

Power MOSFET Selection Guide

Smaller, faster, cooler



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Committed to Excellence

Not all power MOSFETs are the same. NXP power MOSFETs are designed differently and built differently, offering power design engineers unparalleled reliability and performance.



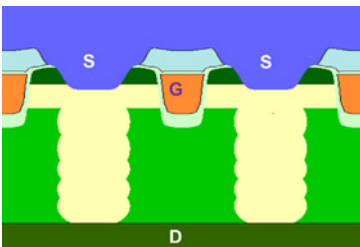
#1 for Automotive MOSFETs

NXP offers the industry's largest portfolio of automotive-qualified power MOSFETs, employed in safety-critical applications as diverse as braking, steering and engine management. Our structured approach to quality & reliability stretches far beyond our automotive products, permeating every aspect of our business.



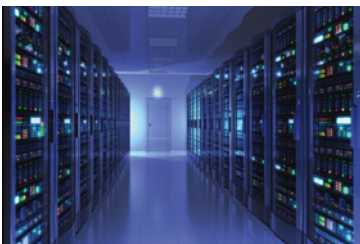
The Toughest Power Packages

Based on a unique copper clip construction, NXP's LFPACK packages include stress-absorbing external leads that can be inspected without the need for specialist X-ray equipment. The result is an ultra-reliable device capable of handling a maximum continuous drain current of up to 100A and a maximum junction temperature of up to 175°C, yet on a footprint that is 100% compatible with its peers.



More Performance & Less Leakage for DC:DC Applications

NXP's new NextPowerS3 low voltage MOSFETs are the first to deliver the high efficiency, low spiking performance usually associated with MOSFETs with an integrated Schottky or Schottky-like diode but without problematic high leakage current. Efficiency is excellent, even at higher frequencies, making NextPowerS3 the perfect choice for high power density DC:DC applications.



#1 for Hot-swap MOSFETs

In applications such as hot-swap and soft-start, power MOSFETs are deliberately turned on/off slowly to limit in-rush currents, causing devices to operate in their linear mode regions. NXP's NextPower Live portfolio is designed specifically for such conditions, offering an unbeatable combination of low $R_{DS(on)}$ and improved safe operating area in a single device.

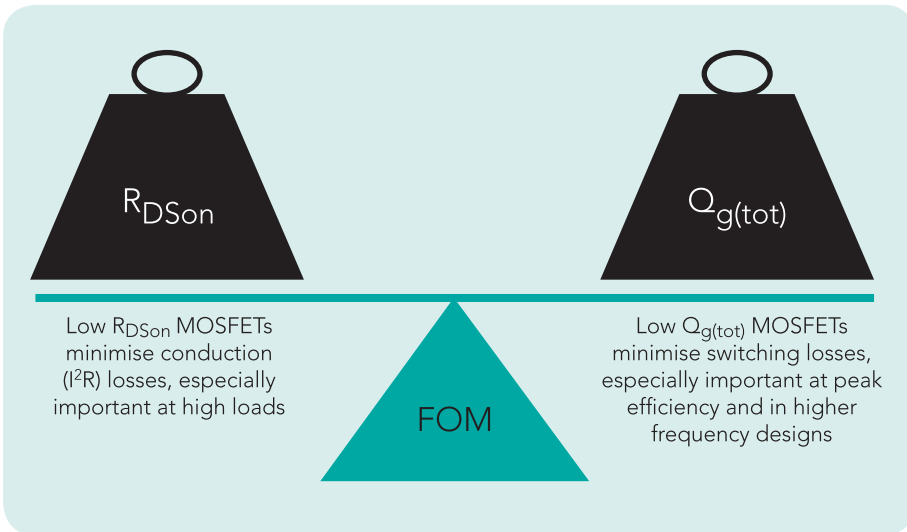


More Current for Motor Control, Guaranteed

Our automotive heritage has given us a detailed understanding of the unique demands of motor control applications. Thicker, double-bonded wires and excellent avalanche ratings are just some of the advantages of our NextPower Cordless range, which offers up to 150A maximum continuous drain current, a specification guaranteed by 100% production testing.

Featured Product: NextPowerS3

NextPowerS3 – Perfectly Balanced for DC:DC Switching Applications



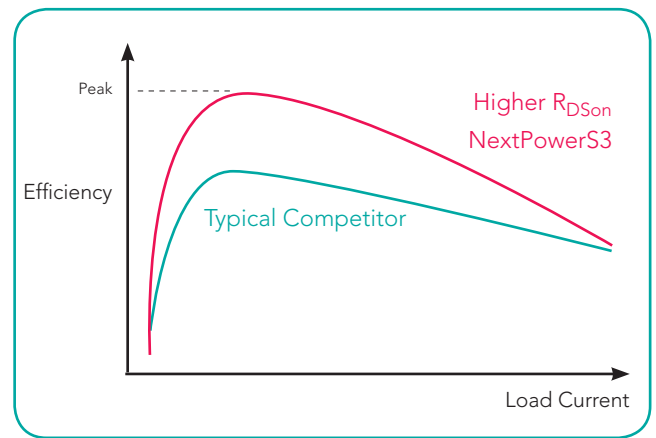
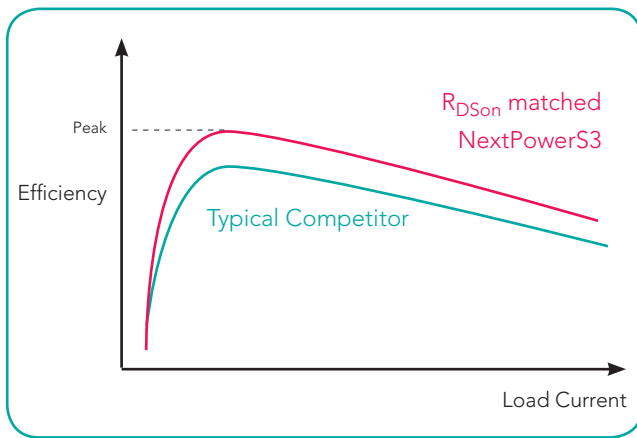
The Challenge

Low $R_{DS(on)}$ MOSFETs typically need a big die.

Low $Q_{g(tot)}$ MOSFETs typically need a small die.

The challenge for manufacturers is to create optimised power MOSFETs that have both low $R_{DS(on)}$ and low $Q_{g(tot)}$ – welcome to NextPowerS3.

The figure of Merit (FOM) of a MOSFET is calculated as the product of the $R_{DS(on)}$ and $Q_{g(tot)}$. A low FOM indicates good MOSFET performance in switching applications.



Comparing the performance of a NextPowerS3 MOSFET with a competitor of similar $R_{DS(on)}$ typically shows an efficiency performance advantage across the load range. Since conduction losses are the same for both devices, the advantage is more noticeable at lower loads where switching losses contribute proportionally more.

Using a NextPowerS3 MOSFET, with a higher $R_{DS(on)}$ than a competitor device reduces the $Q_{g(tot)}$ still further, resulting in an improved peak efficiency. At higher loads, increased conduction losses cancel out the switching advantages and the two parts show similar performance.

Featured Product: NextPowerS3

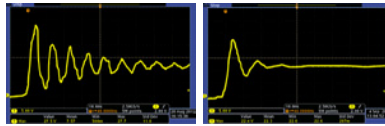
High Switching Frequencies



Increasing switching frequency from 300KHz to 1MHz allows a 70 - 80% reduction in inductor size. NextPowerS3's excellent switching performance enables such design choices with minimal loss of efficiency.

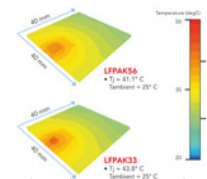
Low Spiking

Typical Competitor NextPowerS3



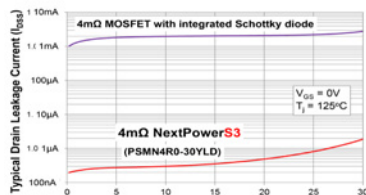
Thanks to optimised output capacitance, body diode and channel structure, NextPowerS3 MOSFETs exhibit "soft-recovery" switching behaviour, resulting in lower voltage spikes, faster decays and virtually no gate glitches.

Thermal Efficiency



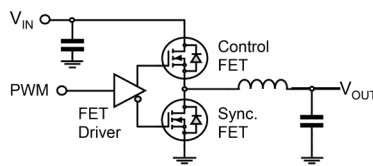
Packaged in the copper-clip based LFPAK package, NextPowerS3 features excellent thermal performance. As R_{DSon} rises with temperature, keeping MOSFETs cool helps efficiency as well as reliability.

Low Leakage



Unique SchottkyPlus technology offers the benefits of an integrated Schottky diode without the leakage current problems.

Specialist High Sides



The NextPowerS3 portfolio contains devices with multiple busbars and low R_g optimised for use as Control FETs, further improving system efficiencies.

Improved Safe Operating Area

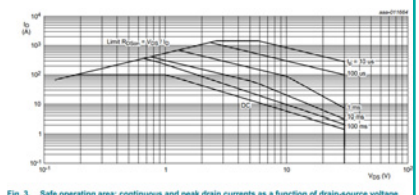


Fig. 3. Safe operating area; continuous and peak drain currents as a function of drain-source voltage
 $T_{amb} = 25^\circ\text{C}$; I_{gate} is a single pulse

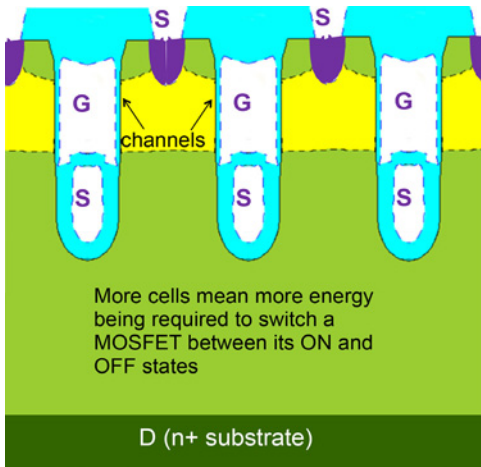
A wide cell pitch makes NextPowerS3 an excellent choice for hot-swap, e-Fuse and power OR-ing applications.

Package name	Type number	V_{DS} [max] [V]	R_{DSon} [max] @ 10 V (mΩ)	R_{DSon} [max] @ VGS 4.5 V (mΩ)	I_D [max] (A)	QG(tot) [typ] (nC)
LFPAK33 (SOT1210)	PSMN2R4-30MLD	30	2.4	3.2	70	16
	PSMN4R2-30MLD	30	4.3	5.7	70	9.2
	PSMN7R5-30MLD	30	7.6	10.3	57	5.8
Power-SO8 (LFPAK56)	PSMN0R9-30YLD	30	0.87	1.09	100	51
	PSMN1R0-30YLD	30	1.02	1.3	100	38
	PSMN1R2-30YLD	30	1.24	1.6	100	32
	PSMN1R4-30YLD	30	1.42	1.85	100	27.6
	PSMN2R4-30YLD	30	2.4	3.1	100	18
	PSMN3R0-30YLD	30	3.1	4	100	14.5
	PSMN4R0-30YLD	30	4	5.5	95	9.6
	PSMN6R0-30YLD	30	6	8.35	66	6.7
	PSMN6R1-30YLD	30	6	8.35	66	6.8
	PSMN7R5-30YLD	30	7.5	10.2	51	5.8
	PSMN1R0-40YLD	40	1.1		100	54
PSMN1R4-40YLD	40	1.4		100	45	

Types in bold red represent new products

Featured Product: NextPowerS3 – The Technology

Typical Competitor



The Importance of Cell Design

The outstanding performance of NextPowerS3 is largely attributable to NXP's unique "Super-junction" technology and optimisation of cell structures.

Most low voltage MOSFET manufacturers use "Split Gate" technology to achieve low R_{DSon} .

NextPowerS3 uses a different approach to its cell design.

The Drive for R_{DSon}

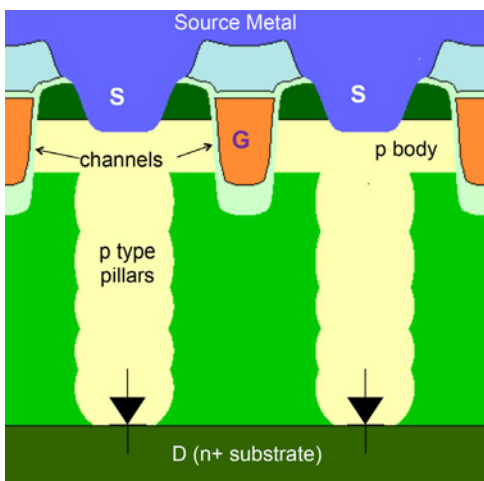
A MOSFET's R_{DSon} is given by the formula:

$$R_{DSon} = R_{channel} + R_{drift} + R_{substrate} + (R_{package})$$

Many manufacturers focus on reducing $R_{channel}$ to drive R_{DSon} down.

NXP's Super-junction allows for an optimisation of all 3 components for reduction in R_{DSon} , whilst also enhancing switching performance and Safe Operating Area.

NextPowerS3



Maximising Switching Performance

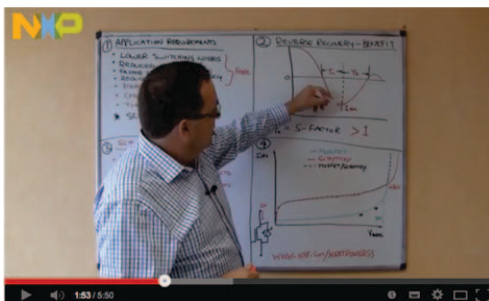
Switching losses result from the energy required to charge / discharge all the cell capacitances across the device. The total charge required is referred to as $Q_{g(tot)}$.

The amount of charge with NextPowerS3, $Q_{g(tot)}$ is lower and switching losses are kept to a minimum. This is especially beneficial at peak efficiency and in higher frequency designs where the number of switching events is increased.

SOA and Other Benefits

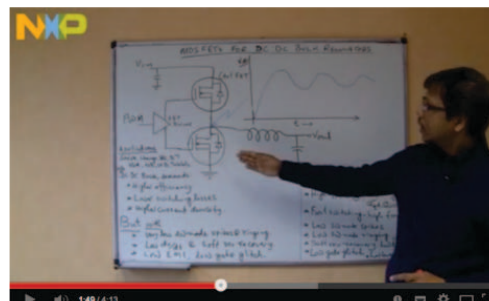
When a device is operating in its linear mode, the channel current generates localised heating effects which can cause failure.

NXP has optimised the cell structure to keep this heating effect under control. As a result, NextPowerS3 enjoys a particularly strong safe operating area (SOA), important in hot-swap, e-fuse and some power OR-ing designs.



Reverse Recovery & Diode Leakage in SMPS

www.nxp.com/quicklearning33



NextPowerS3 MOSFETs for DC/DC buck regulators

www.nxp.com/quicklearning32

Featured product: NextPower Live



NextPower Live! - MOSFETs for a non-stop world

Reliable linear mode performance AND low $R_{DS(on)}$ efficiency in "hot-swap" and "soft-start" applications.

Non-stop Applications

- ▶ Cloud computing
- ▶ Network storage
- ▶ Communications infrastructure
- ▶ Industrial process control
- ▶ Transaction processing
- ▶ Traffic monitoring & signalling
- ▶ CCTV security

Non-stop Equipment

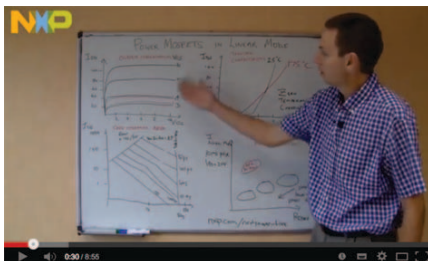
- ▶ Blade and rack servers
- ▶ Routers, switches & base stations
- ▶ RAID arrays
- ▶ Industrial PCs
- ▶ Programmable Logic Controllers (PLCs)
- ▶ CCTV digital video recorders
- ▶ "Hot-swap" & "soft-start" systems

Mobile phones, ATMs, the internet, traffic signals – so much of our daily life depends on 24/7/365 computers, communications, and storage, made possible by rack-based systems that can be maintained with the power on. NextPower Live MOSFETs are designed specifically for such applications:

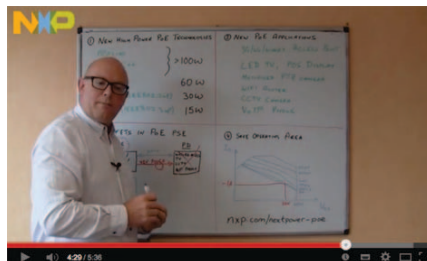
- ▶ When a replacement board is plugged into a live system, it is important that the in-rush current is carefully controlled, so as to protect the components on the board and ensure that other parts of the system experience no power disruption. This application requires MOSFETs with strong linear mode performance and a wide safe operating area (SOA) to manage current effectively and reliably.
- ▶ Once the replacement board is safely installed, the MOSFET is turned fully ON. In this mode of operation, a low R_{DSon} is of primary importance, helping to keep temperatures low while maximizing system efficiency.
- ▶ Only NextPower Live MOSFETs offer reliable linear mode performance **AND** low R_{DSon} efficiency.

