

FUJI POWER MOSFET

Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

Features

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

Applications

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

Maximum ratings and characteristic Absolute maximum ratings

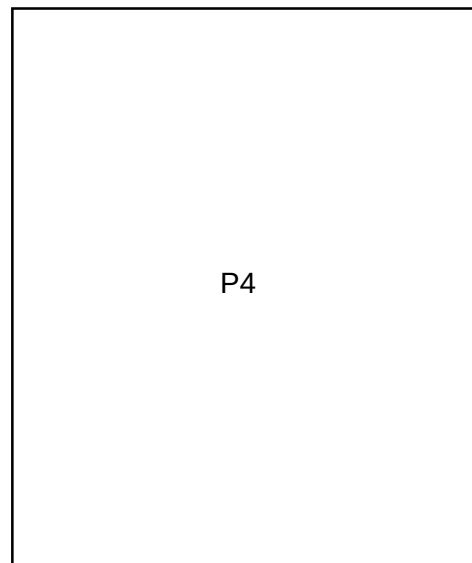
($T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V _{DS}	100	V
	V _{DSX} *5	70	V
Continuous drain current	I _D	±50	A
Pulsed drain current	I _{D(puls)}	±200	A
Gate-source voltage	V _{GS}	±30	V
Non-repetitive Avalanche current	I _{AS} *2	50	A
Maximum Avalanche Energy	E _{AS} *1	465	mJ
Maximum Drain-Source dV/dt	dV _{DS} /dt *4	20	kV/μs
Peak Diode Recovery dV/dt	dV/dt *3	5	kV/μs
Max. power dissipation	P _D	T _a =25°C	1.67
		T _c =25°C	135
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C

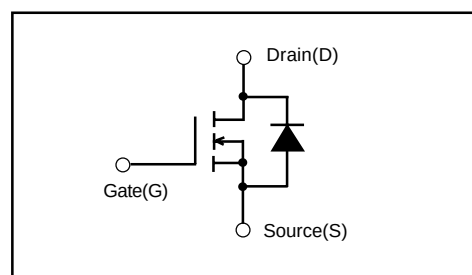
*1 $L=223\mu\text{H}$, $V_{CC}=48\text{V}$ *2 $T_{ch}\leq 150^\circ\text{C}$ *3 $I_F\leq -I_D$, $-di/dt=50\text{A}/\mu\text{s}$, $V_{CC}\leq BV_{DS}$, $T_{ch}\leq 150^\circ\text{C}$

