

N-CHANNEL SILICON POWER MOSFET

FAP-2S Series

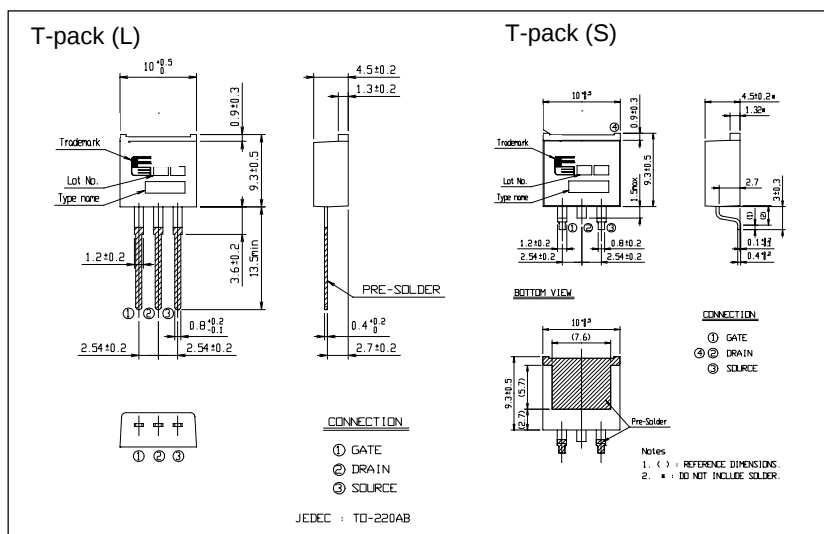
Features

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

Applications

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

Outline Drawings



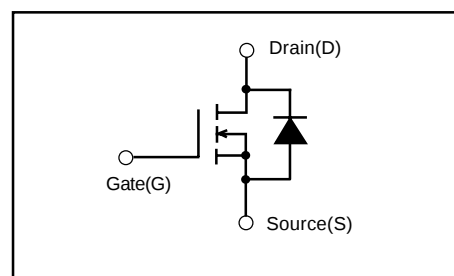
Maximum ratings and characteristicAbsolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V _{DS}	900	V
Continuous drain current	I _D	±3.5	A
Pulsed drain current	I _D (puls)	±14	A
Gate-source voltage	V _{GS}	±35	V
Repetitive or non-repetitive	IAR*2	3.5	A
Maximum Avalanche Energy	EAS*1	258	mJ
Max. power dissipation	P _D	80	W
Operating and storage	T _{ch}	+150	°C
temperature range	T _{stg}	-55 to +150	°C