NextPower Live Portfolio

Package	30 V for 12 V supplies used in computing applications	100 V for 48 V supplies used in computing telecommunications
D ² PAK (SOT404)	PSMN1R5-30BLE PSMN3R4-30BLE	PSMN4R8-100BSE PSMN7R6-100BSE
TO220		PSMN4R8-100PSE PSMN7R8-100PSE
LFPAK56 (Power-SO8)	PSMN2R0-30YLE	PSMN013-100YSE
LFPAK33		(specifically for PoE applications) PSMN040-100MSE PSMN075-100MSE



Power MOSFET operation in Linear Mode
www.nxp.com/quicklearning34



MOSFETs for Power-over-Ethernet (PoE) PSE Applications
www.nxp.com/quicklearning36



Next Power Live!, MOSFETs for HOT SWAP and Power over Ethernet
www.nxp.com/quicklearning29

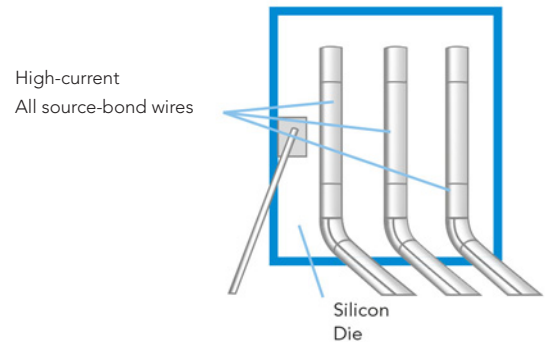
Featured product: NextPower Cordless

- ▶ Battery-powered tools, including everything from small engraving devices and screwdrivers to heavy-duty saws and agricultural tools, present a wide variety of requirements for driving the motor. The MOSFETs used in these systems have to perform at demanding levels and must have:
 - ▶ Low on-resistance for optimum battery life
 - ▶ Low thermal resistance for reduced junction temperature (for greater reliability)
 - ▶ High current capability (when the motor stalls, for example)
 - ▶ Choice of logic- and standard-level gate drives, depending on battery voltage
 - ▶ Excellent avalanche ruggedness to withstand high-load conditions
 - ▶ Environmental robustness (wide operating/storage temperatures, harsh vibrations)
 - ▶ Competitive cost

In summary, the motor-control MOSFET needs to deliver automotive-grade performance at a commercially competitive price



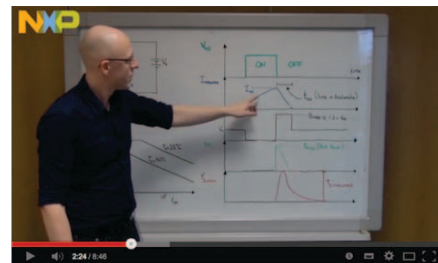
Typical Power Tools MOSFET internal construction



NXP has developed a range of MOSFETs specifically aimed at motor-control applications. These are based on our high reliability automotive-qualified silicon, plus specific package enhancements such as thicker wires and multiple bond points ("stitch bonding") to spread the current evenly over the surface of the die.

NXP's long history in automotive MOSFETs means we have the know-how to produce devices with excellent avalanche ruggedness. The same expertise deployed in power steering and ABS systems worldwide is put to use in our devices for motor control and that means performance you can count on.

Max Current ($I_D[\max]$) depends largely on the number and diameter of the aluminium bond wires. The NXP Power Tools portfolio is typically based on a standard of three 500 μm wires, allowing for an $I_D[\max]$ rating of up to 150 A in a TO220 package.



Single Shot Avalanche Ruggedness

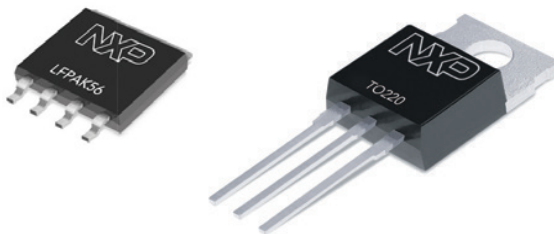
www.nxp.com/quicklearning35



NextPower Cordless MOSFETs for battery powered tools

www.nxp.com/quicklearning28

Device Name	$V_{DS}(V)$	$R_{DS(on)} [max]$ @ $V_{GS} = 10 V (m\Omega)$	$R_{DS(on)} [max]$ @ $V_{GS} = 4.5 V (m\Omega)$	$I_D [max] (A)$	EAS at rated current [mJ]	Package	Gate threshold
PSMN2R0-30YL	30	2	2.63	100	151	LFPAK56	Logic Level
PSMN2R0-30YLE	30	2	3.5	100	370	LFPAK56	Logic Level
PSMN2R5-30YL	30	2.4	3.16	100	103	LFPAK56	Logic Level
PSMN2R6-30YLC	30	2.8	3.65	100	50	LFPAK56	Logic Level
PSMN1R9-40PL	40	1.7	1.94	150	1008	TO220 (SOT78)	Logic Level
PSMN2R1-40PL	40	2.2	2.6	150	622	TO220 (SOT78)	Logic Level
PSMN1R5-40PS	40	1.6	-	120	1400	TO220 (SOT78)	Standard Level
PSMN2R2-40PS	40	2.1	-	100	1240	TO220 (SOT78)	Standard Level
PSMN2R5-60PL	60	2.6	3.15	150	655	TO220 (SOT78)	Logic Level
PSMN2R6-60PS	60	2.9	-	150	519	TO220 (SOT78)	Standard Level
PSMN3R3-60PL	60	3.4	3.8	130	404	TO220 (SOT78)	Logic Level
PSMN3R9-60PS	60	3.9	-	130	372	TO220 (SOT78)	Standard Level
PSMN4R2-60PL	60	4.3	4.3	130	372	TO220 (SOT78)	Logic Level
PSMN7R6-60PS	60	7.8	-	92	110	TO220 (SOT78)	Standard Level



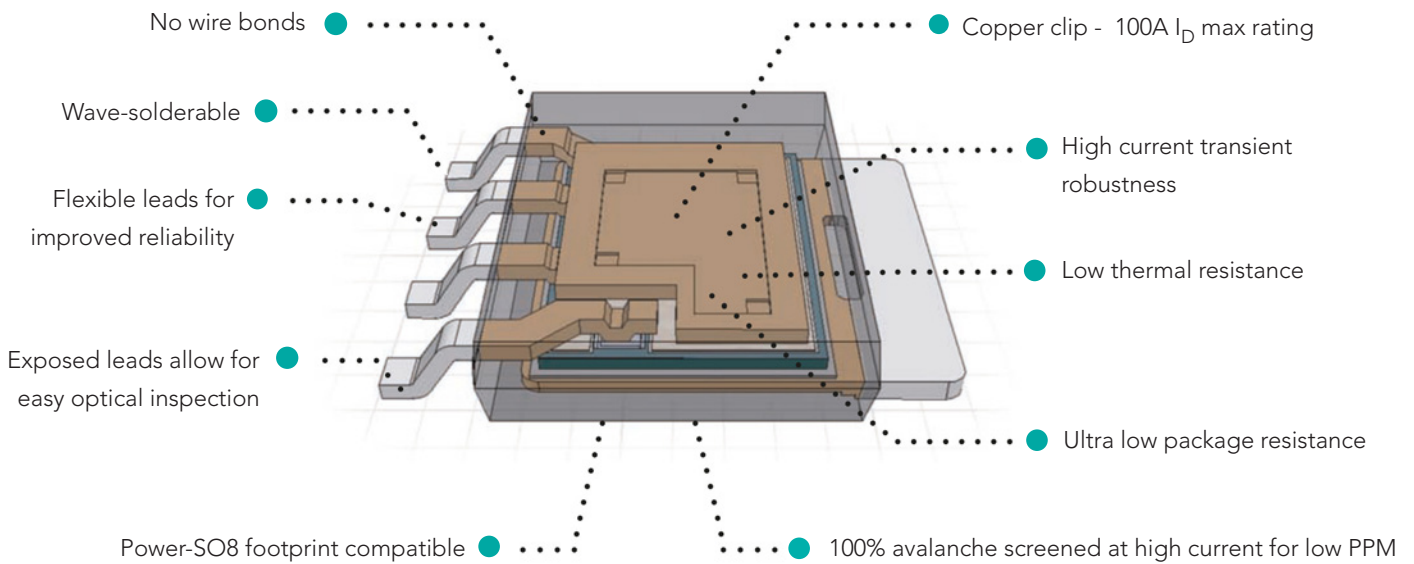
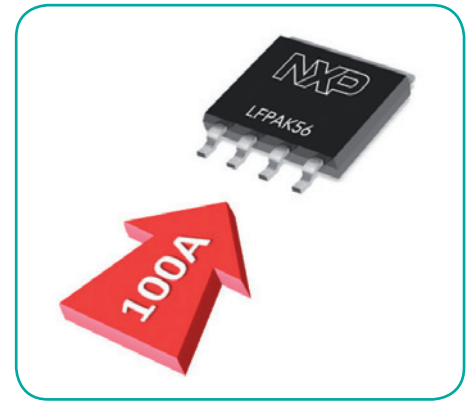
Heavy duty tools with large batteries require MOSFETs to withstand higher currents. NXP's TO-220 NextPower Cordless devices will handle up to 150A. The high-reliability LFPAK56 is ideal for smaller tools and space-constrained applications.

Featured Packages

LFPAK56

LFPAK56 - The Toughest Power-SO8

NXP's LFPAK56 portfolio gives industry leading performance in a truly innovative package. 100% compatible with industry-standard Power-SO8 footprints, the LFPAK56's exposed leads offer extra benefits in terms of reliability and options for wave soldering and automatic optical inspection.



TELECOMMUNICATIONS & NETWORKING

- ▶ DC:DC
- ▶ Synchronous Rectification
- ▶ OR-ing
- ▶ Hot-swap



CLOUD COMPUTING & STORAGE

- ▶ DC:DC
- ▶ Point of Load
- ▶ OR-ing
- ▶ Hot-swap



MOTOR CONTROL

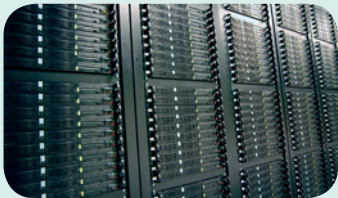
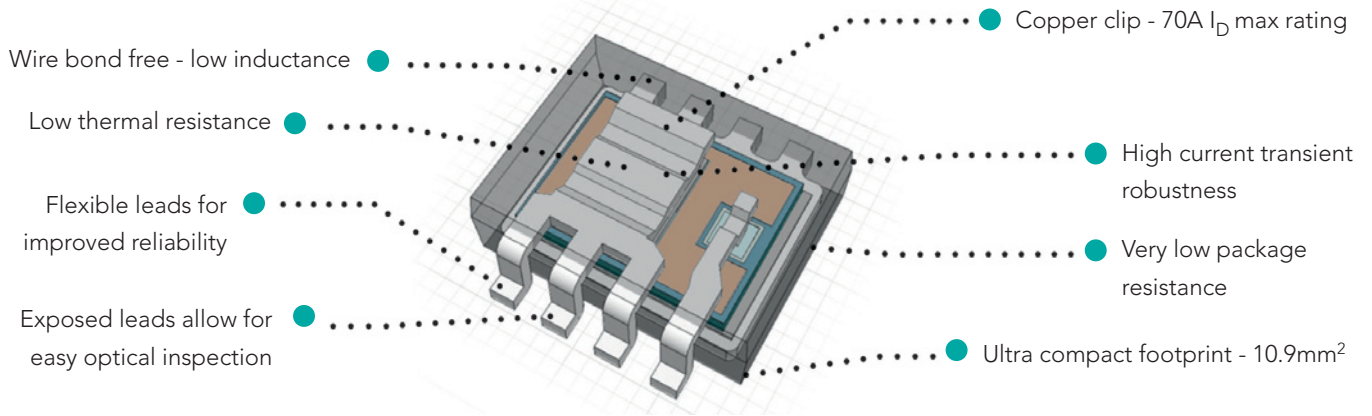
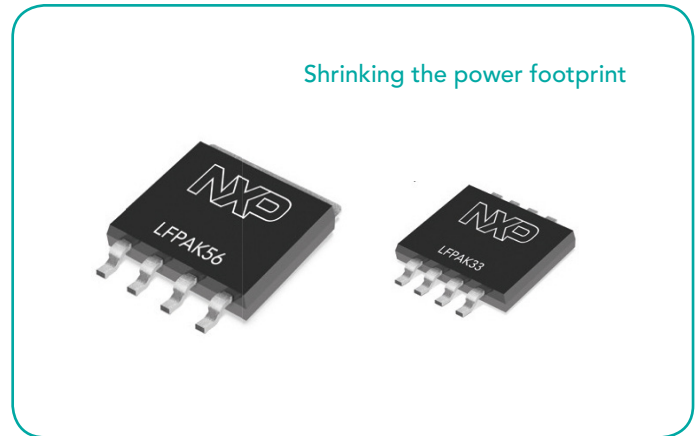
- ▶ 3-phase BLDC
- ▶ Robots
- ▶ Power Tools
- ▶ Medical
- ▶ Vacuum Cleaners
- ▶ Remote Control Vehicles
- ▶ Drones

Featured Packages

LFPAK33

LFPAK33 - Tougher Just got Smaller

With ever increasing pressure to reduce the size of modules whilst at the same time increasing the functionality, LFPAK33 provides the benchmark in a low-resistance small-footprint package. The LFPAK33 brings NXP's robust and reliable copper clip technology to the DFN/QFN3333 footprint.



HIGH PERFORMANCE COMPUTING

- ▶ DC:DC
- ▶ Point of Load
- ▶ Vcore
- ▶ ASICs



POWER SUPPLIES

- ▶ Chargers
- ▶ Power-over-Ethernet



PORTABLE & MOBILE

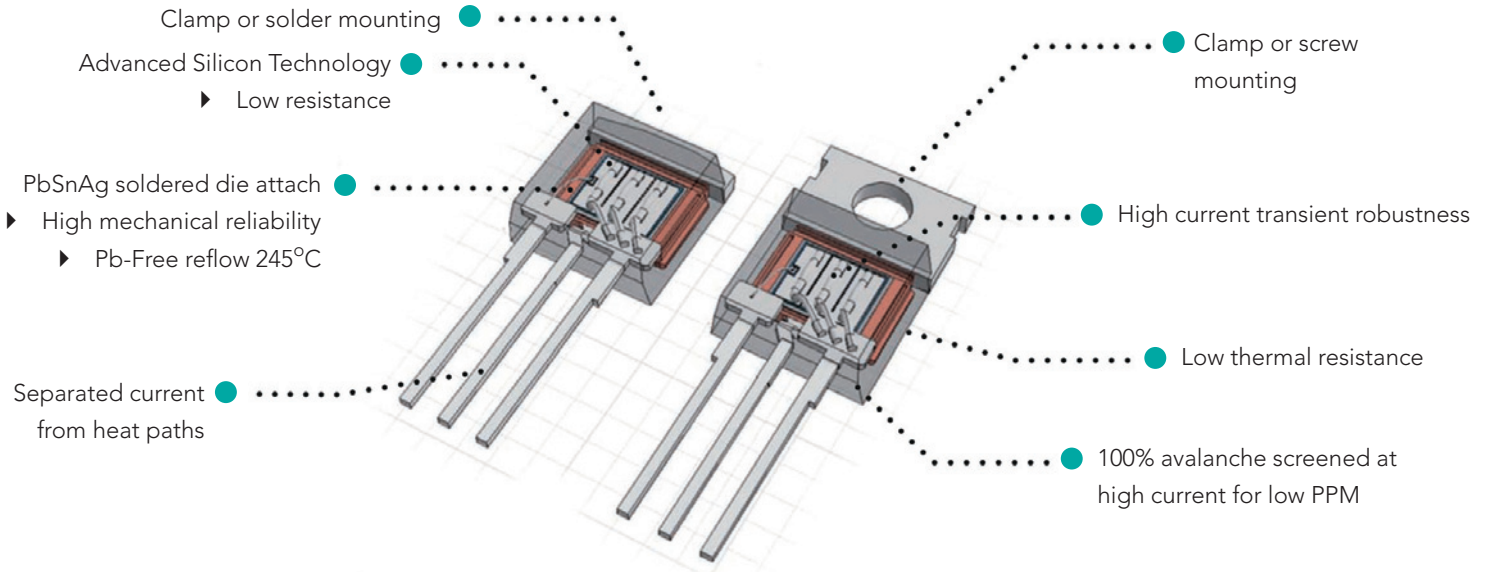
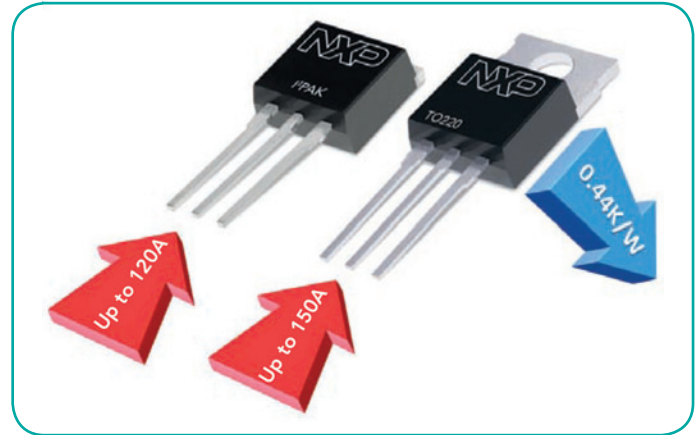
- ▶ Laptops & Tablets
- ▶ DC:DC
- ▶ Fast charging

Featured Packages

I²PAK / TO-220

I²PAK / TO-220 - High performance through-hole products

Providing industry leading performance for through hole products NXP's I²PAK/TO-220 portfolio enables the separation of the electrical and thermal pathways to optimise module performance. The convenience of the tab for screw mounting on the TO-220 is complemented by industry standard footprint and excellent current handling performance. Similarly the I²PAK can be readily soldered down to form a low resistance path.



