

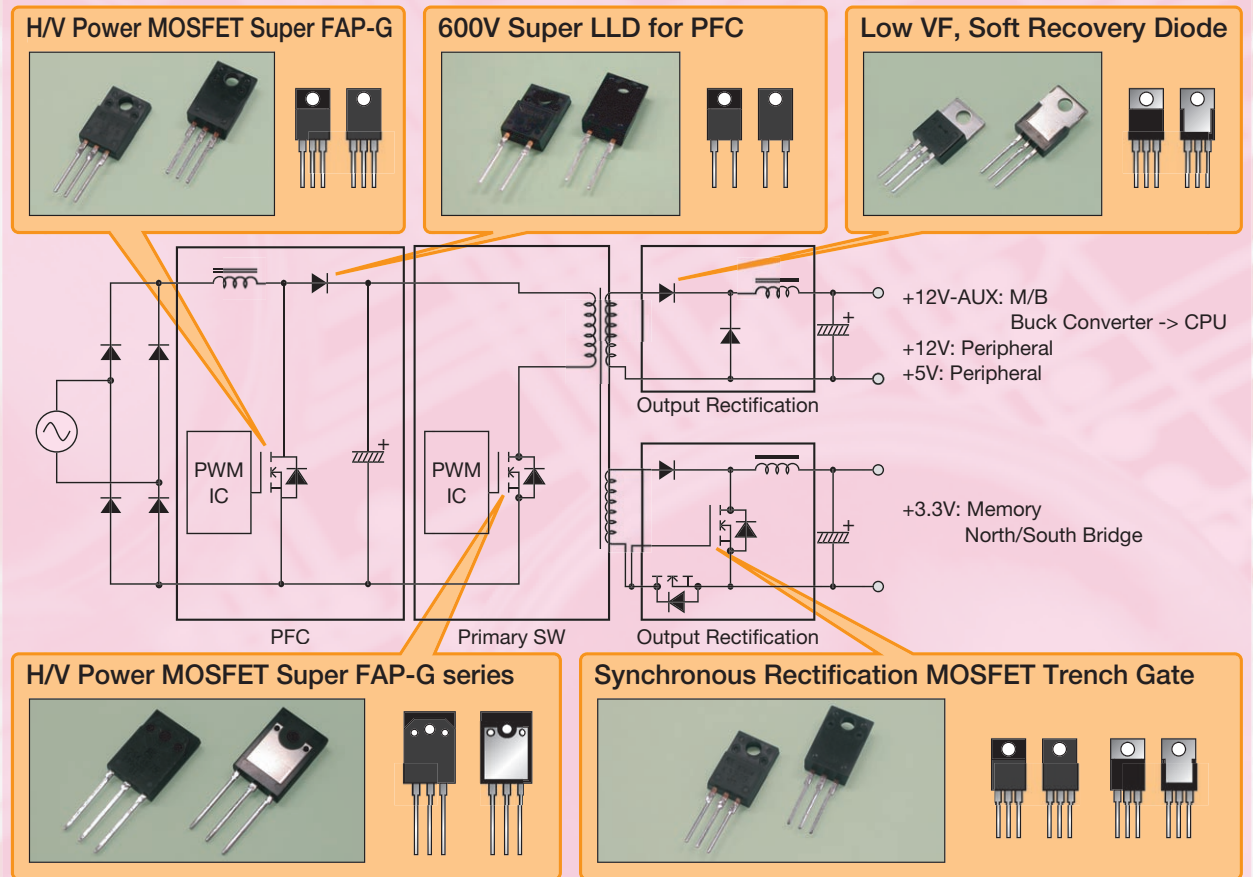
# 开关电源方块图及富士电机推荐器件

## SMPS block diagram & Fuji's recommended devices

### ● 超级场效应管FAP-G系列特性 Features of Super FAP-G MOSFETs

1. 低关断损耗 Eoff  
比传统产品低 75%
2. 低门极电荷 (Qg)  
比传统产品低 60%
3. 高雪崩耐量  
改善高温时雪崩耐量
4. 细小封装低 RDS(on)  
例) 600V/0.75ohm/TO-3P  
600V/0.52ohm/TO-220

