

FAP-III B Series

N-CHANNEL SILICON POWER MOSFET

Features

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

Applications

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

Maximum ratings and characteristic Absolute maximum ratings

(T_c=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V _{DS}	60	V
Continuous drain current	I _D	±45	A
Pulsed drain current	I _{Dp}	±180	A
Gate-source voltage	V _{GS}	±20	V
Maximum avalanche energy	E _{AV} *1	461.9	mJ
Maximum power dissipation	P _D	60	W
Operating and storage	T _{ch}	+150	°C
Temperature range	T _{stg}	-55 to +150	°C

*1 L=0.304mH, V_{CC}=24V

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

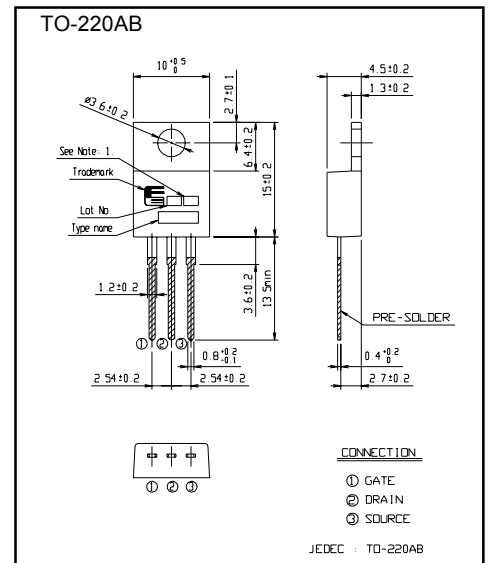
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	BV _{DSS}	I _D =1mA V _{GS} =0V	60			V
Gate threshold voltage	V _{GS(th)}	I _D =1mA V _{DS} =V _{GS}	1.0	1.5	2.0	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V V _{GS} =0V	T _{ch} =25°C	10	500	μA
			T _{ch} =125°C	0.2	1.0	mA
Gate-source leakage current	I _{GSS}	V _{GS} =±20V V _{DS} =0V		10	100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D =22.5A	V _{GS} =4V	15	20	mΩ
			V _{GS} =10V	10	12	
Forward transconductance	g _{fs}	I _D =22.5A V _{DS} =25V	15.0	35.0		S
Input capacitance	C _{iss}	V _{DS} =25V		2900	4350	pF
Output capacitance	C _{oss}	V _{GS} =0V		930	1400	
Reverse transfer capacitance	C _{rss}	f=1MHz		260	390	
Turn-on time t _{on}	td(on)	V _{CC} =30V I _D =45A		13	30	ns
	t _r			35	50	
	td(off)		V _{GS} =10V	190	290	
Turn-off time t _{off}	t _f	R _{GS} =10Ω		75	140	
	I _{AV}	L=100μH T _{ch} =25°C	45			A
Avalanche capability	I _{AV}	L=100μH T _{ch} =25°C	45			A
Diode forward on-voltage	V _{SD}	I _F =45A V _{GS} =0V T _{ch} =25°C		0.95	1.43	V
Reverse recovery time	t _{rr}	I _F =45A V _{GS} =0V		55		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		0.10		μC

Thermal characteristics

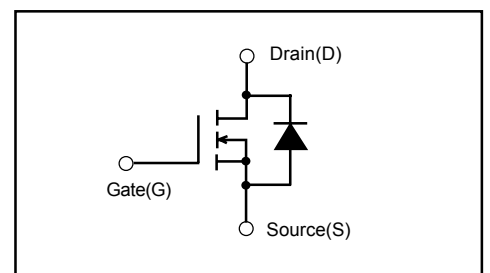
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			2.08	°C/W
	R _{th(ch-a)}	channel to ambient			75.0	°C/W