POWER SUPPLIES

- ▶ SMPS
- ▶ Slimline adaptors
- ▶ PC Silverbox
- ▶ Synchronous Rectification



INDUSTRIAL POWER

- ▶ Power Distribution Units (PDUs)
- ▶ Uninterruptible Power Supplies (UPS)



MOTOR CONTROL

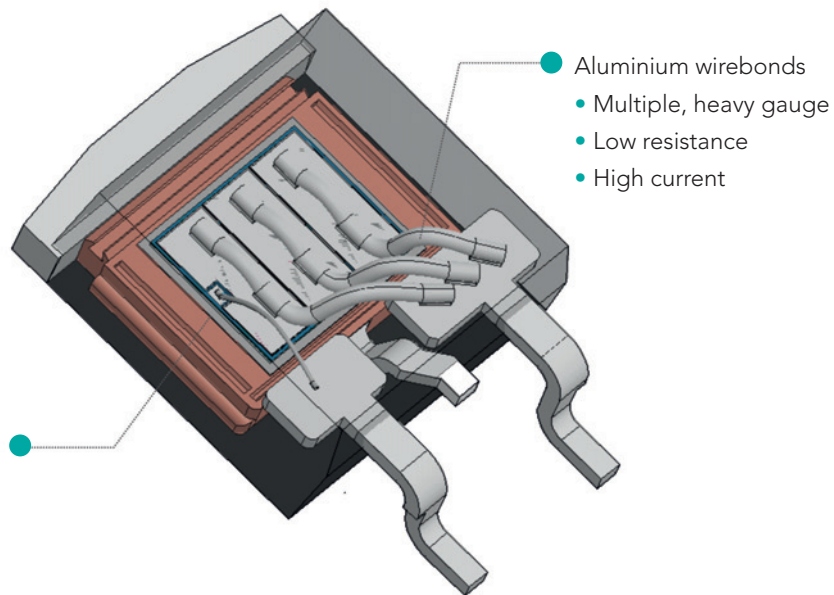
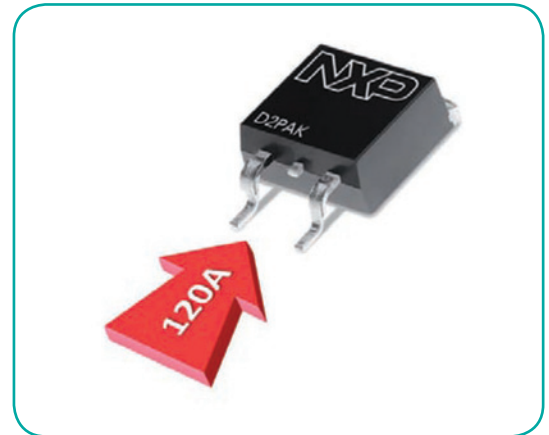
- ▶ Power Tools
- ▶ Garden Tools
- ▶ Robots
- ▶ Fans

Featured Packages

D²PAK

D²PAK - Premium performance SMD products

The NXP D²PAK portfolio is ideally suited to hot-swap and heavy duty motor control applications. Combined with NXP's inherently robust silicon, featuring a large safe operating area (SOA), our D²PAK devices deliver low on-state resistance and thermal performance within an industry standard footprint.



HOT-SWAP

- ▶ Telecommunications racks
- ▶ Cloud Computing
- ▶ Networking Equipment
- ▶ Mass Storage



MOTOR CONTROL

- ▶ Light electric vehicles (LEV)
- ▶ Golf carts
- ▶ Disability vehicles



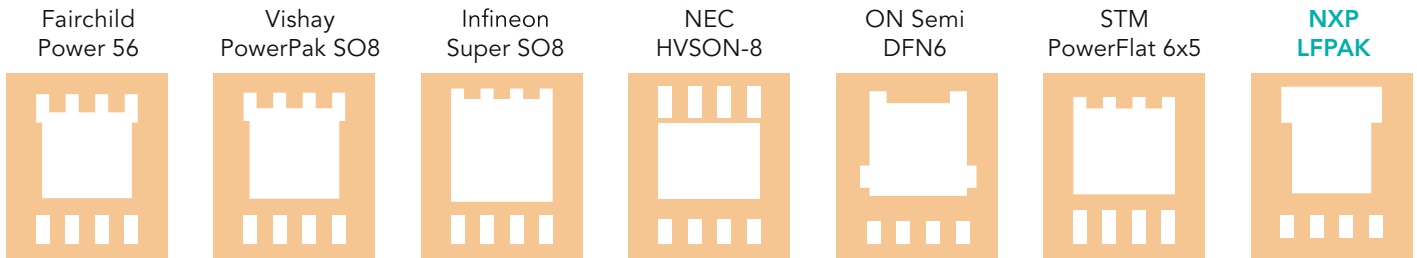
TELECOM POWER

- ▶ Telecommunications racks
- ▶ Networking Equipment

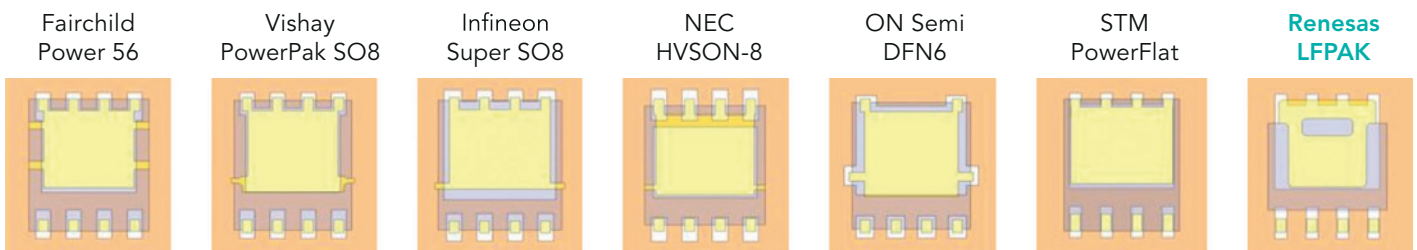
LFPAK56 soldering and footprint compatibility

Although many manufacturers produce MOSFETs in Power-SO8 packages there is no generic JEDEC standard for Power-SO8 devices, and each device has a different PCB footprint. None of the manufacturers' devices are guaranteed to be interchangeable with other devices.

The following diagram shows that the package styles and recommended PCB footprints differ significantly from manufacturer to manufacturer.

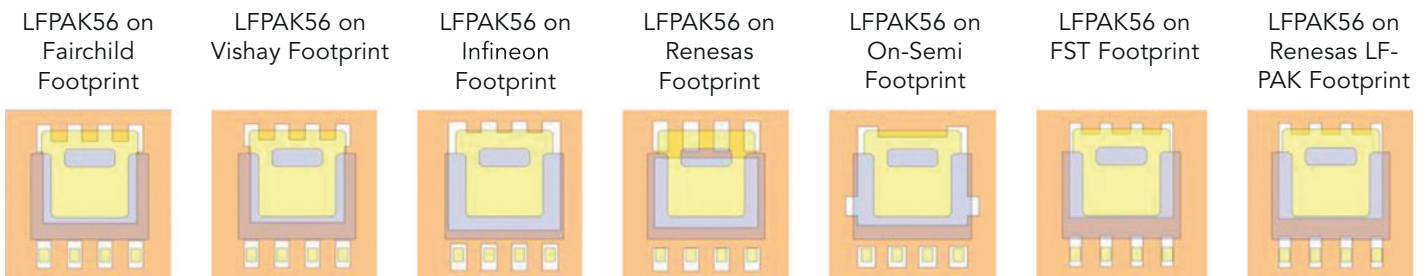


Each variant may require a different solder-resist, solder-stencil and machine programming unless careful consideration has been made in advance to design a universal footprint which will allow multiple devices to be fitted to the PCB. The following diagram shows each manufacturer's original footprint with their Power-SO8 mounted on it.



NXP's LFPAK56 package has been designed to achieve electrical and mechanical compatibility with all these Power-SO8 types.

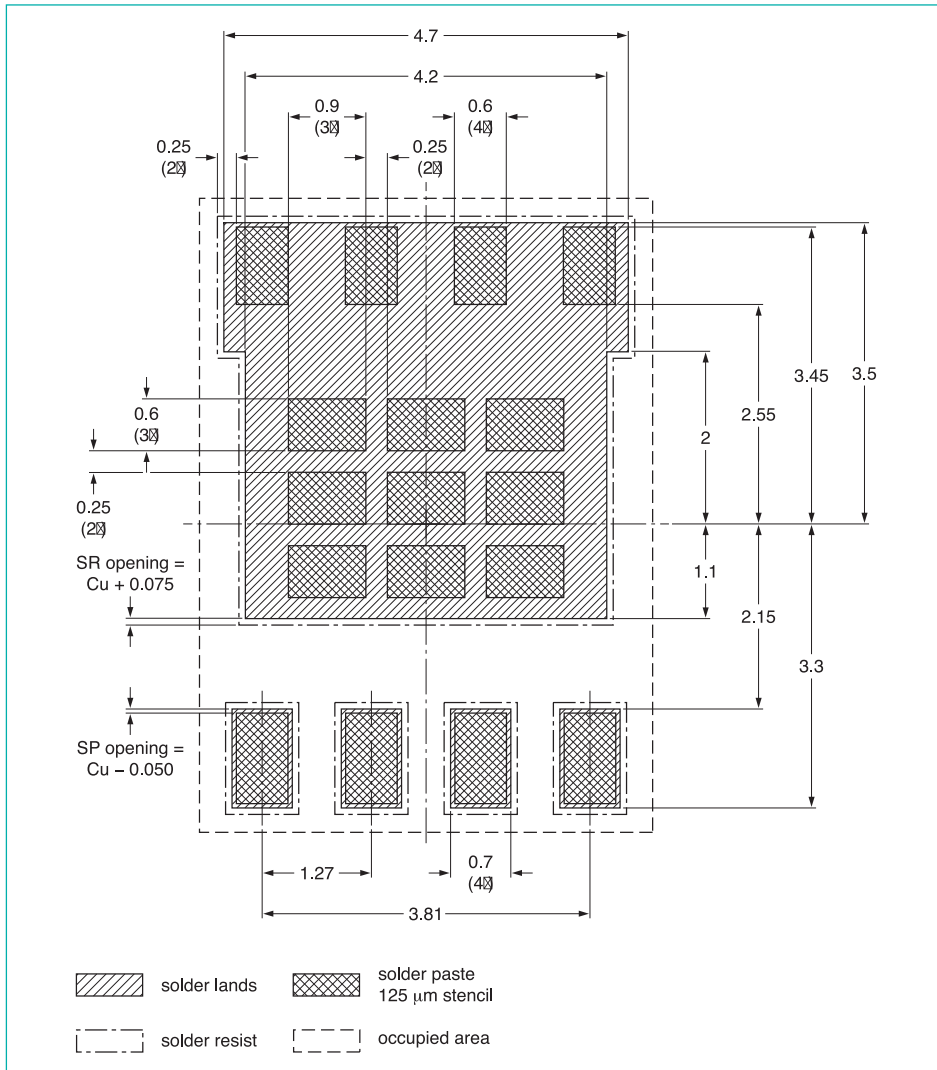
The diagram below shows each manufacturer's footprint with an LFPAK56 mounted. This shows how it is possible to fit an LFPAK56 packaged product instead of a competitor device.



Comprehensive study reports are available on request for LFPAK56 and LFPAK33 packages demonstrating compatibility with competitor footprints.

LFPAK56 universal footprint design

Through careful design of the PCB footprint, it is possible to design a universal footprint, such as the one shown below, that meets the requirements of various Power-SO8 manufacturers. This universal footprint example shows the solder resist and solder stencil details that allow a PCB designer to create a footprint compatible with the majority of Power-SO8 types.



Recommended universal Power-SO8 and LFPAK footprint allows the following device types to be mounted to a single PCB design:

- ▶ NXP LFPAK (SOT669 & SOT1023)
- ▶ Infineon PG-TDSON-8
- ▶ Fairchild Power 56
- ▶ Vishay PowerPAK SO-8
- ▶ NEC 8-pin HVSON
- ▶ ON Semi SO-8 FL
- ▶ STM PowerFLAT (6x5)
- ▶ Renesas LFPAK

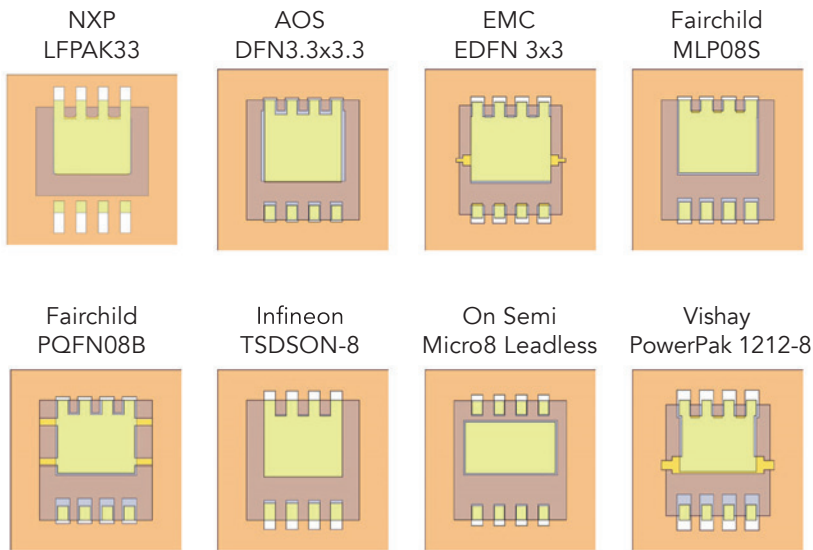
The original document can be downloaded at:

http://www.nxp.com/documents/reflow_soldering/sot669_fr.pdf

LFPAK33 soldering and footprint compatibility

3.3 x 3.3 mm PCB footprints with package mounted

Through careful design of the PCB footprint, it is possible to design a universal footprint, such as the one shown below, that meets the requirements of various 3.3 x 3.3 package manufacturers. This universal footprint example shows the solder resist and solder stencil details that allow a PCB designer to create a footprint compatible with the majority of 3.3 x 3.3 package types.



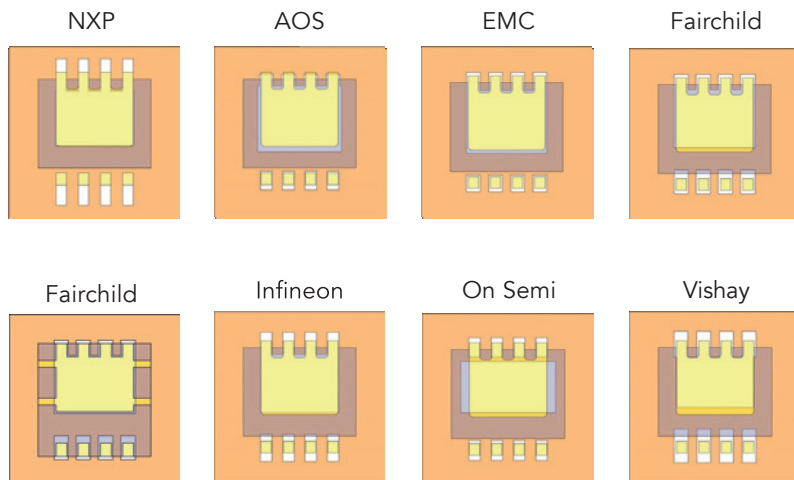
An independent study has been performed by Norcott Technologies (www.norcott.co.uk) to check compatibility:

- ▶ Placement of competitors on NXP universal SOT1210 footprint
- ▶ Placement of SOT1210 package on competitor footprints

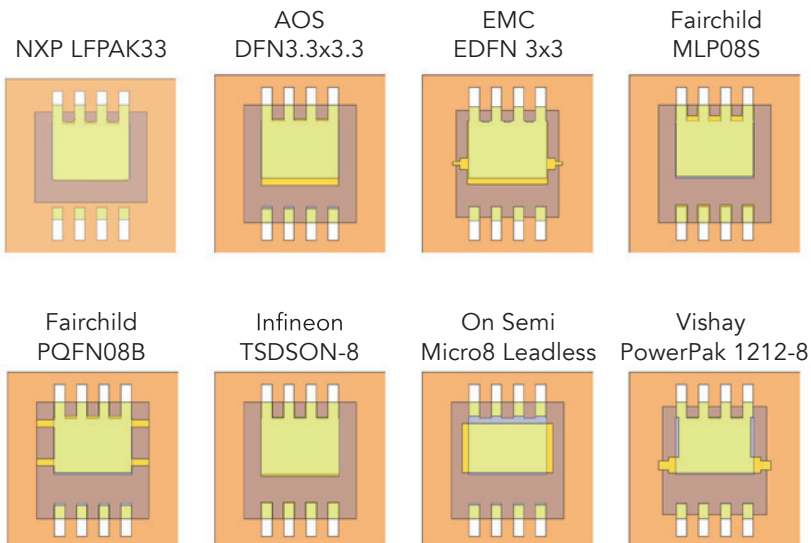
The conclusion of the study is that LFPAK33 is compatible in both scenarios above. The report is available upon request.