*4 $V_{DS}\leq 100\text{V}$ *5 $V_{GS}=-30\text{V}$

Outline Drawings



Equivalent circuit schematic



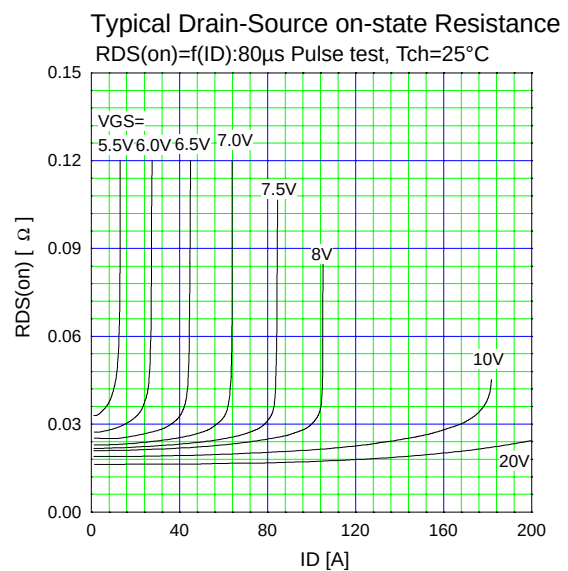
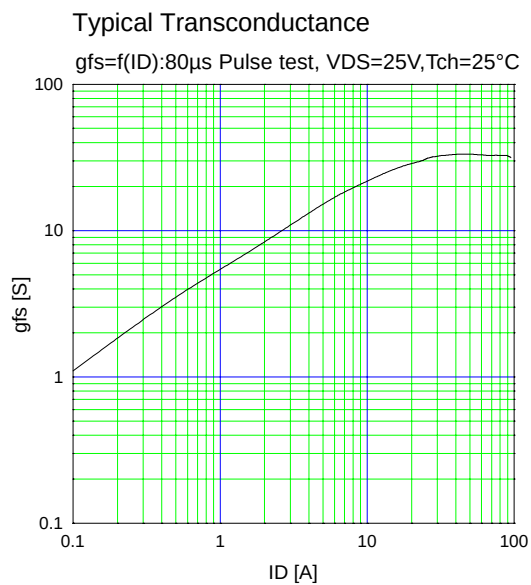
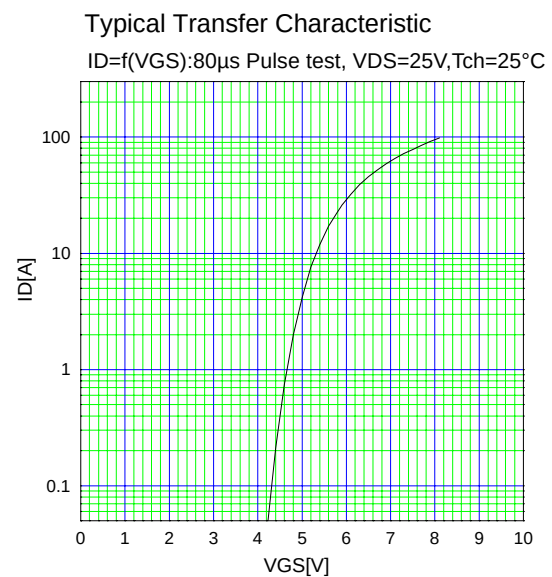
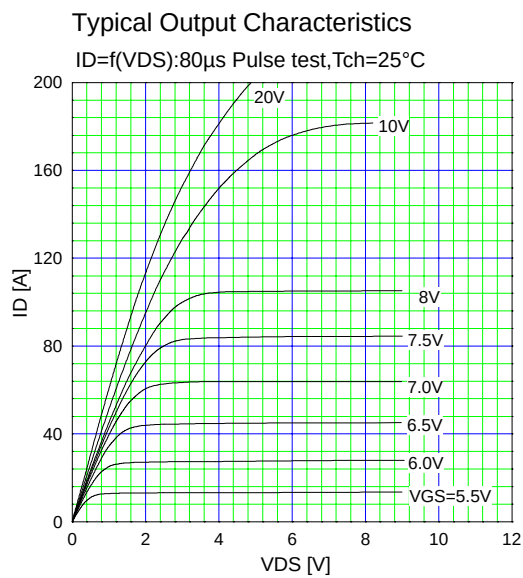
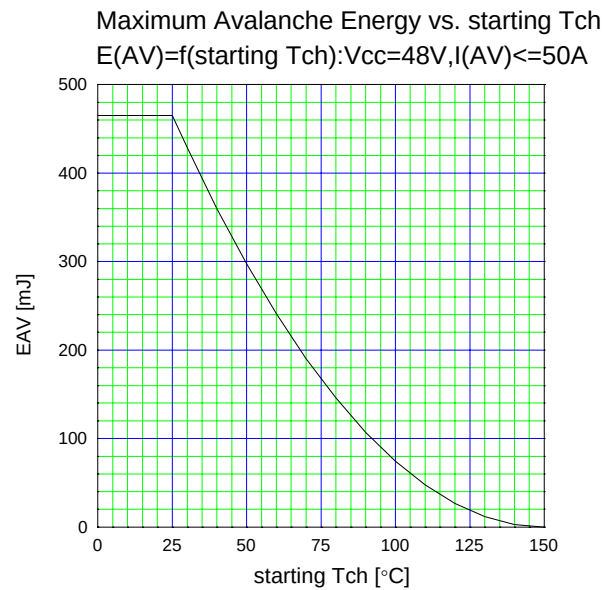
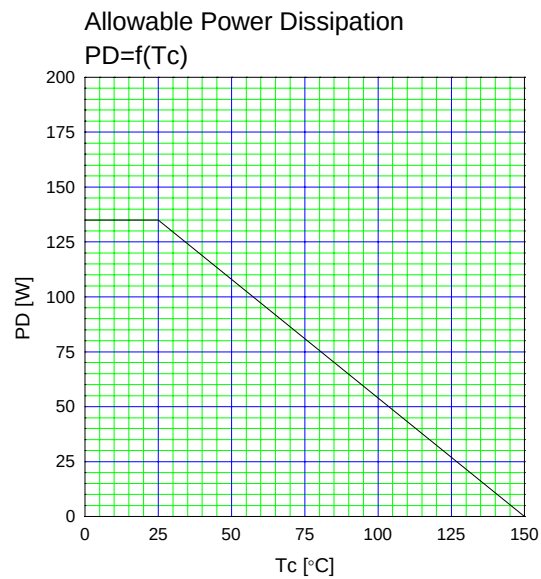
Electrical characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

