

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

■ Maximum ratings and characteristic Absolute maximum ratings (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	250	V	
	V _{DSX}	220	V	V _{GS} =-30V
Continuous drain current	I _D	14	A	
Pulsed drain current	I _{D(puls)}	±56	A	
Gate-source voltage	V _{GS}	±30	V	
Repetitive or non-repetitive	I _{AR}	14	A	Note *1
Non-repetitive Maximum avalanche energy	E _{AS}	301.1	mJ	Note *2
Repetitive Maximum avalanche energy		3.7	mJ	Note *3
Maximum drain-source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤ 250V
Peak diode recovery dV/dt	dV/dt	5	kV/μs	Note *4
Peak diode recovery -di/dt	-di/dt	100	A/μs	Note *5
Max. power dissipation	P _D	2.16	W	T _a =25°C
		37	W	T _c =25°C
Operating and storage temperature range	T _{ch}	+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=14.1mH, V_{CC}=48V, 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_F ≤ -I_D, -di/dt=100A/μs, V_{CC} < BV_{DSS}, T_{ch} ≤ 150°C

Note *5 I_F = -I_D, -di/dt=100A/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C

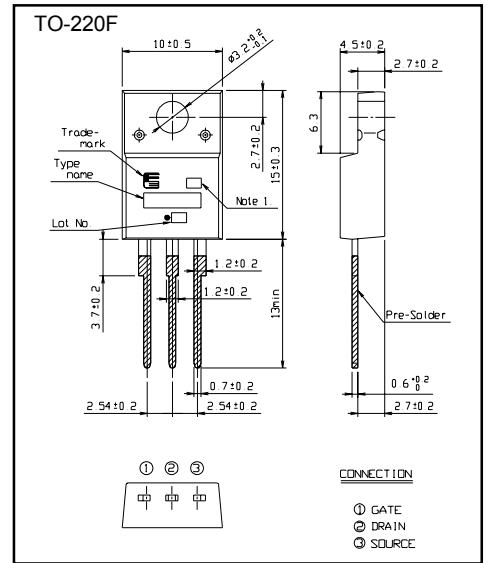
● Electrical characteristics (T_c =25°C unless otherwise specified)

Item	Symbol	Test Conditions			
Drain-source breakdown voltage	V _{(BR)DSS}	I _D = 250μA V _{GS} =0V	250		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} =250V V _{GS} =0V		25	μA
		V _{DS} =200V V _{GS} =0V		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 =7A V _{GS} =10V	220	280	mΩ
Forward transconductance	g _{fs}	I _D =7A V _{DS} =25V	5	10	S
Input capacitance	C _{iss}	V _{DS} =75V	780	1170	pF
Output capacitance	C _{oss}	V _{GS} =0V	90	135	
Reverse transfer capacitance	C _{rss}	f=1MHz	6	9	ns
Turn-on time t _{on}	td(on)	V _{CC} =48V I _D =7A	12	18	
	t _r	V _{GS} =10V	3	4.5	
Turn-off time t _{off}	td(off)	R _{GS} =10 Ω	23	35	
	t _f		6	9	
Total Gate Charge	Q _G	V _{CC} =125V	22	33	nC
Gate-Source Charge	Q _{GS}	I _D =14A	7	11	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V	6	9	
Diode forward on-voltage	V _{SD}	I _F =14A V _{GS} =0V T _{ch} =25°C	1.00	1.50	V
Reverse recovery time	t _{rr}	I _F =14A V _{GS} =0V	120	250	ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C	0.5	1.25	μC

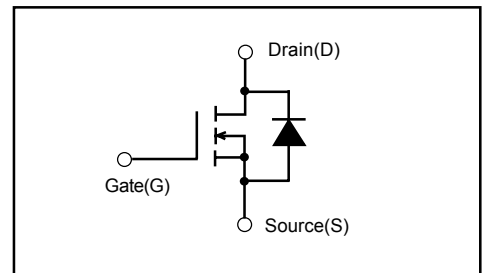
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			3.378	°C/W
	R _{th(ch-a)}	channel to ambient			58.0	°C/W

■ Outline Drawings [mm]



■ Equivalent circuit schematic



Characteristics