LFPAK33 soldering and footprint compatibility

NXP LFPAK33 on competitors' 3.3 x 3.3 package footprints



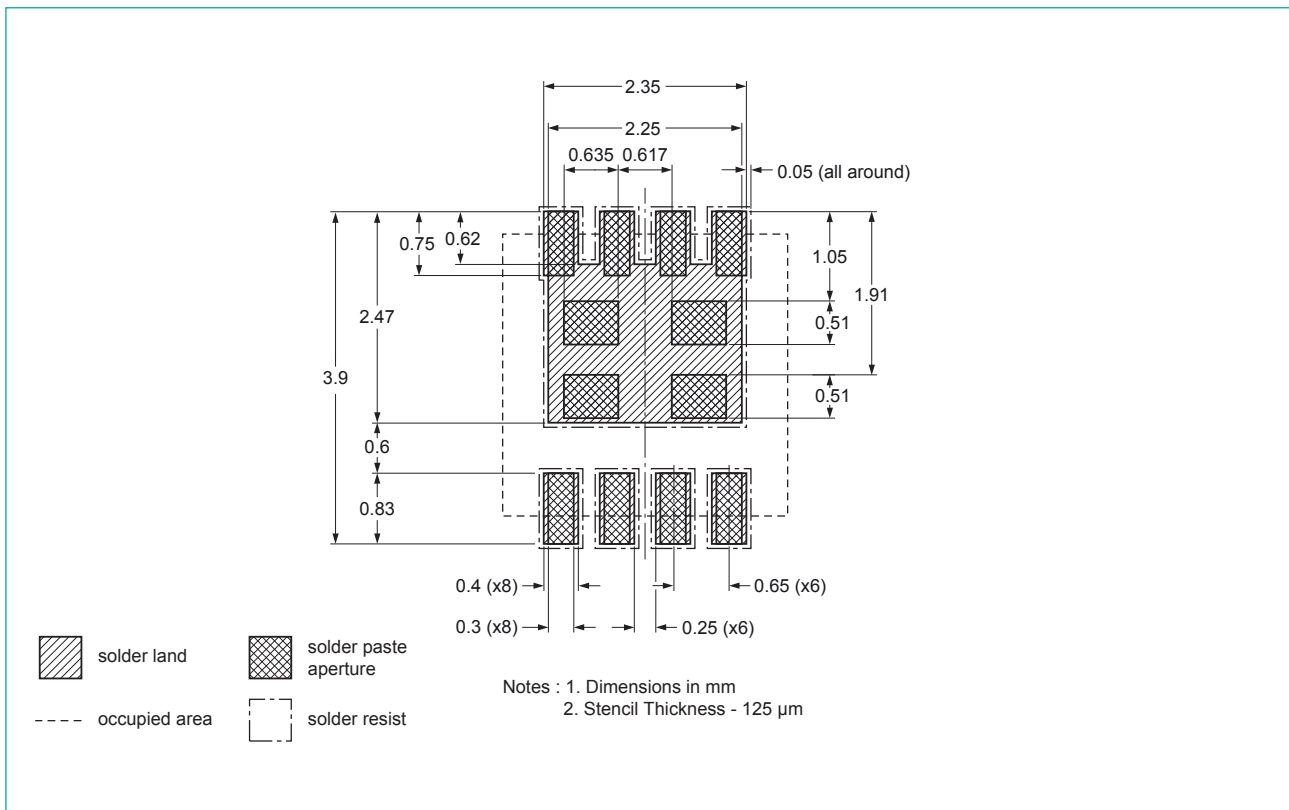
Competitors' 3.3 x 3.3 package on NXP LFPAK33 footprint



LFPAK33 universal footprint design

The LFPAK33 footprint allows for one PCB design to accommodate:

- ▶ NXP - LFPAK33 (SOT1210)
- ▶ NXP - DFN3333-8 (SOT873)
- ▶ Fairchild - MLP 3.3x3.3
- ▶ Vishay - POWERPAK® 1212-8
- ▶ Infineon - PG-TSDSON-8 3.3x3.3
- ▶ ON SEMI - WDFN8 3.3x3.3
- ▶ STM - POWERFlat® 3.3x3.3
- ▶ IR - PQFN 3x3



4 Steps to select a Power MOSFET

1

Select a Voltage, e.g. 40 V

2

Select a package, e.g. LFPAK56

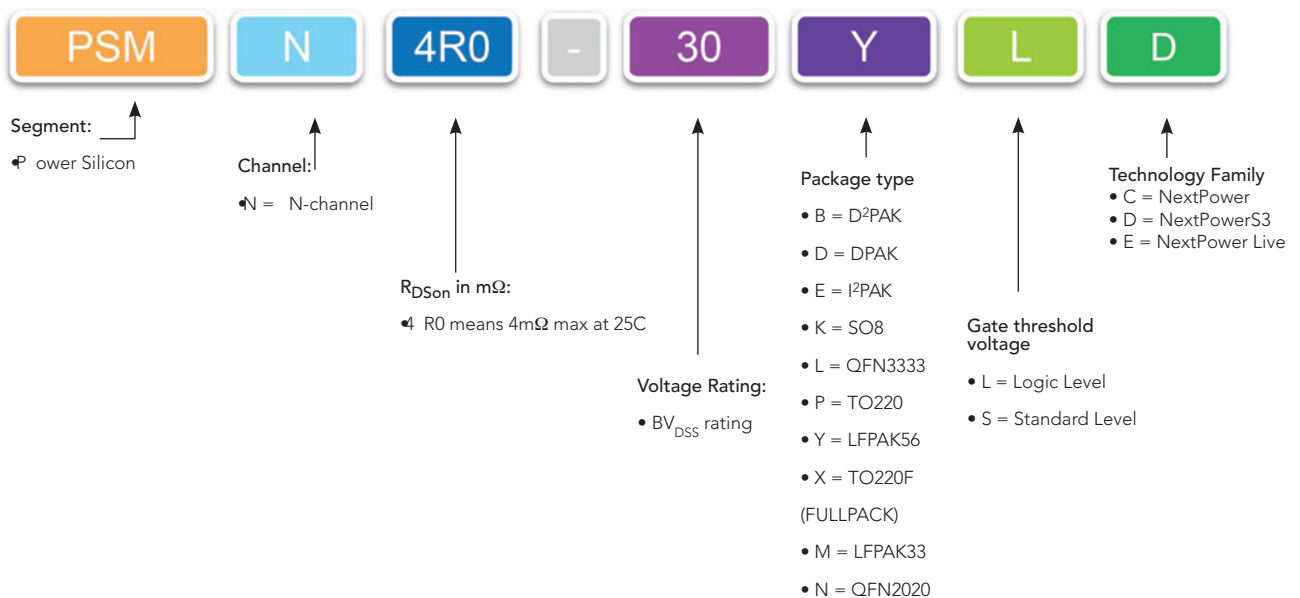
3

Choose an R_{DSon} from our extensive range

4

Select a type and visit www.nxp.com/mosfets to download datasheets, models and order samples

PSMN Part Numbering



High Performance Power MOSFETs

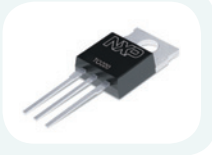
MOSFET Package Selection

Through Hole

Surface Mount

TO220

- ▶ Industry standard
- ▶ up to 150A



TO220F

- ▶ Industry standard
- ▶ up to 75A



I²PAK

- ▶ Industry standard
- ▶ up to 120 A



LFPAK56

- ▶ Power SO8
- ▶ up to 100A



LFPAK33

- ▶ QFN/DFN3333 compatible
- ▶ up to 70A













D²PAK







- ▶ Industry standard
- ▶ up to 120A











20 V - 25 V N-channel MOSFETs

Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	$R_{DS(on)}$ [max] @ VGS 4.5 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PHB66NQ03LT	25	10.5		66	12
DFN1006-3 SOT883 	PMZ250UN	20		300	2.28	0.89
	PMZ270XN	20		340	2.15	0.72
	PMZ290UN	20		350	1	0.89
DFN1006B-3 (SOT883B) 	PMZB290UN	20		350	1	0.89
	PMZB290UNE	20		380	1	0.45
	PMZB300XN	20		380	1	0.72
DFN1010B-6 (SOT1216) 	PMDXB600UNE	20		620	0.6	0.4
DFN1010D-3 (SOT1215) 	PMXB43UNE	20		54	3.2	5.7
DFN2020-6 (SOT1118) 	PMDPB30XN	20		40	5.3	14.4
DFN2020MD-6 (SOT1220) 	PMPB10XNE	20		14	12.9	23
	PMPB15XN	20		21	10.4	13.4
	PMPB23XNE	20		22	10.1	11.6
DPAK (SOT428) 	PHD38N02LT	20			44.7	15.1
	PHD97NQ03LT	25	6.3	10.6	75	11.7
LFPAK33 (SOT1210) 	PSMN2R8-25MLC	25	2.8	3.75	70	16.3
	PSMN3R9-25MLC	25	4.15	5.55	70	9.7
	PSMN9R0-25MLC	25	8.65	11.3	55	5.4
Power-SO8 (LFPAK56) 	PH3120L	20	2.65	3.7	100	48.5
	PH2520U	20		2.7	100	78
	PSMN0R9-25YLC	25	0.99	1.25	100	51
	PSMN1R1-25YLC	25	1.15	1.5	100	39
	PSMN1R2-25YL	25	1.2	1.85	100	50.6
	PSMN1R2-25YLC	25	1.3	1.7	100	31
	PSMN1R5-25YL	25	1.5	2.2	100	36
	PSMN2R2-25YLC	25	2.4	3.15	100	18
	PSMN2R9-25YLC	25	3.15	4.1	100	16
	PSMN4R0-25YLC	25	4.5	5.8	84	10.9
	PSMN6R0-25YLB	25	6.1	7.9	73	9
	PSMN6R5-25YLC	25	6.5	8.5	64	8.4
	PH2925U	25		3	100	92

20 V - 25 V N-channel MOSFETs



Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ V_{GS} 4.5 V (m Ω)	I_D [max] (A)	$Q_G(tot)$ [typ] (nC)
SC-70 (SOT323) 	PMF280UN	20	340	1.02	0.45
SC-75 (SOT416) 	PMR290UNE	20	380	0.7	15.3
SO8 (SOT96-1) 	PHKD6N02LT	20		10.9	32
	PSMN006-20K	20	5	32	
SOT666 	PMDT290UNE	20	380	0.8	0.45
TO-236AB (SOT23) 	BSH105	20	200	1.05	3.9
	PMV31XN	20	37	5.9	5.8
	SI2302DS	20	85	2.5	5.4
TSSOP6 (SOT363) 	PMGD280UN	20	340	0.87	0.89
	PMGD290XN	20	350	0.86	0.72

30 V N-channel MOSFETs

Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	$R_{DS(on)}$ [max] @ VGS 4.5 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PSMNR90-30BL	30	1	1.4	120	118
	PSMN1R5-30BLE	30	1.5	1.85	120	228
	PSMN1R8-30BL	30	1.8	2.1	100	83
	PSMN1R6-30BL	30	1.9	2.2	100	101
	PSMN2R0-30BL	30	2.1	2.9	100	55
	PSMN2R7-30BL	30	3	3.7	100	32
	PSMN3R4-30BL	30	3.3	3.8	100	31
	PSMN3R4-30BLE	30	3.4	5	120	81
	PSMN4R3-30BL	30	4.1	5.2	100	19
	PSMN017-30BL	30	17	23.3	32	5.1
	PSMN022-30BL	30	22.6	29.6	30	4.4
DFN1006-3 SOT883 	PMZ1000UN	30		1000	0.48	0.89
	PMZ350XN	30		420	1.87	0.65
	PMZ390UN	30		460	1.78	0.89
DFN1006B-3 (SOT883B) 	NX3008NBKMB	30		1400	0.53	0.52
	PMZB370UNE	30		490	0.9	0.77
	PMZB380XN	30		460	0.93	0.65
	PMZB420UN	30		490	0.9	0.75
DFN1010D-3 (SOT1215) 	PMXB56EN	30	55	65	3.2	3.6
	PMXB65ENE	30	67		3.2	6
DFN2020MD-6 (SOT1220) 	PMPB11EN	30	14.5	16.5	13	13.7
	NX2020N2	30	19.5	24.5	10.4	7.2
	PMPB20EN	30	19.5	24.5	10.4	7.2
	PMPB13XNE	30		16	11.3	24
	PMPB29XNE	30		33	5	12.4
	PMPB33XN	30		47	5.5	5.1
DPAK (SOT428) 	PHD101NQ03LT	30	5.5		75	23
	PHD71NQ03LT	30	10		75	13.2
I ² PAK (SOT226) 	PSMN1R1-30EL	30	1.3	1.6	120	118
	PSMN017-30EL	30	17	23.4	32	5.1
LFPAK33 (SOT1210) 	PSMN2R4-30MLD	30	2.4	3.2	70	16
	PSMN2R9-30MLC	30	2.95	3.8	70	16.7
	PSMN3R0-30MLC	30	3.15	4.05	70	16.1
	PSMN4R2-30MLD	30	4.3	5.7	70	9.2
	PSMN4R4-30MLC	30	4.65	6	70	10.6
	PSMN7R0-30MLC	30	7	9	67	8.2









Types in **bold red** represent new products

30 V N-channel MOSFETs






Package name	Type number	V_{DS} [max] [V]	R_{DSon} [max] @ 10 V (m Ω)	R_{DSon} [max] @ VGS 4.5 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
LFPAK33 (SOT1210) 	PSMN7R5-30MLD	30	7.6	10.3	57	5.8
	PSMN9R8-30MLC	30	9.8	12.4	50	5
	PSMN013-30MLC	30	13.6	16.9	39	3.7
	PSMN020-30MLC	30	18.1	27	31.8	4.6
Power-SO8 (LFPAK56) 	PSMN0R9-30YLD	30	0.87	1.09	100	51
	PSMN1R0-30YLD	30	1.02	1.3	100	38
	PSMN1R0-30YLC	30	1.15	1.4	100	50
	PSMN1R2-30YLD	30	1.24	1.6	100	32
	PSMN1R2-30YLC	30	1.25	1.65	100	38
	PSMN1R3-30YL	30	1.3	1.95	100	46.6
	PSMN1R4-30YLD	30	1.42	1.85	100	27.6
	PSMN1R5-30YL	30	1.5	1.9	100	36.2
	PSMN1R5-30YLC	30	1.55	2.05	100	30
	PSMN1R7-30YL	30	1.7	2.1	100	36.2
	PSMN2R0-30YL	30	2	2.63	100	30
	PSMN2R0-30YLE	30	2	3.5	100	87
	PSMN2R2-30YLC	30	2.15	2.8	100	26
	PSMN2R4-30YLD	30	2.4	3.1	100	18
	PSMN2R5-30YL	30	2.4	3.16	100	27
	PSMN2R6-30YLC	30	2.8	3.65	100	18
	PSMN3R0-30YL	30	3	4.04	100	21
	PSMN3R0-30YLD	30	3.1	4	100	14.5
	PSMN4R0-30YL	30	4	5.25	100	17.6
	PSMN4R0-30YLD	30	4	5.5	95	9.6
	PSMN4R1-30YLC	30	4.35	5.7	92	11
	PSMN5R0-30YL	30	5	6.7	91	14.1
	PSMN6R0-30YL	30	6	7.87	79	11
	PSMN6R0-30YLD	30	6	8.35	66	6.7
	PSMN6R1-30YLD	30	6	8.35	66	6.8
	PSMN6R0-30YLB	30	6.5	8.1	71	9
	PSMN7R0-30YL	30	7	9.1	76	10
	PSMN7R0-30YLC	30	7.1	8.9	61	7.9
	PSMN7R5-30YLD	30	7.5	10.2	51	5.8
	PSMN9R1-30YL	30	9.1	13.6	57	8.4
	PSMN9R5-30YLC	30	9.8	12.1	44	5
	PSMN013-30YLC	30	13.6	16.9	32	4