*1 L=38.6mH, V_{CC}=90V *2 T_{ch}≤150°C

Equivalent circuit schematic



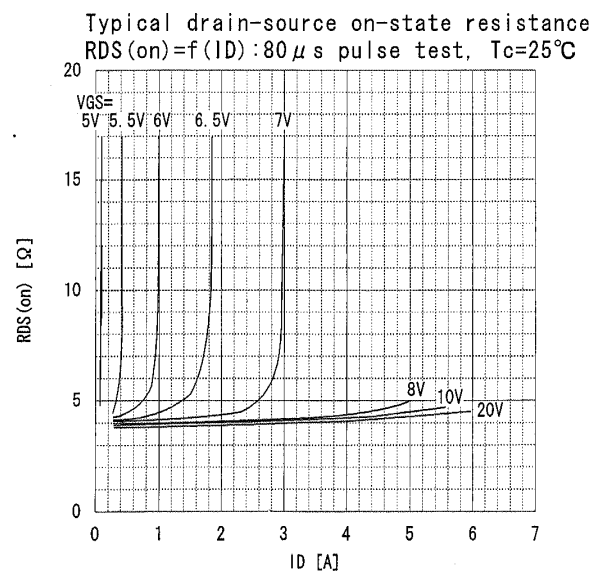
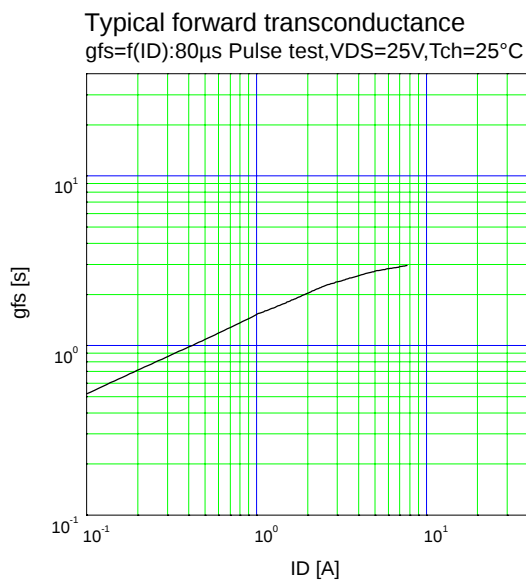
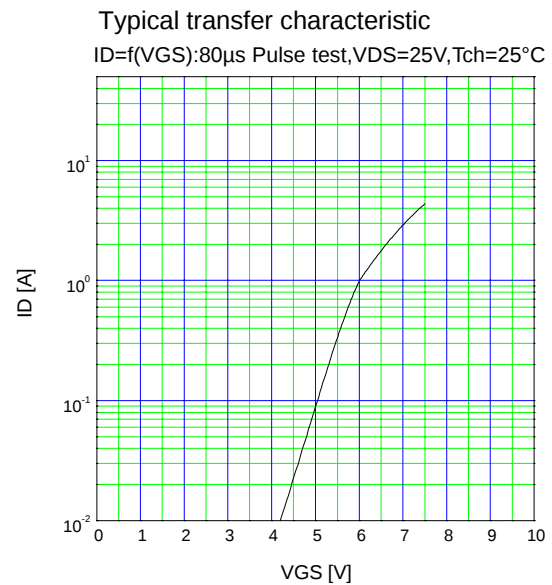
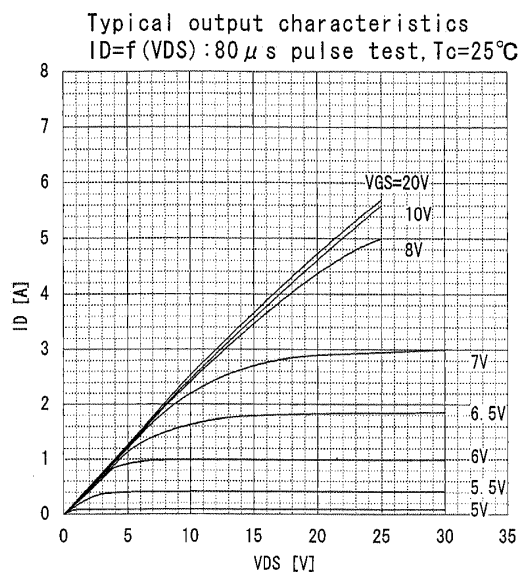
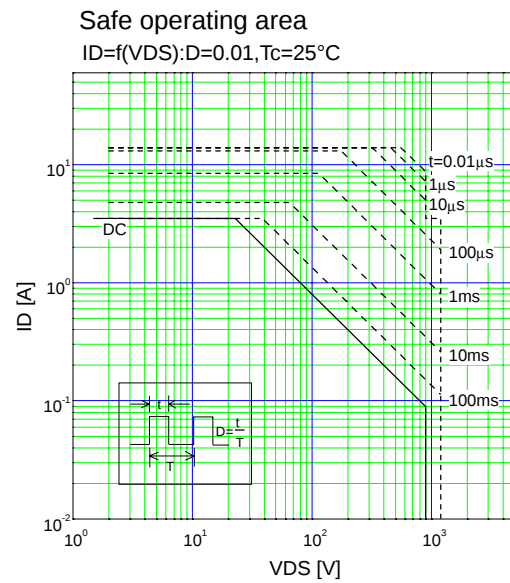
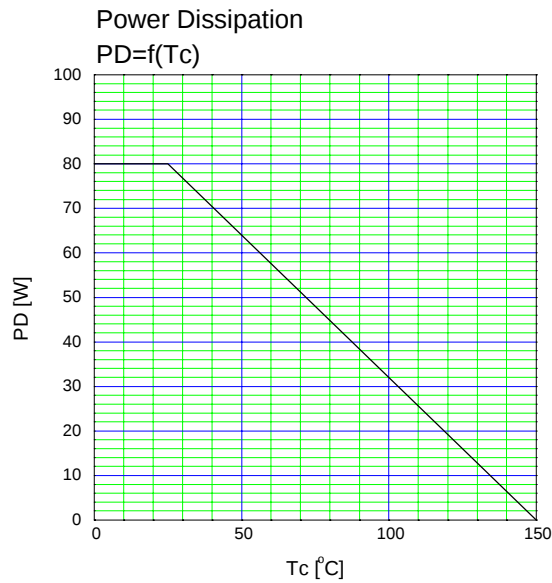
Electrical characteristics (T_c =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =1mA V _{GS} =0V	900			V
Gate threshold voltage	V _{GS(th)}	I _D =1mA V _{DS} =V _{GS}	3.5	4.0	4.5	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =900V V _{GS} =0V		10	500	μA
		T _{ch} =125°C		0.2	1.0	mA
Gate-source leakage current	I _{GSS}	V _{GS} =±35V V _{DS} =0V		10	100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D =2.0A V _{GS} =10V		4.0	5.5	Ω
Forward transconductance	g _{fs}	I _D =2.0A V _{DS} =25V	1.0	2.0		S
Input capacitance	C _{iss}	V _{DS} =25V		450	680	pF
Output capacitance	C _{oss}	V _{GS} =0V		75	120	pF
Reverse transfer capacitance	C _{rss}	f=1MHz		40	60	pF
Turn-on time t _{on}	td(on)	V _{CC} =600V I _D =3.5A		20	30	ns
	tr	V _{GS} =10V		40	60	ns
Turn-off time t _{off}	td(off)	R _{GS} =10 Ω		50	80	ns
	tf			25	40	ns
Avalanche capability	I _{AV}	L=100 μH T _{ch} =25°C	3.5			A
Diode forward on-voltage	V _{SD}	I _F =2×I _{DR} V _{GS} =0V T _{ch} =25°C		1.0	1.5	V
Reverse recovery time	t _{rr}	I _F =I _{DR} V _{GS} =0V		1000		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		5.0		μC