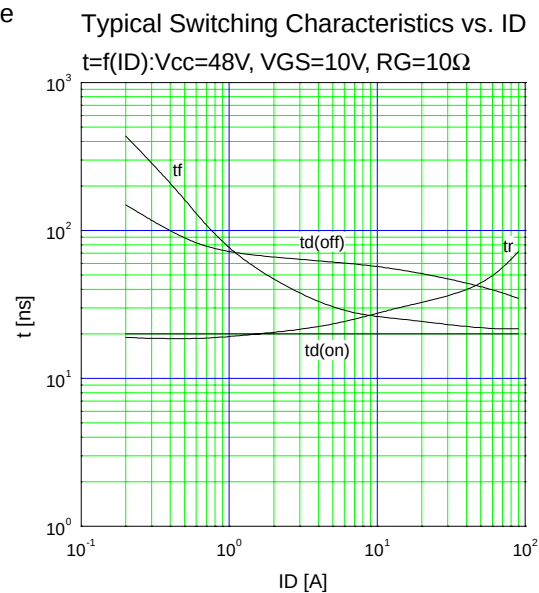
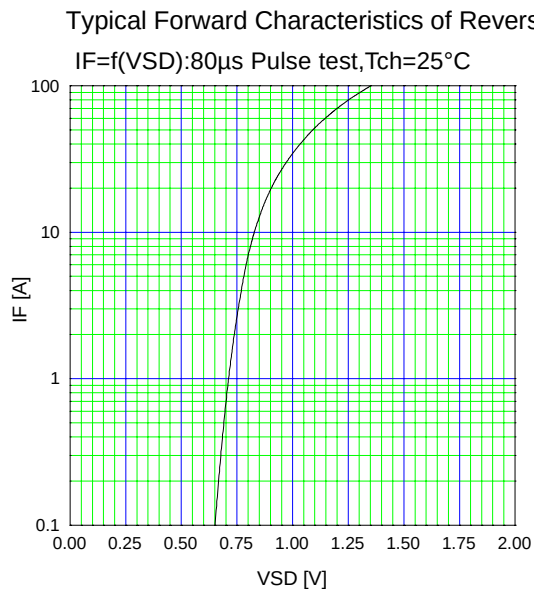
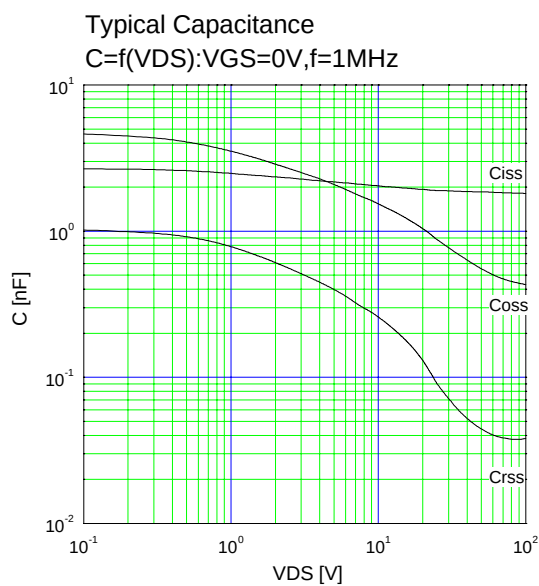
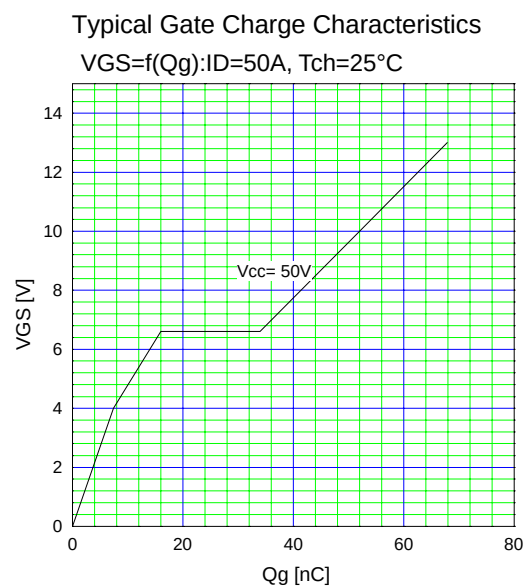
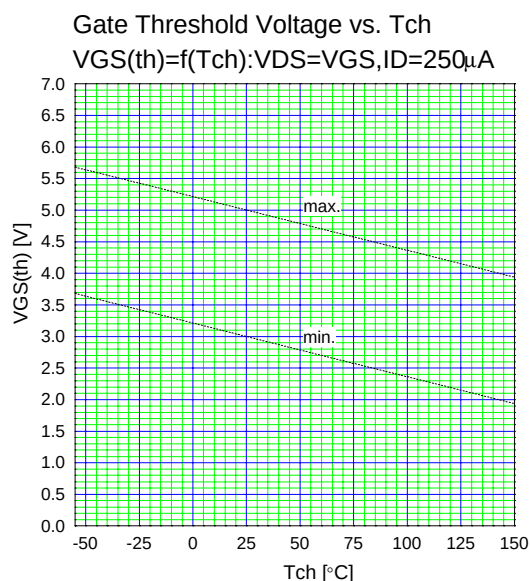
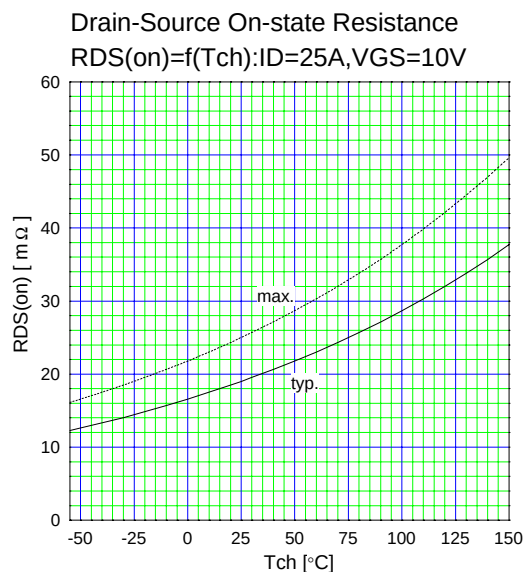
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DS}$	$I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$	100			V
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\mu\text{A}$ $V_{DS}=V_{GS}$	3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$			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}	$L=100\mu\text{H}$ $T_{ch}=25^\circ\text{C}$	50			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

