

## Industrial Applications

### Features and Benefits:

- Low on resistance per silicon area
- Optimized for both fast switching and low gate charge
- Excellent gate, avalanche and dynamic dv/dt ruggedness

### Market/Applications:

- DC Motor Drives
- Uninterruptible Power Supplies (UPS)
- DC-DC Converters
- Power Tools
- Electric Bikes

### The IR Advantage:

- Best die to footprint ratio
- Industry's lowest  $R_{DS(on)}$
- Largest range of packages up to 250V
- Industry-leading quality

Your **FIRST CHOICE**  
for Performance



As the industrial market continues to evolve, so does the need for reliable and rugged switching devices. Large battery driven applications, such as forklifts, uninterruptible power supply (UPS) systems, power tools, electric bikes, and other DC motor driven systems are pushing the limits of efficiency and reliability as the need for more power and extended battery life continues to be a staple of newer designs. The need for rugged and efficient MOSFETs is an integral part of these designs. IR's latest offering of power MOSFETs meets the demands of these applications as they offer the best performing devices in the most reliable package offerings on the market.

The new 7-pin D<sup>2</sup>PAK, for example, combined with IR's latest silicon technology offers superior  $R_{DS(on)}$  and increased power rating compared to standard D<sup>2</sup>PAK devices. A standard three-lead D<sup>2</sup>PAK is limited to approximately 100A, depending on lead cross-section and manufacturer's specification method. IR's devices have an enhanced 7-pin lead frame that allows a larger wire bond area, reducing die-free package resistance. Using the D<sup>2</sup>PAK outline, the 7-pin version can also increase the voltage rating from the standard D<sup>2</sup>PAK and thus increase the safety margin in specific circuitry and load topologies where a higher voltage rating can handle large transients caused by sudden changes in the load.

The 40V IRF2804S-7PPBF (160A continuous) and the 55V IRF3805S-7PPBF (160A continuous) have an  $R_{DS(on)}$  value of 1.6 m $\Omega$  and 2.6m $\Omega$  respectively. The enhanced current rating allows for a considerable improvement in power density. They are an ideal replacement for multiple D<sup>2</sup>PAK devices as well as larger through-hole package devices. In addition, repetitive avalanche (EAR) is characterized on the data sheet and guaranteed up to maximum junction temperature (T<sub>j-max</sub>).

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## 7-Pin D<sup>2</sup>PAK : A Unique Alternative

7-Pin D<sup>2</sup>PAK advantages over standard D<sup>2</sup>PAK

- Up to 0.4mΩ less R<sub>DS(on)</sub>
- Double the current handling capability
- Superior thermal performance



IRF2804SPBF 40V VDS	
Id	R <sub>DS(on)</sub>
270A	2.0mΩ

IRF2804S-7PPBF 40V VDS	
Id	R <sub>DS(on)</sub>
320A	1.6mΩ

Part Number	VDS (V)	RDS(on) Max. @VGS=10V (mΩ)	Id (A)	Qg (nC)	Package
IRF2804S-7PPBF	40	1.6	320	170	D <sup>2</sup> PAK-7
IRF2804SPBF	40	2.0	270	160	D <sup>2</sup> PAK
IRF2804PBF	40	2.3	270	160	T0-220
IRF3805S-7PPBF	55	2.6	240	130	D <sup>2</sup> PAK-7
IRFB3206PBF	60	3.0	210	120	T0-220
IRFS3206PBF	60	3.0	210	120	D <sup>2</sup> PAK
IRFP3206PBF	60	3.0	210	120	T0-247
IRF1018EPBF	60	8.4	79	69	T0-220
IRF1018ESPBF	60	8.4	79	69	D <sup>2</sup> PAK
IRFR1018EPBF	60	8.4	79	69	D-PAK
IRFB3806PBF	60	15.8	43	30	T0-220
IRFS3806PBF	60	15.8	43	30	D <sup>2</sup> PAK
IRFR3806PBF	60	15.8	43	30	D-PAK
IRFB3077PBF	75	3.3	210	160	T0-220
IRFP3077PBF	75	3.3	210	160	T0-247
IRF2907ZS-7PPBF	75	3.8	180	170	D <sup>2</sup> PAK-7
IRFS3207ZPBF	75	4.1	170	120	D <sup>2</sup> PAK
IRFB3607PBF	75	9.0	80	84	T0-220
IRFS3607PBF	75	9.0	80	84	D <sup>2</sup> PAK
IRFR3607PBF	75	9.0	80	84	D-PAK
IRFB4110PBF	100	4.5	180	150	T0-220
IRFP4110PBF	100	4.6	168	152	T0-247
IRFS4310ZPBF	100	6.0	127	120	D <sup>2</sup> PAK
IRFP4310ZPBF	100	6.0	127	120	T0-247
IRFB4321PBF	150	15	83	71	T0-220
IRFS4321PBF	150	15	83	71	D <sup>2</sup> PAK
IRFB4227PBF	200	24	65	70	T0-220
IRFS4227PBF	200	26	62	70	D <sup>2</sup> PAK
IRFB4332PBF	250	33	60	99	T0-220
IRFS4229PBF	250	48	45	72	D <sup>2</sup> PAK