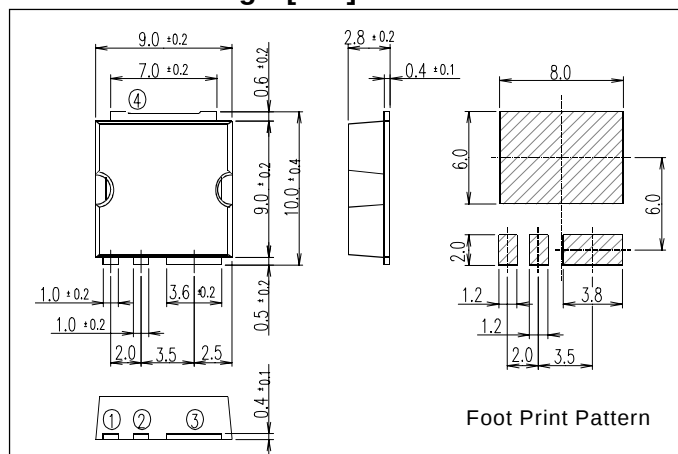


Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

■ Outline Drawings [mm]



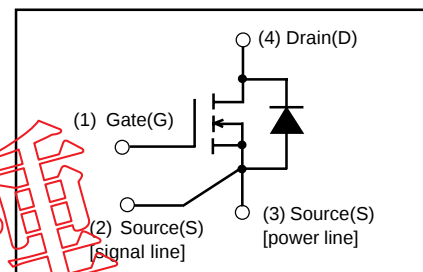
■ Features

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

■ Applications
for Switching■ Absolute Maximum Ratings at $T_c=25^\circ\text{C}$
(unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V_{DS}	100	V	
	V_{DSX}	70	V	$V_{GS}=30\text{V}$
Continuous drain current	I_D	± 73	A	
		± 6.9 *4	A	$T_a=25^\circ\text{C}$
Pulsed drain current	$I_{D(puls)}$	± 292	A	
Gate-source voltage	V_{GS}	± 30	V	
Repetitive or non-repetitive	I_{AR} *2	73	A	
Maximum Avalanche Energy	E_{AS} *1	319.2	mJ	
Maximum Drain-Source dV/dt	dV_{DS}/dt	20	kV/ μs	$V_{GS} \leq 100\text{V}$
Peak Diode Recovery dV/dt	dV/dt_{rr}	5	kV/ μs	
Max. power dissipation	P_a	2.4	W	$T_a=25^\circ\text{C}$
		270	W	
Operating and storage temperature range	T_{ch}	+150	$^\circ\text{C}$	
	T_{stg}	-55 to +150	$^\circ\text{C}$	

■ Equivalent circuit schematic



*1 $L=71.9\mu\text{H}$, $V_{CC}=48\text{V}$, See to Avalanche Energy Graph *2 $T_{ch} \leq 150^\circ\text{C}$ *3 $I_F \leq -I_D$, $-di/dt=50\text{A}/\mu\text{s}$, $V_{CC} \leq BV_{DS}$, $T_{ch} \leq 150^\circ\text{C}$

*4 Surface mounted on 1000mm², $t=1.6\text{mm}$ FR-4 PCB (drain pad area: 500mm²)

● Electrical characteristics at $T_c=25^\circ\text{C}$ (unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$	100			V
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\mu\text{A}$ $V_{DS}=V_{GS}$	3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$			25	μA
		$V_{DS}=80\text{V}$ $V_{GS}=0\text{V}$ $T_{ch}=125^\circ\text{C}$			250	
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 30\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=25\text{A}$ $V_{GS}=10\text{V}$		19	25	m Ω
Forward transconductance	g_{fs}	$I_D=25\text{A}$ $V_{DS}=25\text{V}$	15	30		S
Input capacitance	C_{iss}	$V_{DS}=75\text{V}$		1830	2745	pF
Output capacitance	C_{oss}	$V_{GS}=0\text{V}$		460	690	
Reverse transfer capacitance	C_{rss}	$f=1\text{MHz}$		38	57	
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=48\text{V}$ $I_D=25\text{A}$		20	30	ns
	t_r	$V_{GS}=10\text{V}$		35	53	
Turn-off time t_{off}	$t_{d(off)}$	$R_{GS}=10\Omega$		50	75	
	t_f			23	35	
Total Gate Charge	Q_G	$V_{CC}=50\text{V}$		52	78	nC
Gate-Source Charge	Q_{GS}	$I_D=50\text{A}$		16	24	
Gate-Drain Charge	Q_{GD}	$V_{GS}=10\text{V}$		18	27	
Avalanche capability	I_{AV}	$L=71.5\mu\text{H}$ $T_{ch}=25^\circ\text{C}$	73			A
Diode forward on-voltage	V_{SD}	$I_F=50\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		1.10	1.65	V
Reverse recovery time	t_{rr}	$I_F=50\text{A}$ $V_{GS}=0\text{V}$		0.1		μs
Reverse recovery charge	Q_{rr}	$-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		0.4		μC

