



Ten new high performance MOSFETs for power management

# High performance MOSFETs for DC-DC converters, OR-ing and load switching

NXP's range of 30V Trench 6 logic level MOSFETs deliver significant improvements in efficiency when used in switching power supply applications, DC-DC converters, POL converters and power OR-ing. The LPAK package delivers high current capability and low thermal resistance in a 5mm x 6mm Power SO8 footprint making the new range of MOSFETs the natural choice for demanding power-switching applications.

## Key benefits

Low PCB space, low cost

- ▶ Increased power density whilst maintaining the Power SO8 footprint
- ▶ High efficiency gains in switching power converters
- ▶ Faster switching supports higher frequencies and use of smaller inductors & capacitors
- ▶ Lower in-circuit power dissipation reduces the need for cooling
- ▶ Uses the PCB as a heatsink and reduces the need for external heatsink

## Key features

- ▶ Low ON resistance –  $R_{DS(ON)}$  typical from 1.2mOhm (PSMN1R7-30YL)
- ▶ Low thermal resistance -  $R_{th(jc)}$  from 1.1 °K/W
- ▶ Low package inductance - typically 1.1nH
- ▶ Footprint compatible with SO8 (5mm x 6mm)
- ▶ Low profile - package height 1.1mm
- ▶ Recommended for switching frequencies up to 1MHz

## Key applications

- ▶ Voltage Regulator
- ▶ Motor Control
- ▶ OR-ing
- ▶ Load switching
- ▶ Li-ion battery protection
- ▶ LED lighting / dimming



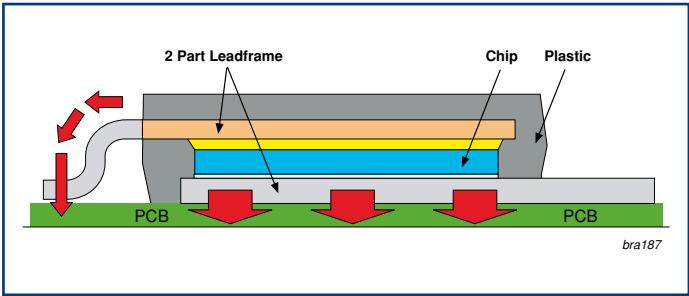
Ten new devices have been added to the PSMN 30 V range of MOSFETs from NXP. This range combines the latest silicon technology (Trench 6), with the high-performance LPAK package, which challenges the best performing devices available in today's marketplace.

Trench 6 silicon technology provides our lowest  $R_{DS(ON)}$  performance yet, at 1.2mOhm typical at  $V_{GS}=10V$  (PSMN1R7-30YL). These parts are highly suited to power OR-ing and SYNC-FET in synchronous buck-regulator applications.

Trench 6 technology also delivers low gate-charge ( $Q_g$ ) and low gate-resistance ( $R_g$ ) Making the devices suitable for switching frequencies typically up to 1MHz and making them ideally suited for use in high-efficiency synchronous buck regulators.

LPAK (Loss Free PAcKage) delivers compact power in a surface-mount package. It provides superior electrical & thermal resistance as well as low inductance, while maintaining the widely accepted SO8 footprint. LPAK is compatible with 'visual inspection' techniques unlike many other Power-SO8 devices.

The combination of Trench 6 silicon and LPAK package delivers higher operating efficiencies, improved thermal characteristics and high power density which are essential for today's high performance power management applications.



| Part Number  | $V_{DS}$ | MAX<br>$R_{DS(ON)}$ @<br>$V_{GS} = 10V$ | MAX<br>$R_{DS(ON)}$ @<br>$V_{GS} = 4.5V$ |
|--------------|----------|---|--|
|              | V        | mΩ                                      | mΩ                                       |
| PSMN1R7-30YL | 30       | 1.7                                     | 2.6                                      |
| PSMN2R0-30YL | 30       | 2.0                                     | 3.2                                      |
| PSMN2R5-30YL | 30       | 2.4                                     | 3.9                                      |
| PSMN3R0-30YL | 30       | 3.0                                     | 4.8                                      |
| PSMN3R5-30YL | 30       | 3.5                                     | 5.6                                      |
| PSMN4R0-30YL | 30       | 4.0                                     | 6.5                                      |
| PSMN5R0-30YL | 30       | 5.0                                     | 8.0                                      |
| PSMN6R0-30YL | 30       | 6.0                                     | 9.7                                      |
| PSMN7R0-30YL | 30       | 7.0                                     | 11.3                                     |
| PSMN9R0-30YL | 30       | 8.0                                     | 13.8                                     |

