

New CoolMOS™ portfolio expanded in ISOPLUS™ packages

May 2009

Overview:

CoolMOS™ – Coolest & fastest

The revolutionary CoolMOS™ power MOSFET family enables a significant reduction of conducting and switching losses in Switched Mode Power Supplies (SMPS). Latest generation of high voltage power MOSFETs will make AC/DC power supplies even more efficient, more compact, lighter and cooler. This target is achieved by offering the lowest on-state resistance per package outline, the fastest switching speed and the lowest gate drive requirements of high voltage MOSFETs commercially available.

IXYS ISOPLUS™ packaging – Highest reliability & flexibility

The new CoolMOS™ is available in standard packages like T0220 or T0247 and Full Plastic T0220. Now IXYS offers also DCB isolated packages like ISOPLUS220™. ISOPLUS™ versions have the same footprint as the unisolated standard packages but offer highest reliability and excellent thermal performance. In ISOPLUS™ packages the dies are soldered on a DCB thereby utilizing the high performance of modules. This construction has a thermal expansion coefficient which is very close to that of the silicon and better matched than the Cu based standard packages. Therefore in ISOPLUS™ packages the die sees reduced mechanical stress under thermal or power cycling resulting in world class reliability.

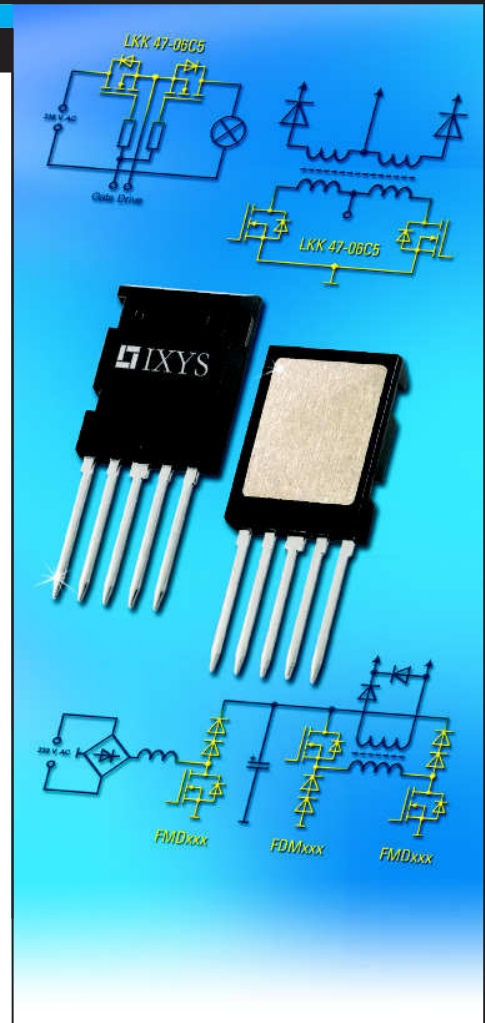
In most applications power devices must be electrically isolated. ISOPLUS™ packages offer isolation without the need of using isolating foils. Therefore ISOPLUS™ gives a very low thermal impedance from die to heat sink.

ISOPLUS™ provides the most advantageous platform for multi chip packaging. Configurations such as buck or boost converters or half bridge topologies are easy to implement. Features include excellent switching behaviour due to low inductive current paths as dies are located within one package.

FMD 15-06KC5 or FMD 47-06KC5 are examples of where ISOPLUS™ technology can be used to increase power density by integrating PFC Mosfet and PFC diode into one package.

The latest product is MKE15R600DCFC using a SiC Boost Diode.

Another benefit is the small coupling capacity between die and heat sink. This helps to reduce EMI emissions. The combination of a very efficient CoolMOS™ and the outstanding ISOPLUS™ packaging technology gives the designer an extremely powerful and reliable solution.



Features

- Worldwide best $R_{DS(ON)}$ per package outline
- Ultra low gate charge
- Extreme dV/dt rated
- High peak current capability
- RoHS compliant

Applications

- Switched Mode Power Supplies (SMPS)
- Adapter
- PFC Boost Stage
- Half Forward Converter
- AC switch

Benefits

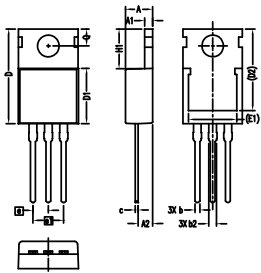
- More compact
- Lighter
- Highest reliability
- Lowest conduction and switching losses
- Low gate drive power

