

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		10.5	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
Maximum power dissipation	P _D	2.02	W	T _a =25°C
		105	W	T _c =25°C
Operating and storage temperature range	T _{ch}	+150	°C	
	T _{stg}	-55 to +150	°C	

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, dv/dt=5kV/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C

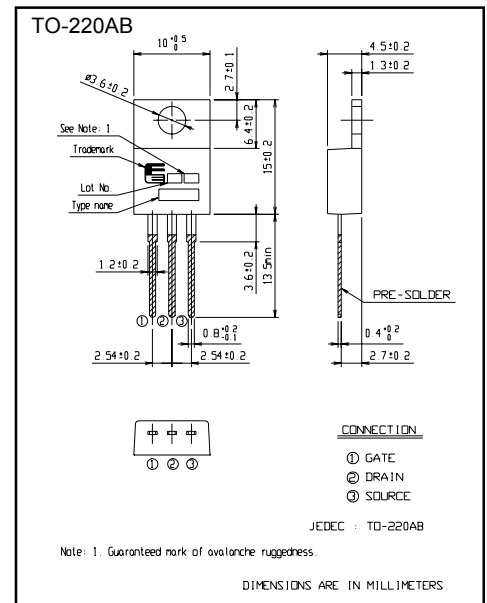
Electrical characteristics (Tc = 25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
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 _D =V _{GS}	3.0		5.0	V
Zero gate voltage drain current	I _{DSS}	V _D =250V V _{GS} =0V T _{ch} =25°C			25	μA
		V _D =200V V _{GS} =0V T _{ch} =125°C			2.0	mA
Gate-source leakage current	I _{GSS}	V _{GS} =±30V V _D =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 _D =25V	5	10		S
Input capacitance	C _{iss}	V _D =75V		780	1170	pF
Output capacitance	C _{oss}	V _{GS} =0V		90	135	pF
Reverse transfer capacitance	C _{rss}	f=1MHz		6	9	pF
Turn-on time t _{on}	t _{d(on)}	V _{CC} =48V I _D =7A		12	18	ns
		V _{GS} =10V		3	4.5	
Turn-off time t _{off}	t _{d(off)}	R _G =10 Ω		23	35	ns
				6	9	
Total Gate Charge	Q _G	V _{CC} =125V		22	33	nC
Gate-Source Charge	Q _{GS}	I _D =14A		7.0	11	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		6.0	9.0	
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

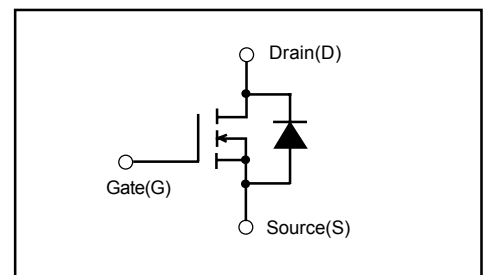
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			1.191	°C/W
	R _{th(ch-a)}	channel to ambient			62.0	°C/W

Outline Drawings [mm]



Equivalent circuit schematic



■ Characteristics

