			11.4	0.4	0.9	2	-	12	-	-			PMPB12UNEA
			6.3	0.75	1.25	2	-	16	24	-		PMV20XNEA	PMPB20XNEA
	30	8	6	0.4	0.9	0.5	-	19	23	39		<b>PMV19XNEA</b>	
			11.3	0.4	0.9	2	-	13	-	-			PMPB13XNEA
			5	0.4	0.9	2	-	28	-	-			PMPB29XNEA
		20	5.5/22	1	2.5	2	17	22	-	-	<b>PMN25ENEA</b>	<b>PMV15ENEA</b>	<b>BUK6D22-30E</b>
			3.9/17	1	2.5	2	28	36	-	-		<b>PMV28ENEA</b>	<b>BUK6D38-30E</b>
			3.7/11	1	2.5	2	54	70	-	-		<b>PMV52ENEA</b>	<b>BUK6D72-30E</b>
	40	15	19	1.4	2.1	-	18	22	-	-			<b>BUK9D23-40E</b>
			6.2/19	1.3	2.7	-	19	23	-	-	<b>PMN20ENA</b>		<b>BUK6D23-40E</b>
			19	2.4	4	-	18	-	-	-			<b>BUK7D25-40E</b>
		20	4.8/18	1	2.5	2	23	30	-	-	<b>PMN30ENEA</b>	<b>PMV30ENEA</b>	<b>BUK6D30-40E</b>
			3.1	1	2.5	1	65	88	-	-		<b>PMV60ENEA</b>	
			2.5/5.7	1	2.5	1	95	120	-	-		<b>PMV130ENEA</b>	<b>BUK6D120-40E</b>
	60	20	4.2/13	1.3	2.7	-	32	38	-	-	<b>PMN40ENA</b>		<b>BUK6D43-60E</b>
			3.5/11	1.3	2.7	2	37	45	-	-	<b>PMN55ENEA</b>	<b>PMV37ENEA</b>	<b>BUK6D56-60E</b>
			10.6	1.3	2.7	2	59	70	-	-			<b>BUK6D77-60E</b>
			2.2/7.4	1.3	2.7	2	88	104	-	-	<b>PMN120ENEA</b>	<b>PMV88ENEA</b>	<b>BUK6D125-60E</b>
			1.5/5.7	1.3	2.7	2	176	196	-	-	PMN230ENEA	<b>PMV164ENEA</b>	<b>BUK6D210-60E</b>
			0.8	1.3	2.7	2	300	332	-	-		PMV450ENEA	
80	20	9.8	1.3	2.7	2	62	70	-	-			<b>BUK6D81-80E</b>	
		5.1	1.3	2.7	2	175	195	-	-			<b>BUK6D230-80E</b>	
100	20	1.5/3.7	1.3	2.7	2	285	301	-	-	<b>PMN280ENEA</b>	<b>PMV280ENEA</b>	<b>BUK6D385-100E</b>	
P	12	12	11.8	0.47	0.9	-	-	15	-	-			PMPB15XPA
			5.6	0.45	0.95	2	-	27	38	50		PMV27UPEA	
	20	8	2	0.5	1.1	-	-	100	155	210		NX2301P	
			2.3	0.45	0.95	-	-	120	150	200		BSH205G2	
			10.3	0.47	0.9	2	-	19	-	-			PMPB20XPEA
			5	0.47	0.9	2	-	28	-	-			PMPB29XPEA
			5.3	0.75	1.25	2	-	28	42	-		PMV30XPEA	
		12	5.7	0.75	1.25	2	-	41	56	-	PMN42XPEA		
			5	0.47	0.9	2	-	39	-	-			PMPB43XPEA
			3.5	0.75	1.25	-	-	48	71	-	PMN48XPA	PMV48XPA	
			3.3	0.75	1.25	2	-	67	99	-		PMV65XPEA	
			2.4	1	2.5	2	-	97	147	-		PMV100XPEA	
	30	20	8.8	1	2.5	-	24	32	-	-			PMPB27EPA
			4.2	1	3	2	35	47	-	-		PMV50EPEA	
			6.8	1	2.5	-	40	55	-	-			PMPB48EPA
			14	1.4	2.7	-	30	45	-	-			<b>BUK6D43-40P</b>
	40	20	1.5	1	2.5	1	180	220	-	-		PMV250EPEA	
			8	1.9	3.2	-	95	125	-	-			<b>BUK6D120-60P</b>

\*Parts in bold qualified to 175°C

### High $R_{DS(on)}$ MOSFETs

Package											SOT23	SOT363	SOT323	SOT666	DFN1006-3 (SOT883)
Size (mm)											2.9 x 1.3 x 1.0	2.0 x 1.25 x 0.95	2.0 x 1.25 x 0.95	1.6 x 1.2 x 0.55	1.0 x 0.6 x 0.5
P <sub>tot</sub> (mW)											250	300	200	300	250
Pol.	V <sub>DS</sub> (V)	V <sub>GS</sub> (V)	I <sub>D</sub> (A)	V <sub>GSth</sub> min. (V)	V <sub>GSth</sub> max. (V)	ESD (kV)	R <sub>DS(on)</sub> typ (mΩ) @ V <sub>GS</sub> =								
							10 V	4.5 V	2.5 V	1.8 V					
N	30	8	0.4	0.6	1.1	2	-	1000	1400	2000	NX3008NBK	NX3008NBKS	NX3008NBKW	NX3008NBKV	
			0.36	0.9	1.5	-	900	1000	-	-	BSS138P	BSS138PS	BSS138PW		
	60	20	0.36	0.48	1.6	1.5	1000	1100	1400	-	BSS138BK	BSS138BKS	BSS138BKW		
			0.3	1	2.5	2	1000	1300	-	-	2N7002BK	2N7002BKS	2N7002BKW		2N7002BKM
			0.3	1	2.5	3	1100	1300	-	-	2N7002CK				
			0.2	0.8	1.5	yes	2700	3000	4000	-	BSS138AKA				
P	30	8	0.23	0.6	1.1	2	-	2800	5300	-	NX3008PBK	NX3008PBKS	NX3008PBKW	NX3008PBKV	
			8	20	0.2	1.1	2.1	1	5300	6000	-	-	BSS84AK	BSS84AKS	BSS84AKW

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