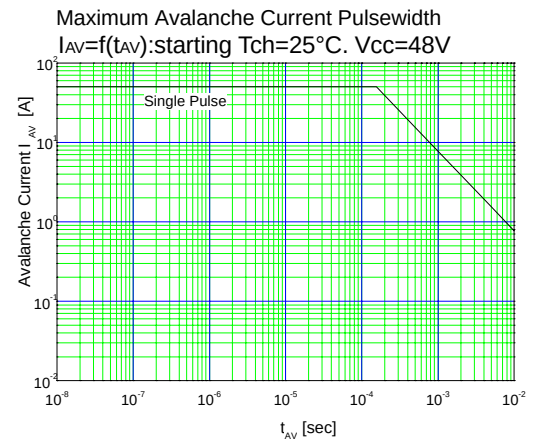
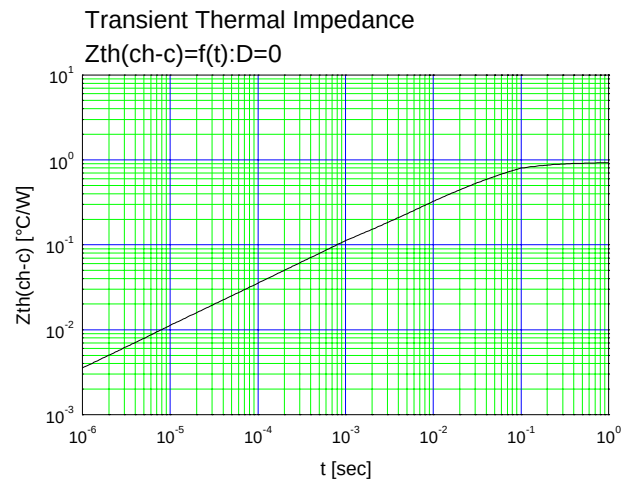
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			0.926	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			75.0	$^\circ\text{C}/\text{W}$