SUMMARY TABLE - CoolMOS™

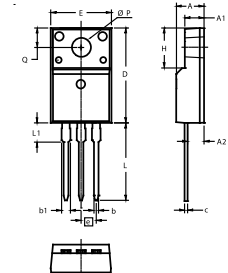
Type	V _{DS} Max V _{DS}	I _{D25} T _c = 25°C A	I _{D90} T _c = 90°C A	R _{DS(ON)} max T _{vj} = 25°C mΩ	Q _(on) typ nC	Circuit	Package
Non isolated							
IXKP 10N60C5	600	10	7	0,385	17	single switch	TO220
IXKP 13N60C5	600	13	9	0,300	22	single switch	TO220
IXKP 20N60C5	600	20	13	0,200	32	single switch	TO220
IXKH 20N60C5	600	20	13	0,200	32	single switch	TO247
IXKP 24N60C5	600	24	16	0,165	40	single switch	TO220
IXKH 24N60C5	600	24	16	0,165	40	single switch	TO247
IXKH 30N60C5	600	30	21	0,125	53	single switch	TO247
IXKH 35N60C5	600	35	25	0,100	60	single switch	TO247
IXKT 70N60C5	600	66	46	0,045	150	single switch (SMD)	TO268
IXKH 70N60C5	600	70	48	0,045	150	single switch	TO247
Full plastic							
IXKP 10N60C5M	600	5,4	3,7	0,385	17	single switch	FP TO220
IXKP 13N60C5M	600	6,5	4,5	0,300	22	single switch	FP TO220
IXKP 20N60C5M	600	7,6	5,3	0,200	32	single switch	FP TO220
IXKP 24N60C5M	600	8,5	6,0	0,165	40	single switch	FP TO220
DCB isolated							
IXKC 15N60C5	600	15	11	0,165	40	single switch	ISOPLUS220™
IXKC 19N60C5	600	19	15	0,125	53	single switch	ISOPLUS220™
IXKC 23N60C5	600	23	16	0,100	60	single switch	ISOPLUS220™
IXKR 70N60C5	600	47	32	0,045	150	single switch	ISOPLUS247™
LKK 47-06C5	600	2 x 47	2 x 32	2 x 0,045	2 x 150	dual switch (push-pull / AC-switch)	ISOPLUS264™
FMD 15-06KC5	600	15	11	0,165	40	Boost with 2 x 300V Diode	ISOPLUSi4™
NEW MKE 15R600DCFC	600	15	11	0,165	40	Boost with SiC Diode	ISOPLUSi4™
FMD 47-06KC5	600	47	32	0,045	150	Boost with 2 x 300V Diode	ISOPLUSi4™
FDM 15-06KC5	600	15	11	0,165	40	Buck with 2 x 300V Diode	ISOPLUSi4™
FDM 47-06KC5	600	47	32	0,045	150	Buck with 2 x 300V Diode	ISOPLUSi4™

Package Outlines (Package dimensions see data sheet.)

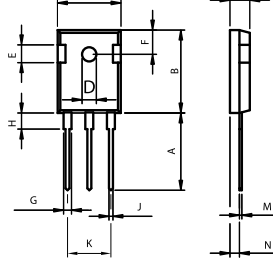
TO220



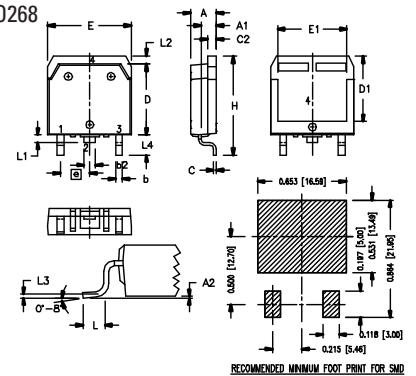
FP TO220 (Full Plastic)



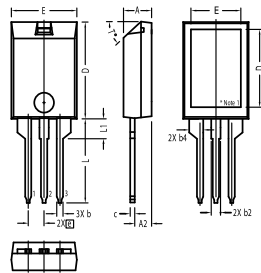
TO247



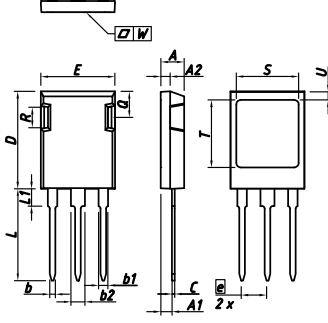
TO268



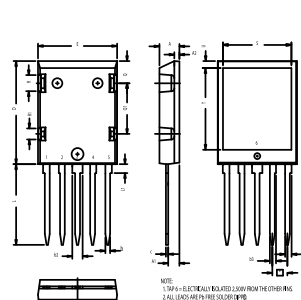
ISOPLUS220™



ISOPLUS247™



ISOPLUS264™



ISOPLUSi4™