Types in **bold red** represent new products

30 V N-channel MOSFETs










Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	$R_{DS(on)}$ [max] @ VGS 4.5 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
SC-70 (SOT323) 	NX3020NAKW	30	4500	5200	0.18	0.34
	NX3008NBKW	30		1400	0.35	0.52
	PMF370XN	30		440	0.87	0.65
SC-73 	BSP030	30	30		10	24
	BSP100	30	100	200	6	6
SC-75 	NX3020NAKT	30	4500	5200	0.18	0.34
SO8 (SOT96-1) 	PHK31NQ03LT	30	4.4	5.6	30.4	33
	PSMN005-30K	30	5.5	8		34
	PHK18NQ03LT	30	8.9	12.5	20.3	10.6
	PHK13N03LT	30	20	26	13.8	10.7
	PHKD13N03LT	30	20	26	10.4	10.7
	PHN203	30	30	55	6.3	14.6
	PHN210T	30	100	200	3.4	6
	PHC21025	30	250	400		10
	PHK12NQ03LT	30		14	11.8	
SOT666 	NX3020NAKV	30	4500	5200	0.2	0.34
	NX3008NBKV	30		1400	0.4	0.52
TO-220AB (SOT78A) 	PSMN1R1-30PL	30	1.3	1.6	120	118
	PSMN1R6-30PL	30	1.7	2.1	100	101
	PSMN1R8-30PL	30	1.8	2.3	100	83
	PSMN2R0-30PL	30	2.1	2.8	100	55
	PSMN2R7-30PL	30	2.7	3.6	100	32
	PSMN3R4-30PL	30	3.4	4.1	100	31
	PSMN4R3-30PL	30	4.3	6.2	100	19
	PHP36N03LT	30	17	22	43.4	18.5
	PSMN017-30PL	30	17	23.4	32	5.1
	PSMN022-30PL	30	22	34	30	4.4
TO-236AB (SOT23) 	SI2304DS	30	117	190	1.7	4.6
	BSH108	30	120		1.9	6.4
	NX3020NAK	30	4500	5200	0.2	0.34
	BSH103	30		400		2.1
	NX3008NBK	30		1400	0.4	0.52
TSSOP6 (SOT363) 	NX3020NAKS	30	4500	5200	0.18	0.34
	NX3008NBKS	30		1400	0.35	0.52
	PMGD370XN	30		440	0.74	0.65

40 V - 50 V N-channel MOSFETs

Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PSMN1R1-40BS	40	1.3	120	136
	PSMN2R2-40BS	40	2.2	100	130
	PSMN2R8-40BS	40	2.9	100	71
	PSMN4R5-40BS	40	4.5	100	35
	PSMN8R0-40BS	40	7.6	77	21
I ² PAK (SOT226) 	PSMN1R5-40ES	40	1.6	120	136
Power-SO8 (LFPAK56) 	PSMN1R0-40YLD	40	1.1	100	54
	PSMN1R4-40YLD	40	1.4	100	45
	PSMN1R6-40YLC	40	1.55	100	59
	PSMN1R8-40YLC	40	1.8	100	45
	PSMN2R6-40YS	40	2.8	100	63
	PSMN3R3-40YS	40	3.3	100	49
	PH4840S	40	4.1	94.5	67
	PSMN4R0-40YS	40	4.2	100	38
	PSMN5R8-40YS	40	5.7	90	28.8
	PSMN8R3-40YS	40	8.6	70	20
	PSMN014-40YS	40	14	46	12
TO-220AB (SOT78A) 	PSMN1R5-40PS	40	1.6	150	136
	PSMN1R9-40PL	40	1.7	150	230
	PSMN2R2-40PS	40	2.1	100	110
	PSMN2R1-40PL	40	2.2	150	168.9
	PSMN2R8-40PS	40	2.8	100	71
	PSMN4R5-40PS	40	4.6	100	35
	PSMN8R0-40PS	40	7.6	77	17
TO-236AB (SOT23) 	PMV130ENEA	40	120	2.1	2.4
	BSN20	50	15000	0.173	








Types in **bold red** represent new products

55 V - 60 V N-channel MOSFETs

Package name	Type number	V _{DS} [max] [V]	R _{DS(on)} [max] @ 10 V (mΩ)	I _D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PHB191NQ06LT	55	3.7	75	95.6
	PHB21N06LT	55	70	19	
	PHB20N06T	55	75	20.3	11
	PSMN1R7-60BS	60	2	120	137
	PSMN3R0-60BS	60	3.2	100	130
	PSMN004-60B	60	3.6	75	168
	PSMN4R6-60BS	60	4.4	100	70.8
	PSMN7R6-60BS	60	7.8	92	38.7
	PSMN015-60BS	60	14.8	50	20.9
	PHB32N06LT	60	37	34	17
DFN1006B-3 (SOT883B) 	PMZ760SN	60	900	1.22	1.05
	2N7002BKM	60	1600	0.45	0.5
DFN1006B-3 (SOT883B) 	PMZB790SN	60	940	0.65	1.05
	2N7002BKMB	60	1600	0.45	0.5
DFN2020MD-6 (SOT1220) 	PMPB40SNA	60	43	12.9	12.1
	PMPB85ENEA	60	95	4.4	6.2
DPAK (SOT428) 	PHD20N06T	55	77	18	11
I ² PAK (SOT226) 	PSMN2R0-60ES	60	2.2	120	137
	PSMN3R0-60ES	60	3	100	130
LFPAK33 (SOT1210) 	PSMN011-60ML	60	11.3	61	37.2
	PSMN011-60MS	60	11.3	61	23
Power-SO8 (LFPAK56) 	PH955L	55	8.3	62.5	42
	PSMN5R5-60YS	60	5.2	100	56
	PSMN7R0-60YS	60	6.4	89	45
	PSMN8R5-60YS	60	8	76	39
	PSMN012-60YS	60	11.1	59	28.4
	PSMN017-60YS	60	15.7	44	20
	PSMN030-60YS	60	24.7	29	13
SC-70 (SOT323) 	BSH121	55		0.3	1
	2N7002BKW	60	1600	0.31	0.5
	BSS138BKW	60	1600	0.32	0.6
	BSS138PW	60	1600	0.32	0.72
	NX7002AKW	60	4500	0.17	0.33







Types in **bold red** represent new products

55 V - 60 V N-channel MOSFETs








Package name	Type number	V _{DS} [max] [V]	R _{DSon} [max] @ 10 V (mΩ)	I _D [max] (A)	QG(tot) [typ] (nC)
SC-73 (SOT223) 	PHT6N06T	55	150	5.5	
	PHT6N06LT	55		5.5	4.5
	PHT8N06LT	55		7.5	11.2
SC-75 (SOT416) 	2N7002BKT	60	1600	0.29	0.5
SOT666 	2N7002BKV	60	1600	0.34	0.5
TO-220AB (SOT78A) 	PHP191NQ06LT	55	3.7	75	95.6
	PHP20N06T	55	75	20.3	11
	PSMN2R0-60PS	60	2.2	120	137
	PSMN2R5-60PL	60	2.6	150	223
	PSMN2R6-60PS	60	2.6	150	140
	PSMN3R0-60PS	60	3	100	130
	PSMN3R3-60PL	60	3.4	130	175
	PSMN3R9-60PS	60	3.9	130	103
	PSMN4R2-60PL	60	3.9	130	151
	PSMN4R6-60PS	60	4.6	100	70.8
	PSMN7R6-60PS	60	7.8	92	38.7
	PSMN015-60PS	60	14.8	50	20.9
TO-220F SOT186A 	PSMN3R9-60XS	60	4	75	103
TO-236AB (SOT23) 	BSH111	55		0.335	1
	2N7002BK	60	1600	0.35	0.5
	2N7002CK	60	1600	0.3	1.09
	BSS138BK	60	1600	0.36	0.6
	BSS138P	60	1600	0.36	0.72
	BSS138AKA	60	4500	0.2	0.39
	NX7002AK	60	4500	0.3	0.33
	2N7002	60	5000	0.3	
	PMGD780SN	60	920	0.49	1.05
TSSOP6 (SOT363) 	2N7002BKS	60	1600	0.3	0.5
	BSS138BKS	60	1600	0.32	0.6
	BSS138PS	60	1600	0.32	0.72
	NX7002AKS	60	4500	0.17	0.33

Types in **bold red** represent new products

75 V - 80 V N-channel MOSFETs






Package name	Type number	V _{DS} [max] [V]	R _{DS(on)} [max] @ 10 V (mΩ)	I _D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PSMN005-75B	75	5	75	165
	PSMN008-75B	75	8.5	75	122.8
	PHB110NQ08T	75	9	75	113.1
	PHB29N08T	75		27	19
	PSMN2R8-80BS	80	3	120	139
	PSMN3R3-80BS	80	3.5	120	111
	PSMN4R4-80BS	80	4.5	100	125
	PSMN5R0-80BS	80	5.1	100	101
	PSMN6R5-80BS	80	6.9	100	71
	PSMN8R7-80BS	80	8.7	90	52
	PSMN012-80BS	80	11	74	36
	PSMN017-80BS	80	17	50	26
	PSMN050-80BS	80	46	22	11
DFN1010D-3 (SOT1215) 	PMXB360ENEA	80	450	1.1	3
DFN2020MD-6 (SOT1220) 	PMPB95ENEA	80	105	4.1	9.9
	PMPB215ENEA	80	230	2.8	4.8
I ² PAK (SOT226) 	PSMN3R3-80ES	80	3.3	120	139
	PSMN3R5-80ES	80	3.5	120	139
	PSMN4R3-80ES	80	4.3	120	111
Power-SO8 (LFPAK56) 	PSMN8R2-80YS	80	8.5	82	55
	PSMN011-80YS	80	11	67	45
	PSMN013-80YS	80	12.9	60	37
	PSMN018-80YS	80	18	45	26
	PSMN026-80YS	80	27.5	34	20
	PSMN041-80YL	80	41	25	21.9
	PSMN045-80YS	80	45	24	12.5
TO-220AB (SOT78A) 	PSMN005-75P	75	5	75	165
	PHP79NQ08LT	75	16	73	30
	PHP29N08T	75		27	19
	PSMN3R3-80PS	80	3.3	120	139
	PSMN3R5-80PS	80	3.5	120	139
	PSMN4R4-80PS	80	4.1	100	112
	PSMN4R3-80PS	80	4.3	120	111
	PSMN5R0-80PS	80	4.7	100	87
	PSMN6R5-80PS	80	6.9	100	71
	PSMN8R7-80PS	80	8.7	90	52
	PSMN012-80PS	80	11	74	36
PSMN017-80PS	80	17	50	26	

100 V N-channel MOSFETs

Package name	Type number	V _{DS} [max] [V]	R _{DS(on)} [max] @ 10 V (mΩ)	I _D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PSMN3R8-100BS	100	3.9	120	170
	PSMN4R8-100BSE	100	4.8	120	196
	PSMN5R6-100BS	100	5.6	100	141
	PSMN7R0-100BS	100	6.8	100	125
	PSMN7R6-100BSE	100	7.6	75	128
	PSMN009-100B	100	8.8	75	156
	PSMN9R5-100BS	100	9.6	89	82
	PSMN013-100BS	100	13.9	68	59
	PSMN015-100B	100	15	75	90
	PSMN016-100BS	100	16	57	49
	PHB45NQ10T	100	25	47	61
	PSMN027-100BS	100	26.8	37	30
	PHB47NQ10T	100	28	47	66
	PSMN034-100BS	100	34.5	32	23.8
	PHB27NQ10T	100	50	28	30
PHB18NQ10T	100	90	18	21	
DFN2020-6 (SOT1118) 	PMDPB760EN	100	860	0.9	2.4
DFN2020MD-6 (SOT1220) 	PMPB200EN	100	235	2.6	7.4
DPAK (SOT428) 	PSMN025-100D	100	25	47	61
I ² PAK (SOT226) 	PSMN4R3-100ES	100	4.3	120	170
	PSMN5R0-100ES	100	5	120	170
	PSMN7R0-100ES	100	6.8	100	125
	PSMN8R5-100ES	100	8.5	100	111
	PSMN013-100ES	100	13.9	68	59
LFPAK33 (SOT1210) 	PSMN040-100MSE	100	36.6	30	30
	PSMN075-100MSE	100	71	18	16.4
Power-SO8 (LFPAK56) 	PSMN012-100YS	100	12	60	64
	PSMN013-100YSE	100	13	82	75
	PSMN016-100YS	100	16.3	51	54
	PSMN020-100YS	100	20.5	43	41
	PH20100S	100	23	34.3	39
	PSMN028-100YS	100	27.5	42	33
	PSMN038-100YL	100	37.5	30	21.6
	PSMN039-100YS	100	39.5	28.1	23
PSMN069-100YS	100	72.4	17	14	







Types in **bold red** represent new products - Types in **bold green** represent products in development

100 V N-channel MOSFETs

Package name	Type number	V _{DS} [max] [V]	R _{DS(on)} [max] @ 10 V (mΩ)	I _D [max] (A)	QG(tot) [typ] (nC)
SC-73 (SOT223) 	PHT6NQ10T	100	90	6.5	21
	PHT4NQ10T	100	250	3.5	7.4
	BSP110	100		0.52	
	PHT4NQ10LT	100		3.5	6.8
SO8 (SOT96-1) 	PSMN038-100K	100	38		43
	PHKD3NQ10T	100	90	3	21
TO-220AB (SOT78A) 	PSMN4R3-100PS	100	4.3	120	170
	PSMN4R8-100PSE	100	5	120	196
	PSMN5R0-100PS	100	5	120	170
	PSMN5R6-100PS	100	5.6	100	141
	PSMN7R0-100PS	100	6.8	100	125
	PSMN7R8-100PSE	100	7.8	75	128
	PSMN8R5-100PS	100	8.5	100	111
	PSMN009-100P	100	8.8	75	156
	PSMN9R5-100PS	100	9.6	89	82
	PSMN013-100PS	100	13.9	68	59
	PSMN015-100P	100	15	75	90
	PSMN016-100PS	100	16	57	49
	PHP45NQ10T	100	25	47	61
	PSMN027-100PS	100	26.8	37	30
	PSMN034-100PS	100	34.5	32	23.8
	PHP18NQ10T	100	90	18	21
	TO-220F (SOT186A) 	PSMN4R6-100XS	100	4.6	70.4
PSMN5R0-100XS		100	5	67.5	153
PSMN5R6-100XS		100	5.6	61.8	145
PSMN7R0-100XS		100	6.8	55	121
PSMN8R5-100XS		100	8.5	49	100
PSMN9R5-100XS		100	9.6	44.2	81.5
PSMN013-100XS		100	13.9	35.2	57.5
PSMN016-100XS		100	16	32.1	46.2
PSMN027-100XS		100	26.8	23.4	30
TO-236AB (SOT23) 	PMV213SN	100	250	1.9	7
	BSH114	100	500	0.85	4.6
	BSS123	100	6000	0.15	
	BST82	100		0.19	









Types in **bold red** represent new products - Types in **bold green** represent products in development

105 V - 150 V N-channel MOSFETs









Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PSMN030-150B	150	30	55.5	98
	PSMN035-150B	150	35	50	79
	PHB45NQ15T	150	42	45.1	32
DPAK (SOT428) 	PSMN063-150D	150	63	29	55
I ² PAK (SOT226) 	PSMN6R3-120ES	120	6.7	70	207.1
	PSMN7R8-120ES	120	7.9	70	167
Power-SO8 (LFAK56) 	PSMN059-150Y	150	59	43	27.9
SO8 (SOT96-1) 	PHK5NQ15T	150	75	5	29
	PSMN085-150K	150	85		40
TO-220AB (SOT78A) 	PHP45NQ11T	105	25	47	60
	PSMN015-110P	110	15	75	90
	PHP27NQ11T	110	50	27.6	30
	PHP23NQ11T	110	70	23	22
	PHP18NQ11T	110	90	18	21
	PSMN6R3-120PS	120	6.7	70	207.1
	PSMN7R8-120PS	120	7.9	70	167
	PSMN030-150P	150	30	55.5	98
	PSMN035-150P	150	35	50	79
	PHP30NQ15T	150	63	29	55
	PHP28NQ15T	150	65	28.5	24

Types in **bold red** represent new products

200 V - 300 V N-channel MOSFETs






Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
D ² PAK (SOT404) 	PSMN057-200B	200	57	39	96
	PSMN070-200B	200	70	35	77
	PHB33NQ20T	200	77	32.7	32.2
	PHB20NQ20T	200	130	20	65
DFN3333-8 (SOT873-1) 	PML260SN	200	294	8.8	13.3
	PML340SN	220	386	7.3	13.2
DPAK (SOT428) 	PSMN130-200D	200	130	20	65
	PHD9NQ20T	200	400	8.7	24
Power-SO8 (LFPAK56) 	PSMN102-200Y	200	102	21.5	30.7
SC-73 (SOT223) 	BSP122	200	2500	0.55	
	BSP89	240	5000	0.375	
	BSP126	250	5000	0.375	
	BSP130	300	6000	0.35	
SO8 (SOT96-1) 	PSMN165-200K	200	165		40
	PHC2300	300	6000		6.24
SOT89 	BSS87	200	3000	0.4	
TO-220AB (SOT78A) 	PSMN057-200P	200	57	39	96
	PSMN070-200P	200	70	35	77
	PHP33NQ20T	200	77	32.7	32.2
	PHP20NQ20T	200	130	20	65
	PHP9NQ20T	200	400	8.7	24

