

Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

Features

- High speed switching
- No secondary breakdown
- Avalanche-proof
- Low on-resistance
- Low driving power

Applications

- Switching regulators
- DC-DC converters
- UPS (Uninterruptible Power Supply)

Maximum ratings and characteristic Absolute maximum ratings

(Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	450	V	
	V _{DSX}	450	V	V _{GS} =-30V
Continuous drain current	I _D	6	A	
Pulsed drain current	I _{D(puls)}	±24	A	
Gate-source voltage	V _{GS}	±30	V	
Repetitive or non-repetitive	I _{AR}	6	A	Note *1
Non-repetitive Maximum avalanche energy	E _{AS}	320	mJ	Note *2
Repetitive Maximum avalanche energy		3.2	mJ	Note *3
Maximum drain-source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤ 450V
Peak diode recovery dV/dt	dV/dt	5	kV/μs	Note *4
Maximum power dissipation	P _D	2.16	W	T _a =25°C
		32	W	T _c =25°C
Operating and storage temperature range	T _{ch}	+150	°C	
	T _{stg}	-55 to +150	°C	
Isolation voltage	V _{ISO} *6	2	kVrms	t=60sec, f=60Hz

Note *1 T_{ch} ≤ 150°C

Note *2 Starting T_{ch}=25°C, I_{AS}=6A, L=102mH, V_{CC}=45V, R_G=50Ω

E_{AS} limited by maximum channel temperature and avalanche current.
See to 'Avalanche Energy' graph.

Note *3 Repetitive rating : Pulse width limited by maximum channel temperature.
See to 'Transient Thermal impedance' graph.

Note *4 I_{SS} ≤ -I_D, -di/dt=50A/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C

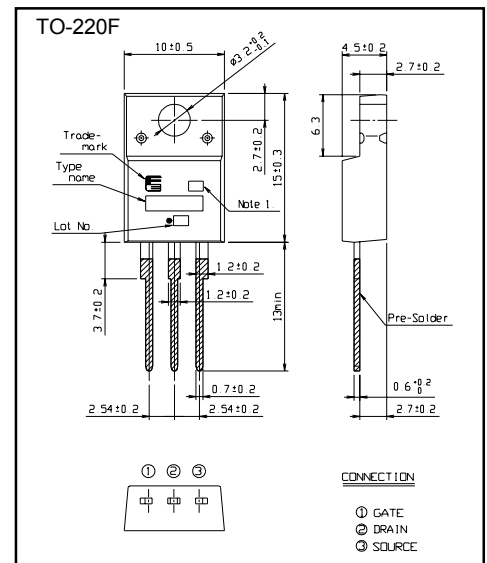
Electrical characteristics (T_c =25°C unless otherwise specified)

Item	Symbol	Test Conditions				
Drain-source breakdown voltage	V(BR) _{DSS}	I _D = 250μA V _{GS} =0V	450			V
Gate threshold voltage	V _{GS(th)}	I _D = 250μA V _{DS} =V _{GS}	3.0		5.0	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =450V V _{GS} =0V T _{ch} =25°C			25	μA
		V _{DS} =360V V _{GS} =0V T _{ch} =125°C			2.0	mA
Gate-source leakage current	I _{GSS}	V _{GS} =±30V V _{DS} =0V			100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D =3A V _{GS} =10V		0.98	1.20	Ω
Forward transconductance	g _{fs}	I _D =3A V _{DS} =25V	2.5	5		S
Input capacitance	C _{iss}	V _{DS} =25V		440	660	pF
Output capacitance	C _{oss}	V _{GS} =0V		67	100	
Reverse transfer capacitance	C _{rss}	f=1MHz		2.8	4.5	
Turn-on time t _{on}	td(on)	V _{CC} =300V I _D =3A		12	18	ns
	t _r	V _{GS} =10V		6.5	10	
Turn-off time t _{off}	td(off)	R _{GS} =10 Ω		25	38	
	t _r			5.5	8.5	
Total Gate Charge	Q _G	V _{CC} =225V		15.5	23.5	nC
Gate-Source Charge	Q _{GS}	I _D =6A		6.8	10.5	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		3.7	5.5	
Diode forward on-voltage	V _{SD}	I _F =6A V _{GS} =0V T _{ch} =25°C		1.00	1.50	V
Reverse recovery time	t _{rr}	I _F =6A V _{GS} =0V		300		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		2.0		μC

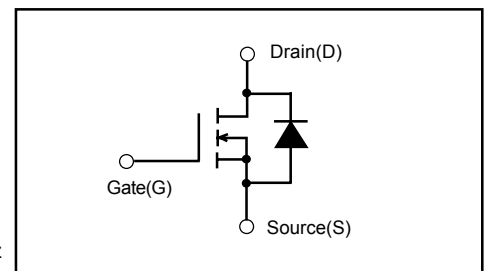
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			3.906	°C/W
	R _{th(ch-a)}	channel to ambient			58.0	°C/W

Outline Drawings [mm]



Equivalent circuit schematic



Characteristics

