

## Automotive MOSFETs in small leaded SMD and leadless DFN packages

### Key features and benefits

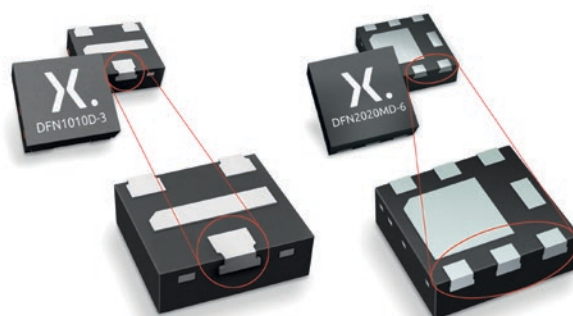
- › Available in SOT23, SOT457, DFN1010 and DFN2020
- › Solderable side pads for optical solder inspection
  - DFN2020 package and DFN1010 package contain tin plated side contacts for automatic optical inspection (AOI) as required by most automotive customers
- › Replacement of larger packages
  - Performance 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)
  - Fully compliant towards automotive standard
- › Key parameters
  - Most types with 2 kV ESD protection
  - $R_{DSon}$  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 and 80 V
  - $R_{th}$  down to < 10 K/W for DFN2020

### Applications

Automotive and industrial applications with required AEC-Q101-compliant devices, such as load switches in power management functions of:

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

### DFN1010 and DFN2020 with solderable side pads



## Small-signal MOSFETs automotive portfolio

### Low $R_{DSon}$ MOSFETs

PACKAGE										SOT223	SOT457 (SC-74)	SOT23	DFN2020MD-6 (SOT1220)	DFN1010D-3 (SOT1215)		
Size (mm)										6.5 x 3.5 x 1.65	2.9 x 1.5 x 1.0	2.9 x 1.5 x 1.0	2.0 x 2.0 x 0.65	1.1 x 1.0 x 0.37		
P <sub>tot</sub> (mW)										1700	600	250	1250	1000		
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>DSon</sub> typ (mΩ) @ V <sub>GS</sub> =									
							10 V	4.5 V	2.5 V	1.8 V						
N	20	8	4.7	0.45	1	2	-	24	29	40		PMN28UNEA	PMV28UNEA			
			2.8	0.4	1	2	-	64	78	110			PMV65UNEA			
		12	12.9	0.4	0.9	2	-	10	12	16				PMPB10XNEA		
			11.4	0.4	0.9	2	-	12	15	20					PMPB12XNEA	
			6.3	0.75	1.25	2	-	16	24	-			PMV20XNEA	PMPB20XNEA		
	30	12	11.3	0.4	0.9	2	-	13	14	17				PMPB13XNEA		
			5	0.4	0.9	2	-	28	32	37				PMPB29XNEA		
		20	5.5	1	2.5	2	17	22	-	-		PMN25ENEA	PMV25ENEA	PMPB25ENEA		
			3.9	1	2.5	2	30	39	-	-			PMV50ENEA	PMPB50ENEA		
			3.7	1	2.5	2	54	70	-	-			PMV100ENEA	PMPB100ENEA		
	40	20	3.1	1	2.5	1	65	88	-	-			PMV65ENEA			
			7	2.4	4	0.5	19	-	-	-				PMPB20SNA		
			5	1.3	2.7	0.5	32	38	-	-				PMPB40ENA		
	60	20	2.5	1	2.5	1	95	120	-	-				PMV130ENEA		
			4	1.3	2.7	2	42	49	-	-					PMPB55ENEA	
			3.1	1.3	2.7	2	46	52	-	-		PMN55ENEA	PMV55ENEA			
			3	1.3	2.7	2	72	85	-	-					PMPB85ENEA	
			2.1	1.3	2.7	2	96	108	-	-		PMN120ENEA	PMV120ENEA			
			1.5	1.3	2.7	2	176	196	-	-		PMN230ENEA	PMV230ENEA			
			0.8	1.3	2.7	2	300	332	-	-				PMV450ENEA		
2.8			1.3	2.7	2	80	92	-	-					PMPB95ENEA		
1.9			1.3	2.7	2	175	195	-	-					PMPB215ENEA		
1.1			1.3	2.7	2	345	390	-	-						PMPB360ENEA	
80	20	1.5	1.3	2.7	2	285	301	-	-	PMT280ENEA		PMV280ENEA				
		100	1.3	2.7	2	527	555	-	-	PMT560ENEA						
P	12	12	11.8	0.47	0.9	-	-	15	17	21					PMPB15XPA	
			5.6	0.45	0.95	2	-	27	38	50				PMV27UPEA		
			6	0.45	0.95	2	-	37	45	59		PMN40UPEA				
	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	22	28					PMPB20XPEA	
		12	5	0.47	0.9	2	-	39	45	56					PMPB43XPEA	
			5.7	0.75	1.25	2	-	27	39	-		PMN27XPEA				
			5.3	0.75	1.25	2	-	28	42	-		PMN30XPEA	PMV30XPEA	PMPB30XPEA		
			5.7	0.75	1.25	2	-	41	56	-		PMN42XPEA				
			3.5	0.75	1.25	-	-	48	71	-		PMN48XPA	PMV48XPA			
			3.3	0.75	1.25	2	-	67	99	-			PMV65XPEA			
			4.1	0.75	1.25	2	-	70	101	-		PMN70XPEA				
			2.4	1	2.5	2	-	97	147	-			PMV100XPEA	PMPB100XPEA		
			4.2	1	3	2	35	47	-	-		PMN50EPEA	PMV50EPEA	PMPB50EPEA		
30	20	1.5	1	2.5	1	180	220	-	-			PMV250EPEA				
		5	1.5	3	1	32	42	-	-					PMPB45EPA		
		2.3	1	3	2	156	177	-	-	PMT200EPEA						

### High $R_{DSon}$ 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>DSon</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		
			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				
P	30	8	0.23	0.6	1.5	yes	2700	3000	4000	-	BSS138AKA				
			0.2	1.1	2.1	1	5300	6000	-	-	NX3008PBK	NX3008PBKS	NX3008PBKW	NX3008PBKV	
			8	20	0.2	1.1	2.1	1	5300	6000	-	-	BSS84AK	BSS84AKS	BSS84AKW

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Date of release:

February 2017

Document Number:

SSMOSAUTOA4LF REV 0

Printed:

In the Netherlands