P-channel MOSFETs



Package name	Type number	Channel type	No. of transistors	V _{DS} [max] [V]	R _{DS(on)} [max] @ 10 V (mΩ)	R _{DS(on)} [max] @ VGS 4.5 V (mΩ)	I _D [max] (A)	QG(tot) [typ] (nC)
DFN1006-3 (SOT883) 	BSS84AKM	P	1	-50	7500		-0.23	0.26
	BSS84AKMB	P	1	-50	7500		-0.23	0.26
DFN1006B-3 (SOT883B) 	NX3008PBKMB	P	1	-30		4100	-0.3	0.55
	PMZB350UPE	P	1	-20		450	-1.4	1.3
	PMZB670UPE	P	1	-20		850	-0.68	0.76
DFN1010B-6 (SOT1216) 	PMCXB900UE	N/P	2	-20		1400	0.6	0.4
	PMDXB950UPE	P	2	-20		1400	-0.5	1.19
DFN1010D-3 (SOT1215) 	PMXB120EPE	P	1	-30	120	170	-2.4	6.2
	PMXB350UPE	P	1	-20		447	-1.2	1.25
	PMXB75UPE	P	1	-20		85	-2.9	6.8
DFN2020-6 (SOT1118) 	PMXB65UPE	P	1	-12		72	-3.2	6.7
	PMDPB70XP	P	2	-30		87	-3.8	5.2
	PMCPB5530X	N/P	2	-20		34	5.3	14.4
	PMDPB55XP	P	2	-20		70	-4.5	16.5
	PMDPB58UPE	P	2	-20		67	-4.5	6.3
	PMDPB70XPE	P	2	-20		79	-4.2	5
	PMDPB80XP	P	2	-20		102	-3.7	5.7
DFN2020MD-6 (SOT1220) 	PMPB85UPE	P	2	-20		103	-3.7	5.4
	PMPB27EP	P	1	-30	29	43	-8.8	30
	PMPB48EP	P	1	-30	50	76	-6.8	17
	NX2020P1	P	1	-30		58	-5	14
	PMPB47XP	P	1	-30		58	-5	14
	PMPB19XP	P	1	-20		22.5	-10.3	28.8
	PMPB20XPE	P	1	-20		23.5	-10.3	30
	PMPB29XPE	P	1	-20		32.5	-5	30
	PMPB33XP	P	1	-20		37	-7.9	15
	PMPB43XPE	P	1	-20		48	-5	15.6
PMPB15XP	P	1	-12		19	-11.8	67	
SC-70 (SOT323) 	BSS84AKW	P	1	-50	7500		-0.15	0.26
	NX3008PBKW	P	1	-30		4100	-0.2	0.55
	PMF170XP	P	1	-20		200	-1	2.6
SC-73 (SOT223) 	BSP230	P	1	-300	17000			
	BSP225	P	1	-250	15000		-0.225	
	BSP220	P	1	-200	12000		-0.225	
	BSP250	P	1	-30	250	400		

Types in bold green represent products in development




P-channel MOSFETs

Package name	Type number	Channel type	No. of transistors	V _{DS} [max] [V]	R _{DSon} [max] @ 10 V (mΩ)	R _{DSon} [max] @ VGS 4.5 V (mΩ)	I _D [max] (A)	QG(tot) [typ] (nC)
SC-75 (SOT416) 	PMR670UPE	P	1	-20		850	-0.48	0.76
SO8 (SOT96-1) 	PMK30EP	P	1	-30	19	30	-14.9	50
	PMK35EP	P	1	-30	19	35	-14.9	42
	PHP225	P	2	-30	250	400		10
	PMK50XP	P	1	-20		50	-7.9	10
	PHK04P02T	P	1	-16		120	-4.66	7.2
	PHC21025	N/P	2	30	250	400		10
	PHC2300	N/P	2	300	6000			6.24
SOT666 	NX1029X	N/P	2	-50	1600		0.33	0.26
	BSS84AKV	P	2	-50	7500		-0.17	0.26
	NX3008CBKV	N/P	2	-30		1400	0.4	0.52
	NX3008PBKV	P	2	-30		4100	-0.22	0.55
	PMDT290UCE	N/P	2	-20		380	0.8	0.45
	PMDT670UPE	P	2	-20		850	-0.55	0.76
SOT89 	BSS192	P	1	-240	12000		-0.2	
TO-236AB (SOT23) 	BSH201	P	1	-60	2500		-0.3	
	BSS84AK	P	1	-50	7500		-0.18	0.26
	PMV250EPEA	P	1	-40	240	300	-1.5	4.7
	BSH202	P	1	-30	900		-0.52	
	BSH203	P	1	-30		900	-0.47	2.2
	NX3008PBK	P	1	-30		4100	-0.23	0.55
	NX2301P	P	1	-20		120	-2	4.5
	PMV160UP	P	1	-20		210	-1.2	3.3
	PMV32UP	P	1	-20		36	-4	15.5
	PMV33UPE	P	1	-20		36	-5.3	14.7
	PMV48XP	P	1	-20		55	-3.5	8.5
	PMV48XPA	P	1	-20		55	-3.5	8.5
	PMV50UPE	P	1	-20		66	-3.7	10.5
	PMV65XP	P	1	-20		74	-4.3	7.7
	PMV65XPE	P	1	-20		78	-3.3	5
	PMV75UP	P	1	-20		102	-3.2	5
BSH205	P	1	-12			-0.75		

P-channel MOSFETs



Package name	Type number	Channel type	No. of transistors	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	$R_{DS(on)}$ [max] @ VGS 4.5 V (m Ω)	I_D [max] (A)	QG(tot) [typ] (nC)
TSOP6 (SOT457) 	PMN27UP	P	1	-20		32	-5.7	21
	PMN27XPE	P	1	-20		30	-5.7	15
	PMN34UP	P	1	-20		40	-5	15.5
	PMN40UPE	P	1	-20		43	-6	15.6
	PMN42XPE	P	1	-20		46	-5.7	11.5
	PMN48XP	P	1	-20		55	-4.1	8.7
	PMN50UPE	P	1	-20		66	-4	10.5
	PMN70XPE	P	1	-20		85	-4.1	5.2
	PMN80XP	P	1	-20		102	-3.2	5
TSSOP6 (SOT363) 	BSS84AKS	P	2	-50	7500		-0.16	0.26
	NX3008CBKS	N/P	2	-30		1400	0.35	0.52
	NX3008PBKS	P	2	-30		4100	-0.2	0.55
	PMG85XP	P	1	-20		115	-2	4.8
	PMGD290UCEA	N/P	2	-20		380	0.725	0.45

Multi-chip MOSFETs

Package name	Type number	V_{DS} [max] [V]	R_{DSon} [max] @ 10 V (m Ω)	R_{DSon} [max] @ VGS 4.5 V (m Ω)
DFN1010B-6 (SOT1216) 	PM CXB900UE	-20		1400
	PM DXB950UPE	-20		1400
	PM DXB600UNE	20		620
DFN2020-6 (SOT1118) 	PM DPB70XP	-30		87
	PM CPB5530X	-20		34
	PM DPB55XP	-20		70
	PM DPB58UPE	-20		67
	PM DPB70XPE	-20		79
	PM DPB80XP	-20		102
	PM DPB85UPE	-20		103
	PM DPB30XN	20		40
	PM DPB760EN	100	860	920
SO8 (SOT96-1) 	PH P225	-30	250	400
	PH KD6N02LT	20		
	PH KD13N03LT	30	20	26
	PH N203	30	30	55
	PH N210T	30	100	200
	PH C21025	30	250	400
	PH KD3NQ10T	100	90	
	PH C2300	300	6000	

Types in **bold green** represent products in development

Multi-chip MOSFETs

Package name	Type number	V_{DS} [max] [V]	$R_{DS(on)}$ [max] @ 10 V (m Ω)	$R_{DS(on)}$ [max] @ VGS 4.5 V (m Ω)
SOT666 	NX1029X	-50	1600	
	BSS84AKV	-50	7500	
	NX3008CBKV	-30		1400
	NX3008PBKV	-30		4100
	PMDT290UCE	-20		380
	PMDT670UPE	-20		850
	PMDT290UNE	20		380
	NX3020NAKV	30	4500	5200
	NX3008NBKV	30		1400
	2N7002BKV	60	1600	
TSSOP6 (SOT363) 	BSS84AKS	-50	7500	
	NX3008CBKS	-30		1400
	NX3008PBKS	-30		4100
	PMGD290UCEA	-20		380
	PMGD290XN	20		350
	NX3020NAKS	30	4500	5200
	NX3008NBKS	30		1400
	PMGD370XN	30		440
	PMGD780SN	60	920	1400
	2N7002BKS	60	1600	
	BSS138BKS	60	1600	2200
	BSS138PS	60	1600	
	NX7002AKS	60	4500	

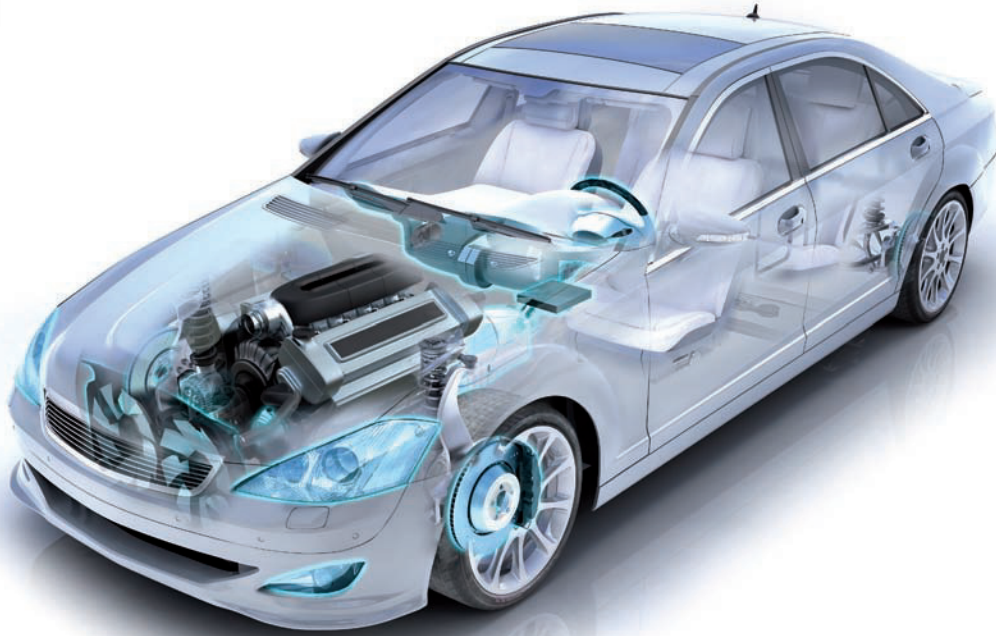


Automotive Grade Power MOSFETs

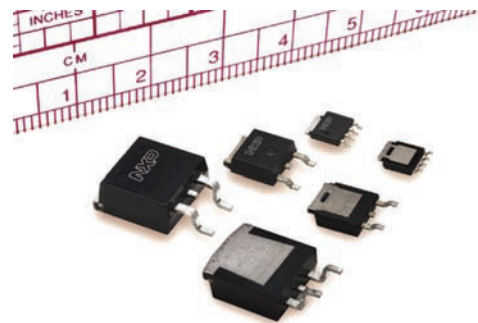
Performance, Quality, Reliability



Automotive Power MOSFETs



- ▶ Global Leadership in Discrete Power MOSFETs for Automotive Applications
- ▶ In today's demanding automotive marketplace only the best will do. Semiconductor components play an increasingly important role in a vehicle's **performance, comfort and reliability**. Only suppliers with specialist knowledge and experience can provide the solutions needed to meet the current & future demands of automotive electronics modules and systems.
- ▶ In the area of power MOSFETs for automotive applications NXP is a clear leader with a dedicated focus on **low voltage MOSFET solutions** for automotive applications. An in-depth understanding of automotive system requirements and focused technical capability enables NXP to provide power semiconductor solutions to meet a wide spectrum of applications. From driving a simple lamp to the sophisticated needs of power management & control in engine, body or chassis applications, NXP power semiconductors can provide the answer to many automotive system power problems.
- ▶ NXP's power products are designed and manufactured around the key themes of **performance, quality & reliability** and are built to withstand long term operation in some of the harshest environments within a typical vehicle.
- ▶ In addition, by providing a complete **technology, device and service capability** NXP helps you meet the diverse and rigorous technical demands of today's automotive power switching and control applications, driving the development of tomorrow's vehicles and keeping you ahead of the rest.
- ▶ Put simply, NXP gives you the power to meet the challenges of automotive power system design, every step of the way.



Commitment to Quality

Designed with automotive in mind

AEC-Q101

- ▶ NXP Automotive Power MOSFETs are commonly deployed in many critical applications such as braking, power steering and engine management, where quality and reliability requirements go beyond mere compliance with **AEC-Q101** standards.
- ▶ Product qualification strategies start with a baseline of AEC-Q101, but far exceed its requirements to reflect real automotive mission profiles.
- ▶ NXP has more than 15 years experience qualifying automotive grade Trench MOSFETs in such applications, resulting in an impressive track record of reliability.

goforQuality
customer focused passion to win



- ▶ All processes and plants are subject to regular internal audits, as well as **TS16949, VDA** and specific customer audits.
- ▶ Our rigorous attention to detail and commitment to automotive quality has resulted in a **sub-ppm combined line, field and 0 Km failure rate at Automotive customers**

DfX

EXCELLENCE

- ▶ NXP's **Design for Excellence (DfX)** programme ensure each new development builds on past learning and that best practice is always employed, resulting in continual product improvement.

ZD

ZERO DEFECT

- ▶ **Our Zero-Defects** culture is supported by a dedicated team of Product Quality, Failure Analysis & Process Engineers at all stages of development & production. Failure analysis is supported by a determination to find real Root Causes and eliminate failure modes with widespread adoption of quality analysis tools and methodologies.
- ▶ Dedicated design & manufacturing facilities focused on providing automotive quality are at the heart of NXP's manufacturing set-up. Every process step for automotive products is carried out within NXP's internal and qualified partner facilities; from silicon & package design, through diffusion to assembly and test.

4 Steps to select an Automotive MOSFET

1

Select a Voltage e.g. 40 V

2

Select a package, e.g. D²PAK

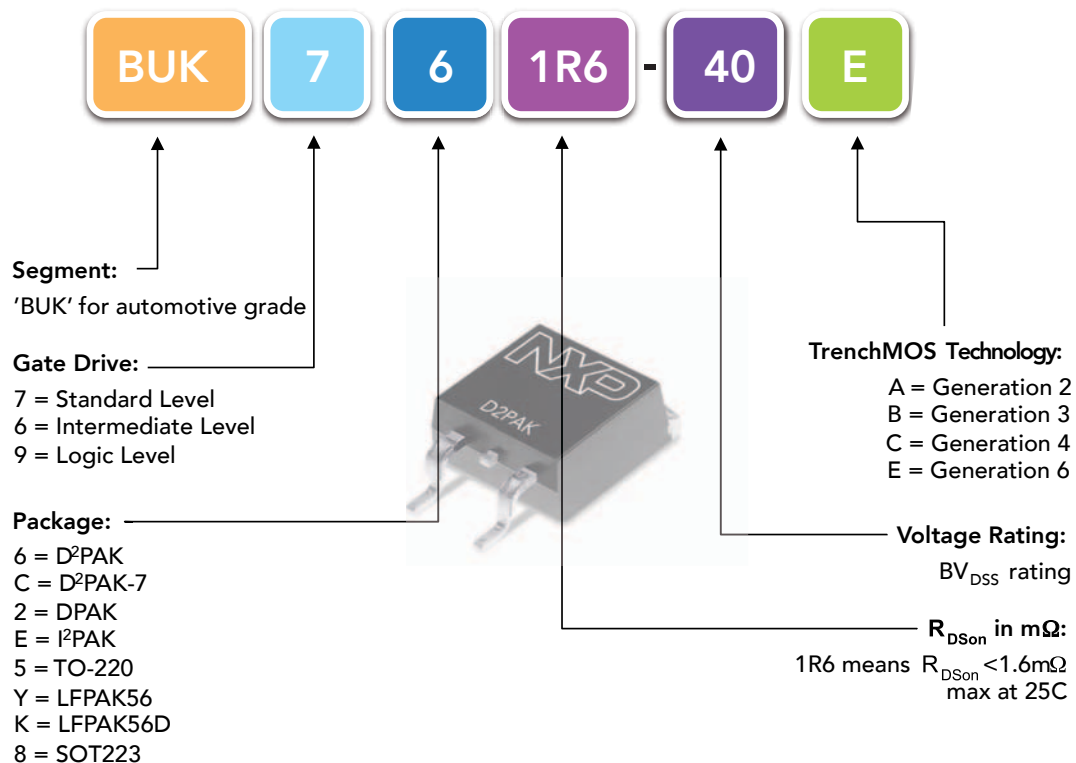
3

Choose an R_{DSon} from our extensive range







4

Select a 'BUK' type and visit www.nxp.com/automotivemosfets to download datasheets, models and order samples