Characteristics

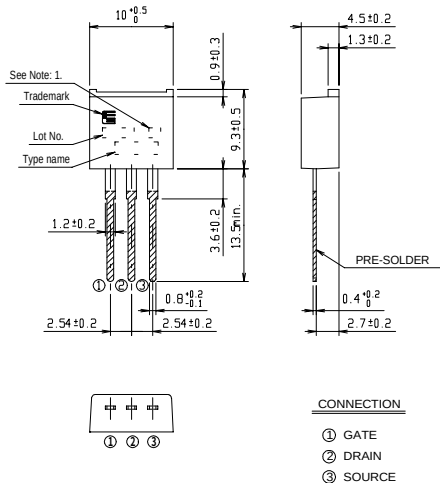




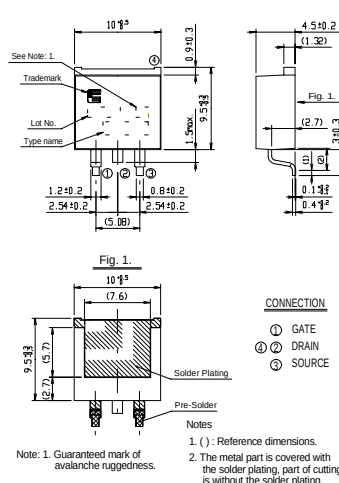


Outline Drawings (mm)

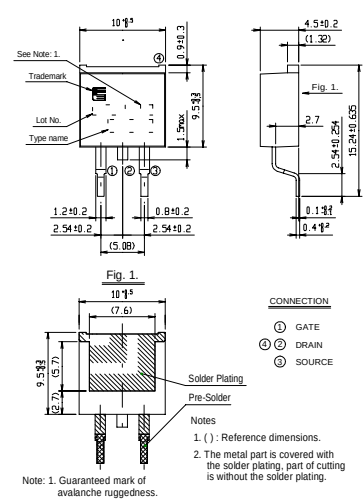
Type(L)



Type(S)



Type(SJ)



Note: 1. Guaranteed mark of avalanche ruggedness.