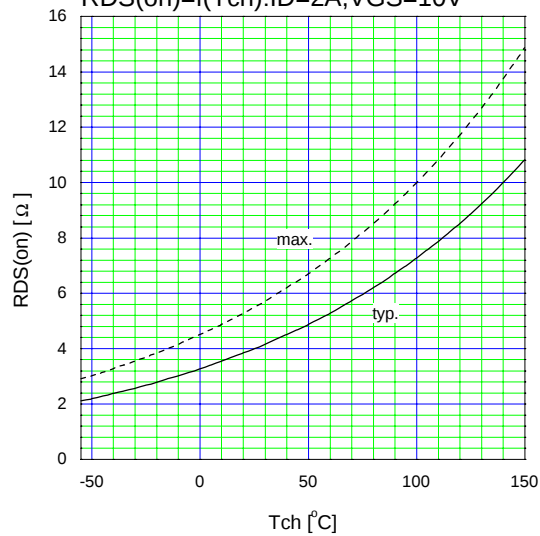
Thermalcharacteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			1.56	°C/W
	R _{th(ch-a)}	channel to ambient			75.0	°C/W

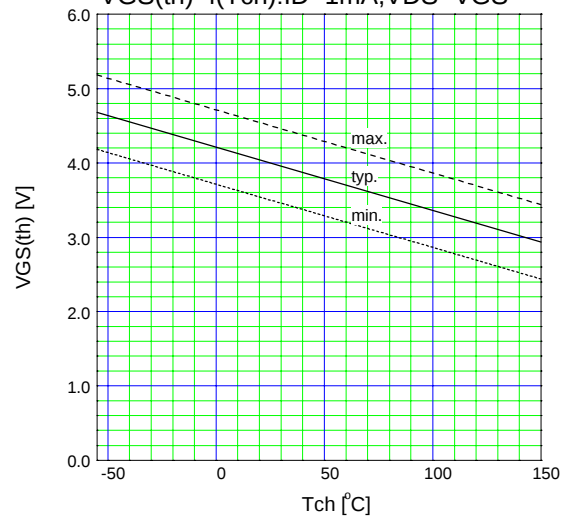
Characteristics



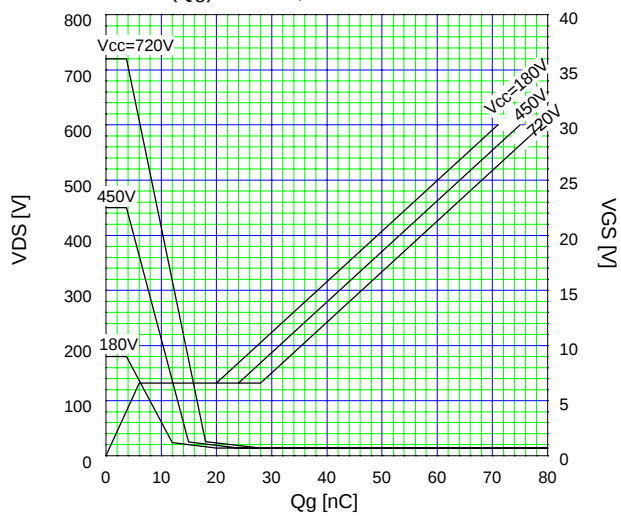
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}): I_D = 2A, V_{GS} = 10V$



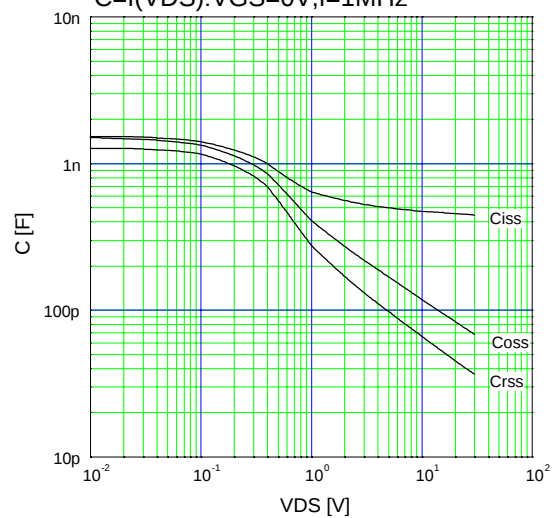
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}): I_D = 1mA, V_{DS} = V_{GS}$



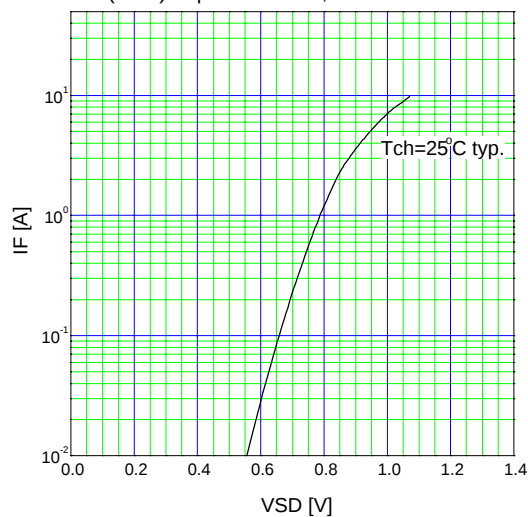
Typical gate charge characteristic
 $V_{GS} = f(Q_g): I_D = 3.5A, T_{ch} = 25^{\circ}C$



Typical capacitances
 $C = f(V_{DS}): V_{GS} = 0V, f = 1MHz$



Forward characteristic of reverse of diode
 $I_F = f(V_{SD}): 80\mu s \text{ Pulse test}, V_{GS} = 0V$



Avalanche energy derating
 $E_{as} = f(\text{starting } T_{ch}): V_{CC} = 90V, I_{AV} = 3.5A$