Automotive Grade MOSFET Naming Convention






30 V Automotive MOSFETs

Package name	Type number	V _{DS} [V]	R _{DSon} @ 10 V (mΩ)	R _{DSon} @ 5 V (mΩ)	I _D [max] @ 25°C(A)	R _{th(j-mb)} [max] [K/W]	Technology
Power-SO8 (LFAK56) 	BUK9Y07-30B	30	6.00	7.00	75	1.42	T3
	BUK7Y07-30B	30	7.00		75	1.42	T3
	BUK9Y11-30B	30	9.00	11.00	59	2.00	T3
	BUK7Y10-30B	30	10.00		67	1.76	T3
	BUK9Y22-30B	30	19	22	38	2.53	T3
	BUK7Y20-30B	30	20		40	2.53	T3
LFAK56D (Dual Power-SO8) (SOT1205) 	BUK9K5R1-30E	30	4.2	5.0	40	2.21	T6
	BUK9K5R6-30E	30	4.6	5.5	40	2.36	T6
	BUK7K5R1-30E	30	5.1		40	2.21	T6
	BUK7K5R6-30E	30	5.6		40	2.36	T6
D ² PAK (SOT404) 	BUK962R8-30B	30	2.4	2.8	75	0.50	T3
	BUK762R7-30B	30	2.7		75	0.50	T3
	BUK763R4-30B	30	3.4		75	0.59	T3
	BUK9605-30A	30	4.6	5.0	75	0.65	T6
	BUK9607-30B	30	5.0	7.0	75	0.95	T3
	BUK7607-30B	30	7.0		75	0.95	T3
DPAK (SOT428) 	BUK624R5-30C	30	4.5	6.0	90	0.95	T4
	BUK724R5-30C	30	4.5		75	0.95	T4
	BUK9207-30B	30	5.0	7.0	75	0.95	T3
	BUK625R2-30C	30	5.2	7.5	90	1.17	T4
	BUK7207-30B	30	7.0		75	0.95	T3
	BUK6209-30C	30	9.8	15.0	50	1.87	T4
	BUK9213-30A	30	11.0	13.0	75	1.00	T2
	BUK9214-30A	30	12.0	14.0	63	1.40	T2
	BUK6213-30A	30	13.0		55	1.40	T2
	BUK6213-30C	30	14.0	22.0	47	2.52	T4
TO-220AB (SOT78A) 	BUK952R8-30B	30	2.4	2.8	75	0.50	T3
	BUK752R7-30B	30	2.7		75	0.50	T3
	BUK9507-30B	30	5.0	7.0	75	0.95	T3
	BUK7507-30B	30	7.0		75	0.95	T3
I ² PAK (SOT226) 	BUK7E2R7-30B	30	2.7		75	0.50	T3
	BUK9E04-30B	30	3.0	4.0	75	0.59	T3





Types in **bold red** represent new products - Types in **bold green** represent products in development

40 V Automotive MOSFETs

Package name	Type number	V_{DS} [V]	R_{DSon} @ 10 V (m Ω)	R_{DSon} @ 5 V (m Ω)	I_D [max] @ 25°c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
Power-SO8 (LFPAK56) 	BUK9Y3R0-40E	40	2.4	3.0	100	0.80	T6
	BUK9Y3R5-40E	40	2.9	3.5	100	0.90	T6
	BUK7Y3R0-40E	40	3.0		100	0.80	T6
	BUK7Y3R5-40E	40	3.5		100	0.90	T6
	BUK9Y4R4-40E	40	3.7	4.4	100	0.96	T6
	BUK7Y4R4-40E	40	4.4		100	0.96	T6
	BUK9Y7R6-40E	40	6.2	7.6	79	1.59	T6
	BUK7Y7R6-40E	40	7.6		79	1.59	T6
	BUK9Y12-40E	40	9.9	12.2	50	2.48	T6
	BUK7Y12-40E	40	12.2		50	2.48	T6
	BUK9Y21-40E	40	16.9	20.9	31	3.74	T6
	BUK7Y21-40E	40	20.9		31	3.74	T6
	BUK9Y29-40E	40	23.8	29.2	23	4.66	T6
	BUK7Y29-40E	40	29.2		24	4.66	T6
LFPAK56D (Dual Power-SO8) (SOT1205) 	BUK7K6R2-40E	40	5.9		40	2.21	T6
	BUK9K6R2-40E	40	6.0	6.2	40	2.21	T6
	BUK9K6R8-40E	40	6.1	6.9	40	2.36	T6
	BUK7K6R8-40E	40	6.8			2.36	T6
	BUK9K8R7-40E	40	7.8	8.9	30	2.84	T6
	BUK7K8R7-40E	40	8.5		30	2.84	T6
	BUK9K18-40E	40	16.0	19.5	30	3.96	T6
	BUK7K18-40E	40	17.4		30	3.96	T6
	BUK9K25-40E	40	23.1	26.7	24	4.68	T6
	BUK7K25-40E	40	25.0			4.68	T6
D ² PAK (SOT404) 	BUK961R6-40E	40	1.4	1.6	120	0.43	T6
	BUK761R6-40E	40	1.6		120	0.43	T6
	BUK761R7-40E	40	1.6		120	0.46	T6
	BUK762R0-40E	40	2.0		120	0.51	T6
	BUK962R6-40E	40	2.4	2.8	100	0.57	T6
	BUK762R6-40E	40	2.6		100	0.57	T6
	BUK963R1-40E	40	2.7	3.1	100	0.64	T6
	BUK963R2-40B	40	2.8	3.2	100	0.50	T3
	BUK762R9-40E	40	2.9		100	0.64	T6
	BUK763R1-40B	40	3.1		75	0.50	T3
	BUK964R1-40E	40	3.5	4.1	75	0.82	T6




Types in **bold red** represent new products - Types in **bold green** represent products in development

40 V Automotive MOSFETs

Package name	Type number	V_{DS} [V]	R_{DSon} @ 10 V (m Ω)	R_{DSon} @ 5 V (m Ω)	I_D [max] @ 25°c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
D ² PAK (SOT404) 	BUK9604-40A	40	4.0	4.4	75	0.50	T2
	BUK964R4-40B	40	4.0	4.4	75	0.59	T3
	BUK764R0-40E	40	4.0		75	0.82	T6
	BUK764R3-40B	40	4.3		75	0.59	T3
	BUK965R4-40E	40	4.4	5.4	75	1.09	T6
	BUK765R3-40E	40	4.9		75	1.09	T6
	BUK9606-40B	40	5.0	6.4	75	0.74	T3
	BUK765R2-40B	40	5.2		75	0.74	T3
	BUK9609-40B	40	7.0	9.0	75	0.95	T3
	BUK768R1-40E	40	7.2		75	1.56	T6
BUK7608-40B	40	8.0		75	0.95	T3	
DPAK (SOT428) 	BUK625R0-40C	40	5.0	6.9	90	0.95	T4
	BUK725R0-40C	40	5.0		75	0.95	T4
	BUK626R2-40C	40	6.2	8.8	90	1.17	T4
	BUK9209-40B	40	7.0	9.0	75	0.95	T3
	BUK7208-40B	40	8.0		75	0.95	T3
	BUK6212-40C	40	11.2	16.3	50	1.87	T4
	BUK6218-40C	40	16.0		42	2.52	T4
TO-220AB (SOT78A) 	BUK751R8-40E	40	1.8		120	0.43	T6
	BUK752R3-40E	40	2.3		120	0.51	T6
	BUK953R2-40B	40	2.8	3.2	100	0.50	T3
	BUK753R1-40E	40	3.1		100	0.64	T6
	BUK753R1-40B	40	3.1		75	0.50	T3
	BUK9504-40A	40	4.0	4.4	75	0.50	T2
	BUK954R4-40B	40	4.0	4.4	75	0.59	T3
	BUK754R3-40B	40	4.3		75	0.59	T3
	BUK9506-40B	40	5.0	6.4	75	0.74	T3
	BUK755R2-40B	40	5.2		75	0.74	T3
	BUK9509-40B	40	7.0	9.0	75	0.95	T3
	BUK758R3-40E	40	7.4		75	1.56	T6
	BUK7508-40B	40	8.0		75	0.95	T3
I ² PAK (SOT226) 	BUK7E1R8-40E	40	1.8		120	0.43	T6
	BUK7E1R9-40E	40	1.9		120	0.46	T6
	BUK7E2R3-40E	40	2.3		120	0.51	T6
	BUK7E3R1-40E	40	3.1		100	0.64	T6
	BUK7E8R3-40E	40	7.4		75	1.56	T6



Types in **bold red** represent new products

55 V - 60 V Automotive MOSFETs

Package name	Type number	V_{DS} [V]	R_{DSon} @ 10 V (m Ω)	R_{DSon} @ 5 V (m Ω)	I_D [max] @ 25°c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
Power-SO8 (LFAK56) 	BUK9Y4R8-60E	60	4.1	4.8	100	0.60	T6
	BUK7Y4R8-60E	60	4.8		100	0.60	T6
	BUK9Y6R0-60E	60	5.2	6.0	100	0.70	T6
	BUK7Y6R0-60E	60	6.0		100	0.70	T6
	BUK9Y7R2-60E	60	6.2	7.2	100	0.84	T6
	BUK7Y7R2-60E	60	7.2		100	0.84	T6
	BUK9Y8R7-60E	60	7.5	8.7	89	1.00	T6
	BUK7Y8R7-60E	60	8.7		89	0.96	T6
	BUK9Y15-60E	60	13.1	15.1	53	1.59	T6
	BUK7Y15-60E	60	15.1		53	1.59	T6
	BUK9Y25-60E	60	21.6	25.0	33	2.48	T6
	BUK7Y25-60E	60	25.0		33	2.48	T6
	BUK9Y43-60E	60	37.3	43.2	20	3.74	T6
	BUK7Y43-60E	60	43.2		20	3.74	T6
	BUK9Y59-60E	60	51.3	59.3	15	4.66	T6
BUK7Y59-60E	60	59.3		16	4.66	T6	
LFAK56D (Dual Power-SO8) 	BUK9K12-60E	60	10.7	11.5	40	2.21	T6
	BUK7K12-60E	60	11.2		40	2.21	T6
	BUK9K13-60E	60	12.0	12.9	40	2.36	T6
	BUK7K13-60E	60	12.5		40	2.36	T6
	BUK9K17-60E	60	16.1	17.5	30	2.84	T6
	BUK7K17-60E	60	17.0		30	2.84	T6
	BUK9K35-60E	60	32.0	35.0	22	3.96	T6
	BUK7K35-60E	60	34.6		22	3.96	T6
	BUK9K52-60E	60	49.0	55.0	17	4.68	T6
	BUK7K52-60E	60	51.8		17	4.68	T6
D ² PAK (SOT404) 	BUK962R5-60E	60	2.3	2.5	120	0.43	T6
	BUK762R4-60E	60	2.4		120	0.43	T6
	BUK962R8-60E	60	2.5	2.8	120	0.46	T6
	BUK762R6-60E	60	2.6		120	0.46	T6
	BUK963R3-60E	60	3.0	3.3	120	0.51	T6
	BUK763R1-60E	60	3.1		120	0.51	T6
	BUK964R2-55B	55	3.7	4.2	75	0.50	T3
	BUK763R9-60E	60	3.9		100	0.57	T6
	BUK964R2-60E	60	3.9	4.2	100	0.57	T6
	BUK764R0-55B	55	4.0		75	0.50	T3

Types in **bold red** represent new products - Types in **bold green** represent products in development

55 V - 60 V Automotive MOSFETs

Package name	Type number	V_{DS} [V]	R_{DSon} @ 10 V (m Ω)	R_{DSon} @ 5 V (m Ω)	I_D [max] @ 25°c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
D ² PAK (SOT404) 	BUK964R8-60E	60	4.4	4.8	100	0.64	T6
	BUK764R4-60E	60	4.5		100	0.64	T6
	BUK9606-55B	55	5.4	6.0	75	0.58	T3
	BUK966R5-60E	60	5.9	6.5	75	0.82	T6
	BUK7606-55B	55	6.0		75	0.59	T3
	BUK766R0-60E	60	6.0		75	0.82	T6
	BUK9608-55B	55	7.0	8.4	75	0.74	T3
	BUK7607-55B	55	7.1		75	0.74	T3
	BUK969R0-60E	60	8.0	9.0	75	1.09	T6
	BUK768R3-60E	60	8.3		75	1.09	T6
	BUK9610-55A	55	9.0	10.0	75	0.75	T2
	BUK7610-55AL	55	10.0		75	0.50	T2
	BUK9611-55A	55	10.0	11.0	75	0.90	T2
	BUK9612-55B	55	10.0	12.0	75	0.95	T3
	BUK7611-55A	55	11.0		75	0.90	T2
	BUK7611-55B	55	11.0		75	0.95	T3
	BUK9614-60E	60	12.8	14.0	56	1.56	T6
	BUK7613-60E	60	13.0		58	1.56	T6
	BUK9616-55A	55	15.0	16.0	66	1.10	T2
	BUK9618-55A	55	16.0	18.0	61	1.10	T2
	BUK9620-55A	55	18.0	20.0	54	1.20	T2
	BUK7620-55A	55	20.0		54	1.20	T2
	BUK9624-55A	55	21.7	24.0	46	1.40	T2
	BUK7624-55A	55	24.0		47	1.40	T2
	BUK9628-55A	55	25.0	28.0	42	1.50	T2
	BUK7628-55A	55	28.0		42	1.50	T2
	BUK9635-55A	55	32.0	35.0	34	1.80	T2
BUK7635-55A	55	35.0		35	1.70	T2	
BUK9675-55A	55	68.0	75.0	20	2.40	T2	
BUK7675-55A	55	75.0		20	2.40	T2	
DPAK (SOT428) 	BUK6207-55C	55	7.8	10.0	90	0.95	T4
	BUK6210-55C	55	9.6	13.2	78	1.17	T4
	BUK7210-55B	55	10.0		75	0.95	T3
	BUK9212-55B	55	10.0	12.0	75	0.95	T3
	BUK7212-55B	55	12.0		75	0.95	T3
	BUK9215-55A	55	13.6	15.0	62	1.30	T2




Types in **bold red** represent new products

55 V - 60 V Automotive MOSFETs

Package name	Type number	V_{DS} [V]	R_{DSon} @ 10 V (m Ω)	R_{DSon} @ 5 V (m Ω)	I_D [max] @ 25° c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
DPAK (SOT428)	BUK7215-55A	55	15.0		62	1.30	T2
	BUK9219-55A	55	17.6	19.0	55	1.30	T2
	BUK6217-55C	55	19.0	24.5	44	1.87	T4
	BUK7219-55A	55	19.0		55	1.30	T2
	BUK9222-55A	55	20.0	22.0	48	1.50	T2
	BUK7222-55A	55	22.0		48	1.50	T2
	BUK9225-55A	55	22.0	25.0	43	1.60	T2
	BUK7225-55A	55	25.0		43	1.60	T2
	BUK9230-55A	55	27.0	30.0	38	1.70	T2
	BUK6228-55C	55	29.0	38.0	31	2.52	T4
	BUK7230-55A	55	30.0		38	1.70	T2
	BUK9237-55A	55	33.0	37.0	32	1.94	T2
	BUK7237-55A	55	37.0		32	1.90	T2
	BUK9245-55A	55	40.0	45.0	28	2.10	T2
	BUK9277-55A	55	69.0	77.0	18	2.93	T2
	BUK7277-55A	55	77.0		18	2.90	T2
BUK92150-55A	55	125.0	140.0	11	4.10	T2	
BUK72150-55A	55	150.0		11	4.10	T2	
TO-220AB (SOT78A)	BUK954R2-55B	55	3.7	4.2	75	0.50	T3
	BUK754R0-55B	55	4.0		75	0.50	T3
	BUK9508-55B	55	7.0	8.4	75	0.74	T3
	BUK7507-55B	55	7.1		75	0.74	T3
	BUK953R5-60E	60	3.4	3.7	120	0.51	T6
	BUK7510-55AL	55	10.0		75	0.50	T2
	BUK9512-55B	55	10.0	12.0	75	0.95	T3
	BUK7511-55B	55	11.0		75	0.95	T3
	BUK954R8-60E	60	4.5	4.9	100	0.64	T6
	BUK7506-55A	55	6.3		75	0.50	T2
	BUK7508-55A	55	8.0		75	0.59	T2
	BUK7509-55A	55	9.0		75	0.71	T2
	BUK9511-55A	55	10.0	11.0	75	0.90	T2

