

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}	120	V	V _{GS} =-30V
	V _{DSX}	90	V	
Continuous drain current	I _D	67	A	
Pulsed drain current	I _{D(puls)}	±268	A	
Gate-source voltage	V _{GS}	±30	V	
Repetitive or non-repetitive	I _{AR}	67	A	Note *1
Non-repetitive Maximum avalanche energy	E _{AS}	719.1	mJ	Note *2
Repetitive Maximum avalanche energy		27.0	mJ	Note *3
Maximum drain-source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤ 120V
Peak diode recovery dV/dt	dV/dt	5	kV/μs	Note *4
Maximum power dissipation	P _D	2.02	W	T _a =25°C
		270	W	T _c =25°C
Operating and storage temperature range	T _{ch} T _{stg}	+150 -55 to +150	°C	

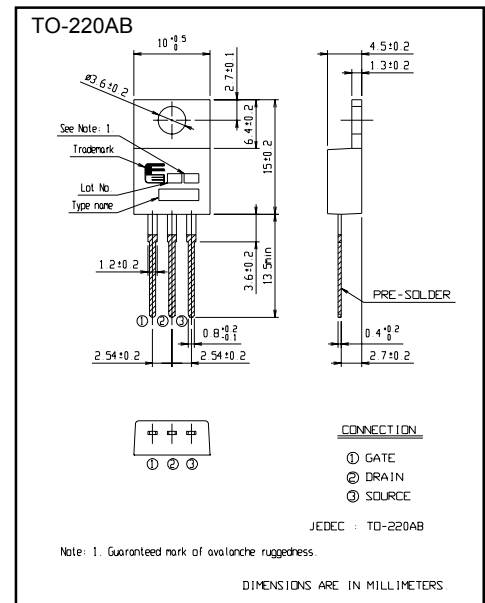
Note *1 T_{ch} ≤ 150°C

Note *2 Starting T_{ch}=25°C, I_{AS}=27A, L=1.32mH, V_{CC}=48V, R_G=50Ω
E_{AS} limited by maximum channel temperature and avalanche current.
See to 'Avalanche Energy' graph.

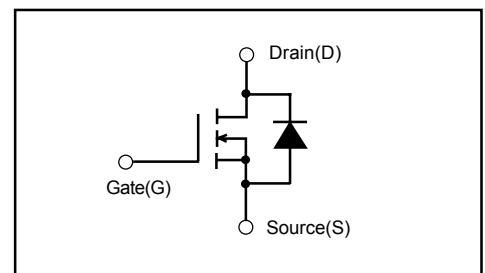
Note *3 Repetitive rating : Pulse width limited by maximum channel temperature.
See to 'Transient Thermal Impedance' graph.

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

Outline Drawings [mm]



Equivalent circuit schematic



Electrical characteristics (T_c = 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	120			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} = 120V V _{GS} = 0V T _{ch} = 25°C			25	μA
		V _{DS} = 96V V _{GS} = 0V T _{ch} = 125°C			250	
Gate-source leakage current	I _{GSS}	V _{GS} = ±30V V _{DS} = 0V		100		nA
Drain-source on-state resistance	R _{DS(on)}	I _D = 33.5A V _{GS} = 10V	24.6	30.0		mΩ
Forward transconductance	g _{fs}	I _D = 33.5A V _{DS} = 25V	14	28		S
Input capacitance	C _{iss}	V _{DS} = 75V		1880	2820	pF
Output capacitance	C _{oss}	V _{GS} = 0V		360	540	
Reverse transfer capacitance	C _{rss}	f = 1MHz		30	45	
Turn-on time t _{on}	td(on)	V _{CC} = 48V I _D = 33.5A		20	30	ns
	t _r	V _{GS} = 10V		35	53	
Turn-off time t _{off}	td(off)	R _G = 10 Ω		50	75	
	t _f			23	35	
Total Gate Charge	Q _G	V _{CC} = 60V		52	78	nC
Gate-Source Charge	Q _{GS}	I _D = 67A		16	24	
Gate-Drain Charge	Q _{GD}	V _{GS} = 10V		18	27	
Diode forward on-voltage	V _{SD}	I _F = 67A V _{GS} = 0V T _{ch} = 25°C		1.10	1.50	V
Reverse recovery time	t _{rr}	I _F = 67A V _{GS} = 0V		150		ns
Reverse recovery charge	Q _{rr}	-di/dt = 100A/μs T _{ch} = 25°C		0.9		μC

Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			0.463	°C/W
	R _{th(ch-a)}	channel to ambient			62.0	°C/W

Characteristics

