

GEN6 E6 SERIES

500 V / 600 V Super-Junction MOSFETs

for TV SMPS, notebook adapters and PC power supplies

Well-balanced thermal, switching and EMI performance for compact power designs



Magnachip's Gen6 E6 is a 500 V and 600 V super-junction MOSFET portfolio designed for consumer and computing power applications below 1 kW.

Fifteen products across DPAK, TO-220FA and TO-220SFA packages provide flexible device options for different $R_{DS(on)}$, thermal and board-mounting requirements.

PERFORMANCE HIGHLIGHT

5.3% lower operating temperature

vs. Magnachip's previous-generation device under the same test conditions

600 V, 280 m Ω E6 · TO-220SFA · PFC stage

KEY FEATURES AND BENEFITS

BALANCED SWITCHING & EMI

Controlled switching behavior to manage efficiency, oscillation and EMI.

THERMAL DESIGN MARGIN

Balanced switching performance helps manage operating temperature and thermal design margin.

ROBUST POWER DESIGN

Improved BV and E_{AS} capability provides additional margin for transient conditions.

FLEXIBLE DEVICE SELECTION

500 V / 600 V · Multiple $R_{DS(on)}$ classes

Three package options:

DPAK (TO-252) · TO-220FA · TO-220SFA

PACKAGE OPTIONS

DPAK (TO-252)

Compact surface-mount package for space-constrained power boards.



TO-220FA

Through-hole package for general power designs and heat dissipation requirements.



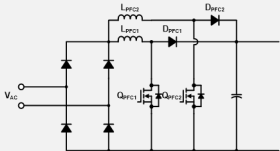
TO-220SFA

Wide creepage package (4.25 mm pitch / 3.25 mm creepage) for electrical isolation in polluted environments.



APPLICATION & TOPOLOGY GUIDE

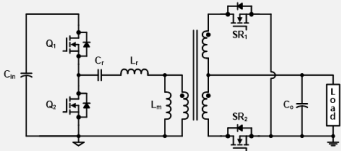
TV POWER BOARD · PFC



180 mΩ class

Thermal management and low E_{OSS} are key considerations.

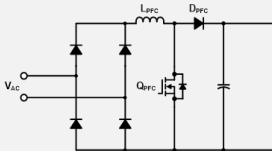
TV POWER BOARD · LLC



360–900 mΩ class

Half-bridge LLC; light-load efficiency and EMI suppression are key considerations.

PC POWER BOARD · PFC



180–360 mΩ class

Boost PFC; dv/dt ruggedness and low Q_g are key considerations.

PRODUCT LINEUP

500 V

Part number	V_{DS} [V]	I_D [A]	$R_{DS(on)}$ max [mΩ]	$R_{DS(on)}$ typ [mΩ]	Q_g [nC]	E_{AS} [mJ]	$R_{th(jc)}$ [°C/W]	P_D [W]	Package
MMD50R380E6ZRH	500	11	380	342	11.0	50	2.20	57.5	TO-252
MMFA50R280E6ZTH	500	13	280	246	13.7	80	2.11	119	TO-220FA

600 V

Part number	V_{DS} [V]	I_D [A]	$R_{DS(on)}$ max [mΩ]	$R_{DS(on)}$ typ [mΩ]	Q_g [nC]	E_{AS} [mJ]	$R_{th(jc)}$ [°C/W]	P_D [W]	Package
MMD60R180E6ZRH	600	18	180	158	23.0	80	1.74	72	TO-252
MMD60R280E6ZRH	600	12	280	246	16.6	80	2.35	53	TO-252
MMD60R360E6ZRH	600	9	360	317	13.6	80	3.02	41	TO-252
MMD60R580E6ZRH	600	6	580	510	9.1	80	4.17	30	TO-252
MMD60R900E6ZRH	600	4.4	900	792	6.7	50	5.73	22	TO-252
MMFA60R180E6ZTH	600	18	180	158	23.0	80	4.82	26	TO-220FA
MMFA60R280E6ZTH	600	12	280	246	16.6	80	5.25	24	TO-220FA
MMFA60R360E6ZTH	600	9	360	317	13.6	80	5.58	22	TO-220FA
MMFA60R580E6ZTH	600	6	580	510	9.1	80	5.95	21	TO-220FA
MMSFA60R180E6ZTH	600	18	180	158	23.0	80	4.82	26	TO-220SFA
MMSFA60R280E6ZTH	600	12	280	246	16.6	80	5.25	24	TO-220SFA
MMSFA60R360E6ZTH	600	9	360	317	13.6	80	5.58	22	TO-220SFA
MMSFA60R580E6ZTH	600	6	580	510	9.1	80	5.95	21	TO-220SFA

SALES CONTACTS

KOREA koreasales@magnachip.com
TAIWAN taiwansales@magnachip.com
EUROPE europesales@magnachip.com

CHINA chinasales@magnachip.com
JAPAN japansales@magnachip.com