Types in **bold red** represent new products

55 V - 60 V Automotive MOSFETs

Package name	Type number	V_{DS} [V]	$R_{DS(on)}$ @ 10 V (m Ω)	$R_{DS(on)}$ @ 5 V (m Ω)	I_D [max] @ 25°c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
TO-220AB (SOT78A) 	BUK9516-55A	55	15.0		66	1.10	T2
	BUK7516-55A	55	16.0	16.0	66	1.10	T2
	BUK9518-55A	55	16.0		61	1.10	T2
	BUK7520-55A	55	20.0	18.0	54	1.20	T2
	BUK9524-55A	55	21.7		46	1.40	T2
	BUK7528-55A	55	28.0	24.0	42	1.50	T2
	BUK9535-55A	55	32.0		34	1.80	T2
	BUK7535-55A	55	35.0	35.0	35	1.70	T2
	BUK9575-55A	55	68.0		20	2.40	T2
	BUK7575-55A	55	75.0	75.0	20	2.40	T2
I ² PAK (SOT226) 	BUK7E2R6-60E	60	2.6		120	0.43	T6
	BUK7E3R5-60E	60	3.5		120	0.51	T6
	BUK7E4R6-60E	60	4.6		100	0.64	T6
	BUK9E06-55B	55	5.4		75	0.58	T3
	BUK9E06-55A	55	5.8	6.0	75	0.50	T2
	BUK9E08-55B	55	7.0	6.3	75	0.74	T3
	BUK7E07-55B	55	7.1	8.4	75	0.74	T3
	BUK7E11-55B	55	11.0		75	0.95	T3
	BUK7E13-60E	60	13.0		58	1.56	T6
SC-73 SOT223 	BUK9832-55A	55	29.0		12	15.00	T2
	BUK9880-55A	55	73.0	32.0	7	15.00	T2
	BUK7880-55A	55	80.0	80.0	7	15.00	T2
	BUK98150-55A	55	137.0		6	15.00	T2
	BUK78150-55A	55	150.0	150.0	6	15.00	T2




Types in **bold red** represent new products

75 V - 80 V Automotive MOSFETs

Package name	Type number	V_{DS} [V]	R_{DSon} @ 10 V (m Ω)	R_{DSon} @ 5 V (m Ω)	I_D [max] @ 25°c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
Power-SO8 (LFPAK56)	BUK9Y8R5-80E	80	7.4	8.5	100	0.55	T6
	BUK7Y7R8-80E	80	7.8		100	0.55	T6
	BUK9Y11-80E	80	9.4	11.0	93	0.70	T6
	BUK7Y9R9-80E	80	9.9		93	0.70	T6
	BUK9Y12-80E	80	10.9	11.9	77	0.84	T6
	BUK7Y12-80E	80	11.9		77	0.84	T6
	BUK9Y14-80E	80	13.0	14.2	66	0.96	T6
	BUK7Y14-80E	80	14.2		66	0.96	T6
	BUK9Y25-80E	80	22.7	24.7	39	1.59	T6
	BUK7Y25-80E	80	24.7		39	1.59	T6
	BUK9Y41-80E	80	38.0	41.4	24	2.48	T6
	BUK7Y41-80E	80	41.4		24	2.48	T6
	BUK9Y72-80E	80	65.8	71.7	15	3.74	T6
	BUK7Y72-80E	80	71.7		15	3.74	T6
	BUK9Y107-80E	80	93.0	107.0	11	4.66	T6
BUK7Y98-80E	80	97.8		11	4.66	T6	
LFPAK56D (Dual Power-SO8) (SOT1205)	BUK9K19-80E	80	17.8	18.8	38	2.21	T6
	BUK7K19-80E	80	18.0		39	2.21	T6
	BUK9K21-80E	80	19.9	21.0	35	2.36	T6
	BUK7K21-80E	80	20.2		35	2.36	T6
	BUK9K29-80E	80	27.4	29.1	27	2.84	T6
	BUK7K29-80E	80	27.9		27	2.84	T6
	BUK9K57-80E	80	55.5	59.0	16	3.96	T6
	BUK7K57-80E	80	56.6		16	3.96	T6
	BUK9K85-80E	80	83.8	89.3	12	4.68	T6
BUK7K85-80E	80	85.7		12	4.68	T6	
D ² PAK (SOT404)	BUK763R8-80E	80	3.8		120	0.43	T6
	BUK964R2-80E	80	4.0	4.2	120	0.43	T6
	BUK764R2-80E	80	4.2		120	0.46	T6
	BUK964R7-80E	80	4.5	4.7	120	0.46	T6
	BUK9606-75B	75	5.5	6.1	75	0.50	T3
	BUK7606-75B	75	5.6		75	0.50	T3
	BUK9609-75A	75	8.5	9.0	75	0.65	T2
	BUK769R6-80E	80	9.6		75	0.82	T6
	BUK9611-80E	80	10.0	11.0	75	0.82	T6
	BUK7613-75B	75	13.0		75	0.95	T3
	BUK9616-75B	75	14.0	16.4	67	0.95	T3
	BUK9623-75A	75	22.0	23.0	53	1.10	T2
	BUK7623-75A	75	23.0		53	1.10	T2
	DPAK (SOT428)	BUK6211-75C	75	11.0	13.2	74	0.95
BUK7214-75B		75	14.0		70	0.95	T3
BUK6215-75C		75	15.0	18.0	57	1.17	T4
BUK9217-75B		75	15.0	17.0	64	0.95	T3
BUK9226-75A		75	24.6	26.0	45	1.30	T2
BUK7226-75A		75	26.0		45	1.00	T2
BUK6226-75C		75	29.0	35.0	33	1.87	T4
BUK6246-75C		75	46.0	56.0	22	2.52	T4
TO-220AB (SOT78A)	BUK753R8-80E	80	4.0		120	0.43	T6
	BUK9506-75B	75	5.5	6.1	75	0.50	T3
	BUK7506-75B	75	5.6		75	0.50	T3
	BUK7509-75A	75	9.0		75	0.65	T2
	BUK7513-75B	75	13.0		75	0.95	T3
BUK9516-75B	75	14.0	16.4	67	0.95	T3	






Types in **bold red** represent new products - Types in **bold green** represent products in development

100 V Automotive MOSFETs

Package name	Type number	V _{DS} [V]	R _{DSon} @ 10 V (mΩ)	R _{DSon} @ 5 V (mΩ)	I _D [max] @ 25°c(A)	R _{th(j-mb)} [max] [K/W]	Technology
Power-SO8 (LFPAK56) 	BUK9Y12-100E	100	12	12	90	0.6	T6
	BUK7Y12-100E	100	12		90	0.6	T6
	BUK9Y15-100E	100	15	15	71	0.7	T6
	BUK7Y15-100E	100	16		71	0.7	T6
	BUK9Y19-100E	100	18	19	59	0.8	T6
	BUK7Y19-100E	100	19		59	0.8	T6
	BUK9Y22-100E	100	22	22	51	1.0	T6
	BUK7Y22-100E	100	22		51	1.0	T6
	BUK9Y38-100E	100	38	38	30	1.6	T6
	BUK7Y38-100E	100	38		30	1.6	T6
	BUK9Y65-100E	100	63	65	18	2.5	T6
	BUK7Y65-100E	100	65		18	2.5	T6
	BUK9Y113-100E	100	110	113	11	3.7	T6
	BUK7Y113-100E	100	113		11	3.7	T6
	BUK9Y153-100E	100	149	153	9	4.7	T6
BUK7Y153-100E	100	153		9	4.7	T6	
LFPAK56D (Dual Power-SO8) (SOT1205) 	BUK9K29-100E	100	27	29	30	2.2	T6
	BUK7K29-100E	100	28		30	2.2	T6
	BUK7K32-100E	100	31		27	2.4	T6
	BUK9K32-100E	100	31	33	27	2.4	T6
	BUK9K45-100E	100	42	45	21	2.8	T6
	BUK7K45-100E	100	44		21	2.8	T6
	BUK9K89-100E	100	85	89	13	4.0	T6
	BUK7K89-100E	100	88		12	4.0	T6
	BUK7K134-100E	100	134		9	4.7	T6
	BUK9K134-100E	100	154	159	9	4.7	T6
D ² PAK (SOT404) 	BUK765R0-100E	100	5		120	0.4	T6
	BUK965R8-100E	100	6	6	120	0.4	T6
	BUK768R1-100E	100	8		100	0.6	T6
	BUK969R3-100E	100	9	9	100	0.6	T6
	BUK7613-100E	100	13		72	0.8	T6
	BUK9615-100E	100	14	15	66	0.8	T6
	BUK9620-100B	100	19	20	63	0.8	T3
	BUK7619-100B	100	19		64	0.7	T3
	BUK7620-100A	100	20		63	0.8	T2
	BUK7626-100B	100	26		49	1.0	T3

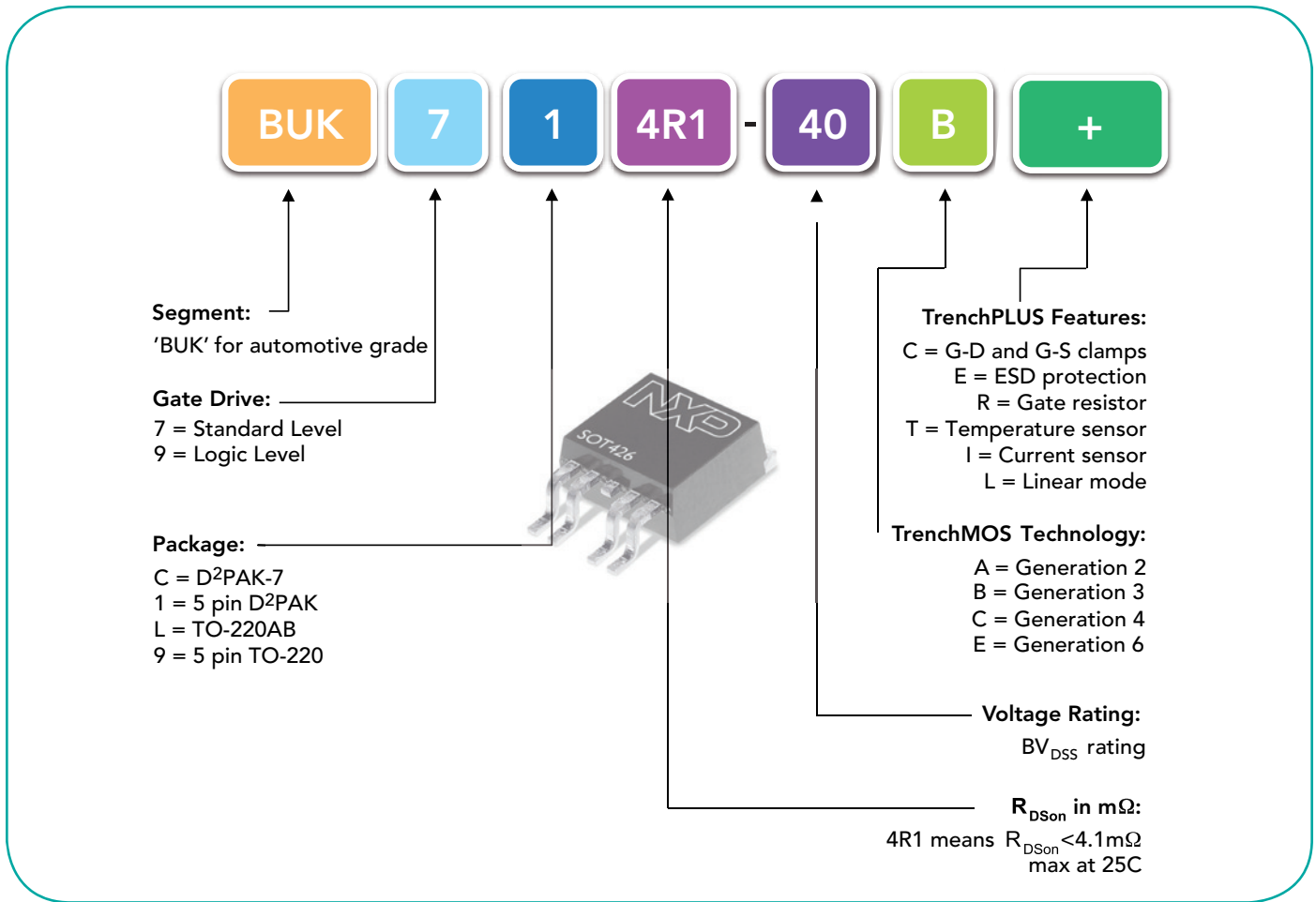
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100 V Automotive MOSFETs

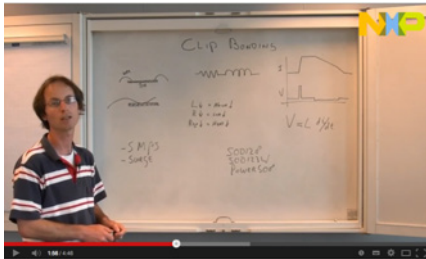
Package name	Type number	V_{DS} [V]	R_{DSon} @ 10 V (m Ω)	R_{DSon} @ 5 V (m Ω)	I_D [max] @ 25° c(A)	$R_{th(j-mb)}$ [max] [K/W]	Technology
D ² PAK (SOT404) 	BUK9628-100A	100	27	28	49	0.9	T2
	BUK9629-100B	100	27	29	46	1.0	T3
	BUK7628-100A	100	28		47	0.9	T2
	BUK7631-100E	100	31		34	1.6	T6
	BUK9637-100E	100	36	37	31	1.6	T6
	BUK9660-100A	100	58	60	26	1.4	T2
	BUK7660-100A	100	60		26	1.4	T2
	BUK9675-100A	100	72	75	23	1.5	T2
	BUK7675-100A	100	75		23	1.5	T2
DPAK (SOT428) 	BUK7227-100B	100	27		48	1.0	T3
	BUK9230-100B	100	28	30	47	1.0	T3
	BUK9240-100A	100	39	40	33	1.3	T2
	BUK7240-100A	100	40		34	1.3	T2
	BUK9275-100A	100	72	75	22	1.7	T2
	BUK7275-100A	100	75		22	1.7	T2
TO-220AB (SOT78A) 	BUK755R4-100E	100	5		120	0.4	T6
	BUK9510-100B	100	10	10	75	0.5	T3
	BUK7510-100B	100	10		75	0.5	T3
	BUK9515-100A	100	14	15	75	0.7	T2
	BUK7515-100A	100	15		75	0.5	T2
	BUK9520-100B	100	19	20	63	0.8	T3
	BUK9520-100A	100	19	20	63	0.8	T2
	BUK7520-100A	100	20		63	0.8	T2
	BUK7526-100B	100	26		49	1.0	T3
	BUK9529-100B	100	27	29	46	1.0	T3
	BUK7528-100A	100	28		47	0.9	T2
	BUK9535-100A	100	34	35	41	1.0	T2
	BUK7535-100A	100	35		41	1.0	T2
	BUK7540-100A	100	40		37	1.1	T2
	BUK9575-100A	100	72	75	23	1.5	T2
	BUK7575-100A	100	75		23	1.5	T2
I ² PAK (SOT226) 	BUK7E5R2-100E	100	5		120	0.4	T6
SC-73 SOT223 	BUK9875-100A	100	72	75	7	15	T2
	BUK98180-100A	100	173	180	5	15	T2

Types in **bold red** represent new products

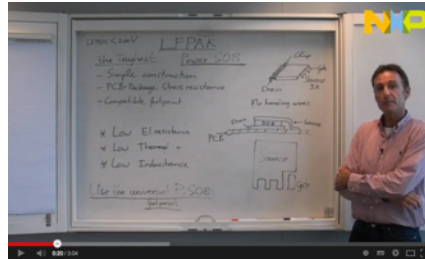
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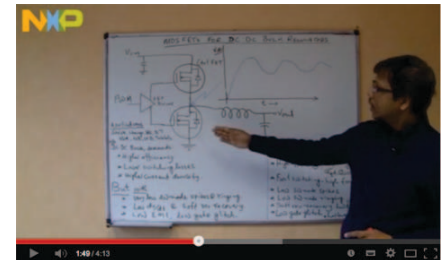
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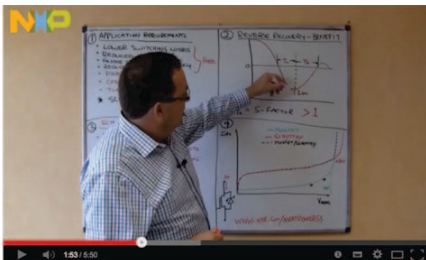
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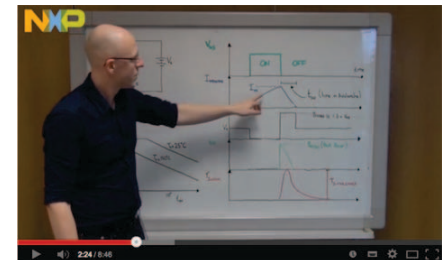
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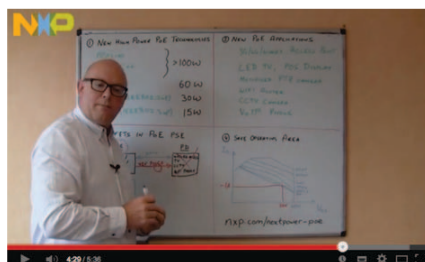
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