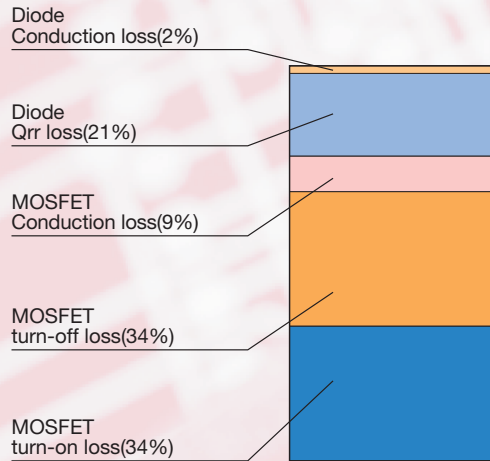
1. Lower Turn-Off Loss  
75% Lower Eoff against Conventional type
2. Lower Gate Charge (Qg)  
60% Lower Qg against Conventional type
3. Higher Avalanche Ruggedness  
Improved Avalanche Ruggedness at high temp.
4. Smaller Package with Small RDS(on)  
ex) 600V/0.75ohm/TO-3P → 600V/0.52ohm/TO-220



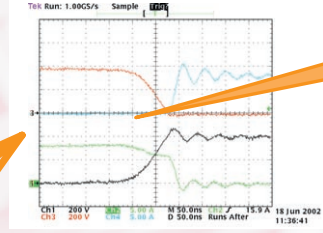
### ● 超高效能和超低损耗

The point for higher efficiency and lower dissipation

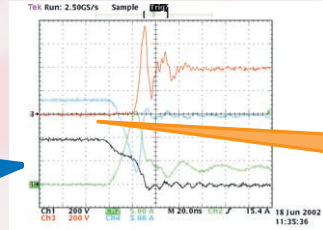
Power device Loss simulation results



Turn-off waveform



Turn-on waveform



The turn-off loss depend on the switching characteristic of MOSFET

Speed up tf Of MOSFET  
decrease of Qrr of diode

The turn-on loss depend on the Qrr characteristic of MOSFET

### ● 超级FAP-G 和 SJ 特性比较

Characteristic comparative data with Super FAP-G and SJ

Items	Super FAP-G 2SK3504-01	Conventional MOS	SJ MOS
Package	Non-SJ	Non-SJ	SJ
BVSS	500V	500V	600V
VGS(th)	3~5V	2~4V	2.1~3.9V
RDS(on)	0.46Ωmax	0.38Ωmax	0.38Ωmax
Qg	33nCtyp.	75nCtyp.	45nCtyp.
Qgd	10.5nCtyp.	38nCtyp.	22nCtyp.
Rod•Qgd	3.67ΩnC	11.8ΩnC	7.48ΩnC
Rod•Qd	11.6ΩnC	23.3ΩnC	15.3ΩnC
Package	TO-220	TO-247	TO-220

\*: SJ means super junction

### ● 超低Ron•Qgd参数比较

Lower Ron•Qgd against competitors 600V MOSFET

Items	Super FAP-G 2SK3451-01MR	Conventional 2SK1941-01R	Company A	Company B	Company C
Package	TO-220F	TO-3PF	TO-220F	TO-220F	TO-220F
VDS	600V	600V	600V	600V	600V
VGS	±30V	±30V	±30V	±30V	±20V
ID	±12A	±16A	±10A	±5.5A	±7.3A
VGS(th)	3~5V	2.5~3.5V	3.0~5.0V	2.0~4.0V	3.5~5.5V
RDS(on) typ.	0.5Ω	0.37Ω	0.54Ω	0.65Ω	0.54Ω
Qg Typ.	34nc	100nc	45nc	33nc	27nc
Qgd Typ.	11nc	28nc	20nc	13nc	16.5nc
FOM Ron•Qgd.	5.5Ωnc	10.4Ωnc	10.8Ωnc	8.45Ωnc	8.91Ωnc

less than a half of the FOM (Ron•Qgd)