

40V High-Current TrenchT4™ Power MOSFETs

Ideal for synchronous rectification applications

I. MAIN FEATURES

- Ultra-low on-state resistance $R_{DS(on)}$
- High current handling capability
- Avalanche rated
- 175°C operating temperature
- High power density
- Space savings
- Easy mounting
- International standard packages

II. KEY TECHNOLOGY ADVANTAGES

TrenchT4™ Technology

These Power MOSFETs exhibit on-state resistance as low as 1.7 milliohms (devices with less than 1 milliohm on-resistance soon to be released), enabling a reduction in the number of MOSFETs needed, especially in synchronous rectification. Paralleling multiple devices may not be necessary due to their high-current carrying capability and high power density, thereby simplifying the power system and improving its reliability at the same time.

Avalanche ruggedness

The new MOSFETs are avalanche rated as well and can withstand a junction temperature up to 175°C. They are thus robust against device failure caused by voltage transients and the accidental turn-on of parasitic bipolar transistors inherent in the MOSFET structure.

III. TARGET APPLICATIONS

Ideal applications include synchronous rectification, high-current switching power supplies, battery powered electric motors, resonant-mode power supplies, electronic ballasts, Class-D audio amplifiers, electric forklifts, and cordless power tools.

IV. COMPETITIVE LANDSCAPE

The following analysis has been done using devices having similar breakdown voltages and drain current ratings.

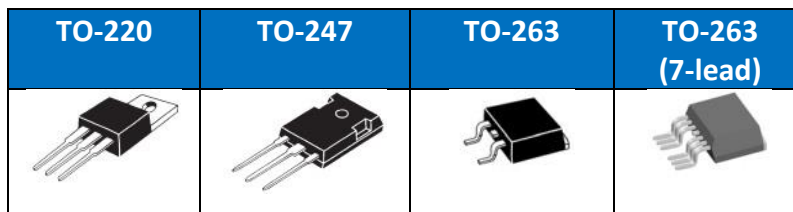
	IXTA340N04T4 (IXYS)	IRFS3004PbF (Infineon)
Technology	TrenchT4™	HEXFET®
V _{DSS}	40V	40V
I _D @ T _J =25 °C	340A	340A
R _{DS(on)} (max)	1.7mΩ	1.75mΩ
E _{AS} (max)	1.2J	0.3J
R _{thJC} (max)	0.31 °C/W	0.4 °C/W
P _D	480W	380W
Package type	TO-263	TO-263

Table 1: IXTA340N04T4 vs. IRFS3004PbF

Compared with the 40V HEXFET® IRFS3004PbF from Infineon, the IXYS part IXTA340N04T4 has a better (lower) thermal resistance (R_{thJC}) and displays a superior ruggedness with a higher avalanche rating E_{AS} of 1.2 joule.

V. AVAILABLE PACKAGES

These new 40V TrenchT4™ Power MOSFETs are available in the following international standard size packages: TO-220, TO-263(3- or 7-lead), SOT-227, and TO-247. Other standard and non-standard types may be manufactured upon request.



VI. PRICING

Part Number	V _{DSS} (V)	I _{D25} T _C =25°C (A)	R _{DS(on)} max. T _J =25°C (mΩ)	Package Type	Pack Quantity	Average Selling Price (1 unit) (USD)
IXTA270N04T4	40	270	2.2	TO-263	50	\$3.25
IXTA270N04T4-7	40	270	2.2	TO-263 (7-lead)	50	\$3.25
IXTH270N04T4	40	270	2.4	TO-247	30	\$4.03
IXTP270N04T4	40	270	2.4	TO-220	50	\$2.97
IXTA340N04T4	40	340	1.7	TO-263	50	\$4.03
IXTA340N04T4-7	40	340	1.7	TO-263 (7-lead)	50	\$4.03
IXTH340N04T4	40	340	1.9	TO-247	30	\$4.98
IXTP340N04T4	40	340	1.9	TO-220	50	\$3.86