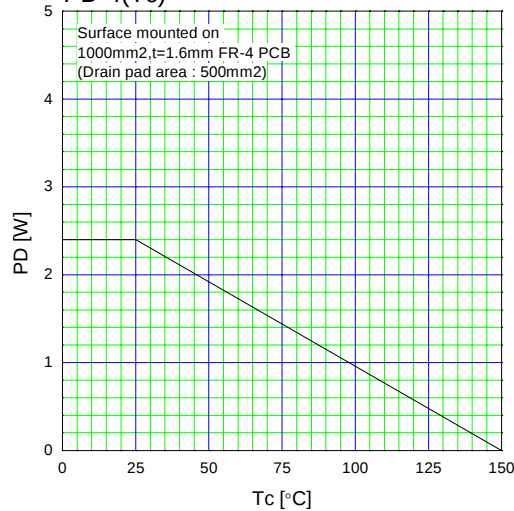
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			0.463	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			87.0	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$ *4	channel to ambient			52.0	$^\circ\text{C}/\text{W}$

Characteristics

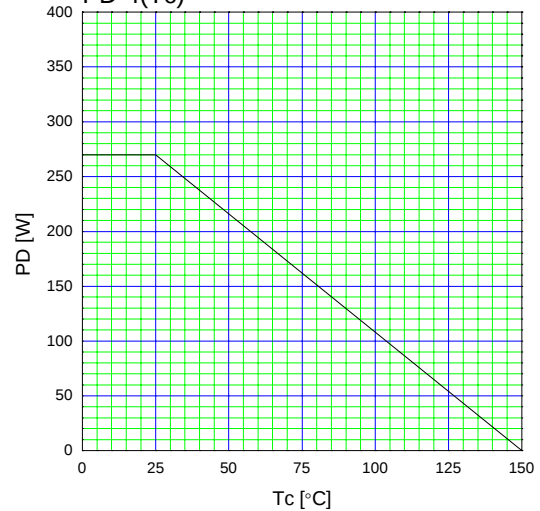
Allowable Power Dissipation

$$PD=f(T_c)$$



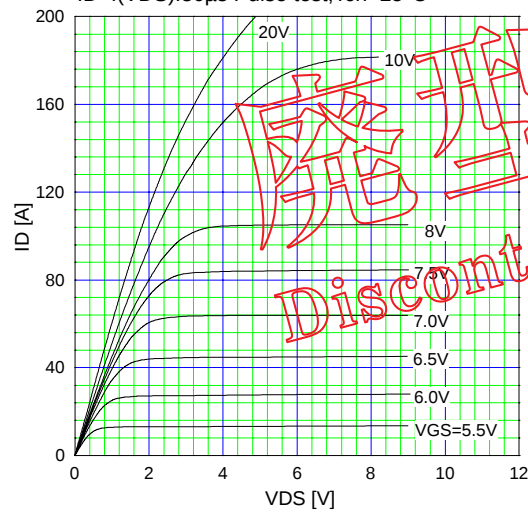
Allowable Power Dissipation

$$PD=f(T_c)$$



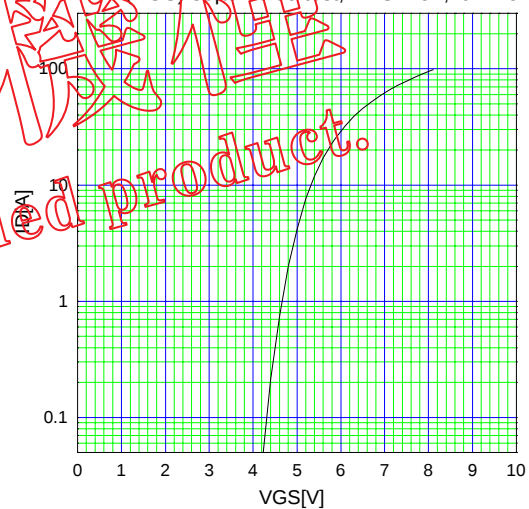
Typical Output Characteristics

$$I_D=f(V_{DS}):80\mu s \text{ Pulse test, } T_{ch}=25^\circ C$$



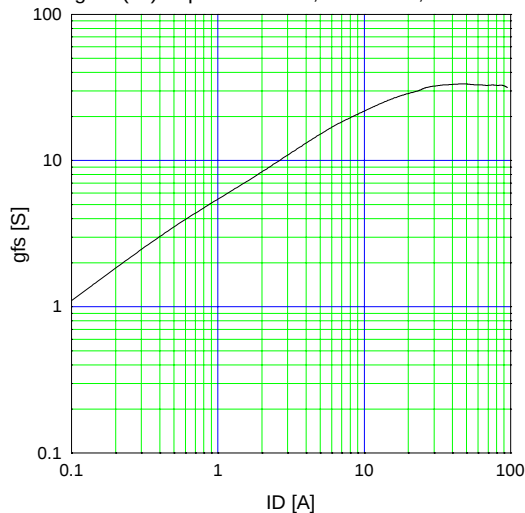
Typical Transfer Characteristic

$$I_D=f(V_{GS}):80\mu s \text{ Pulse test, } V_{DS}=25V, T_{ch}=25^\circ C$$



Typical Transconductance

$$g_{fs}=f(I_D):80\mu s \text{ Pulse test, } V_{DS}=25V, T_{ch}=25^\circ C$$



Typical Drain-Source on-state Resistance

$$R_{DS(on)}=f(I_D):80\mu s \text{ Pulse test, } T_{ch}=25^\circ C$$