<http://www.fujielectric.co.jp/fdt/scd/>

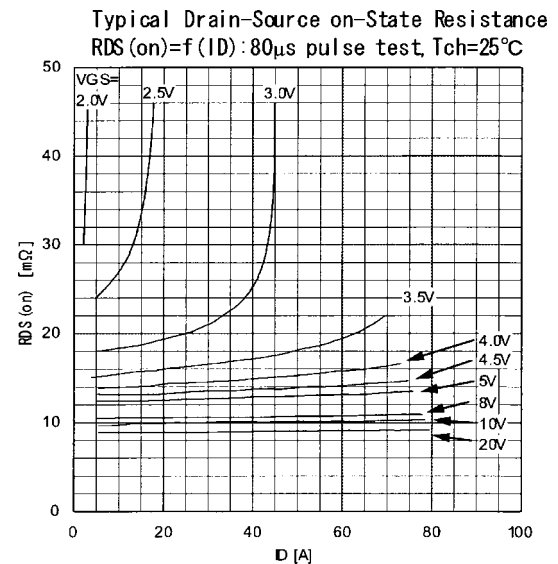
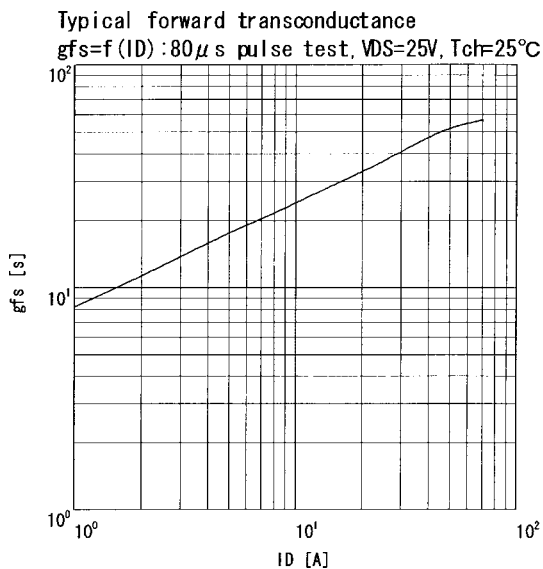
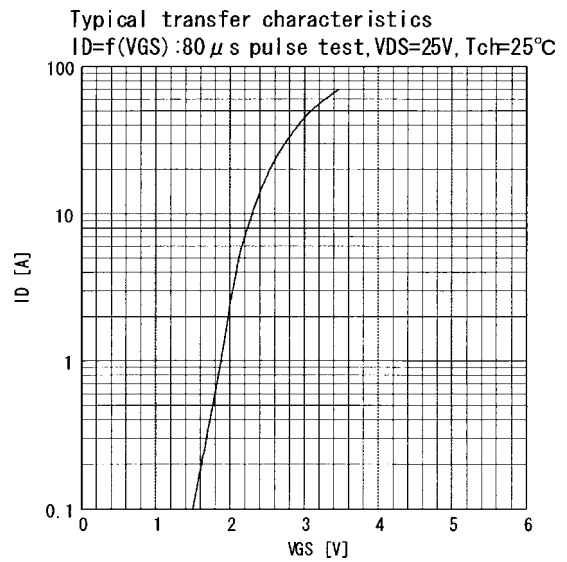
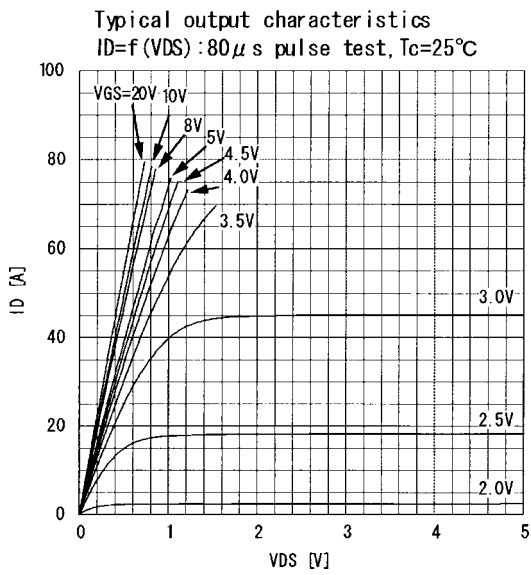
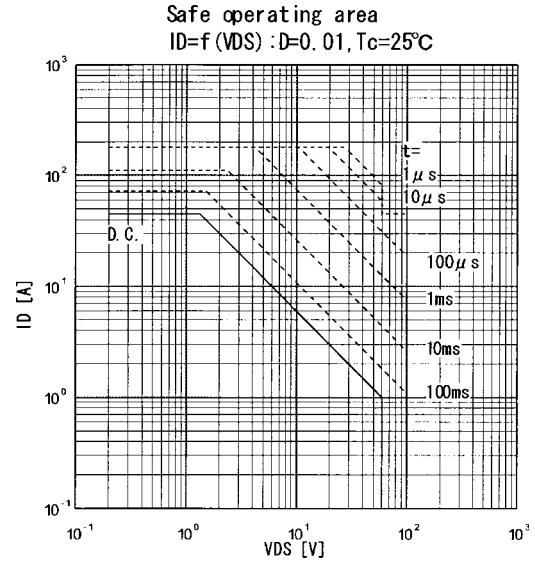
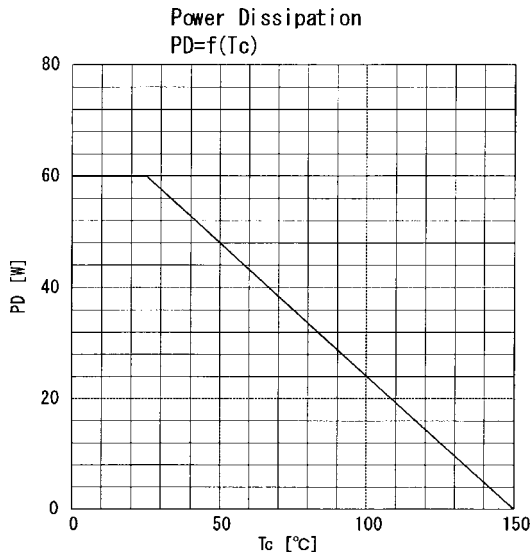
Outline Drawings [mm]

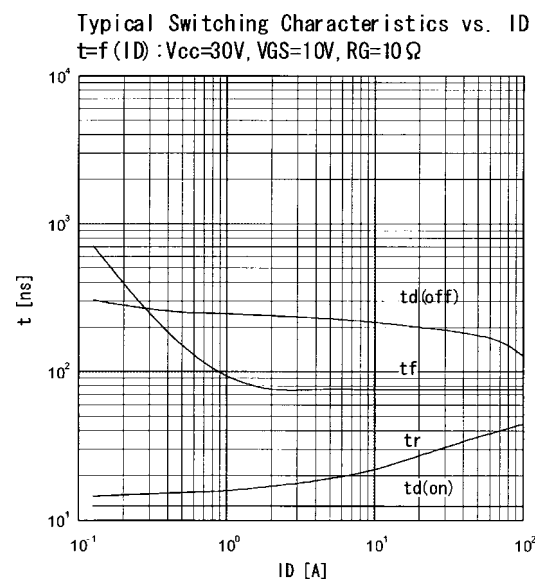
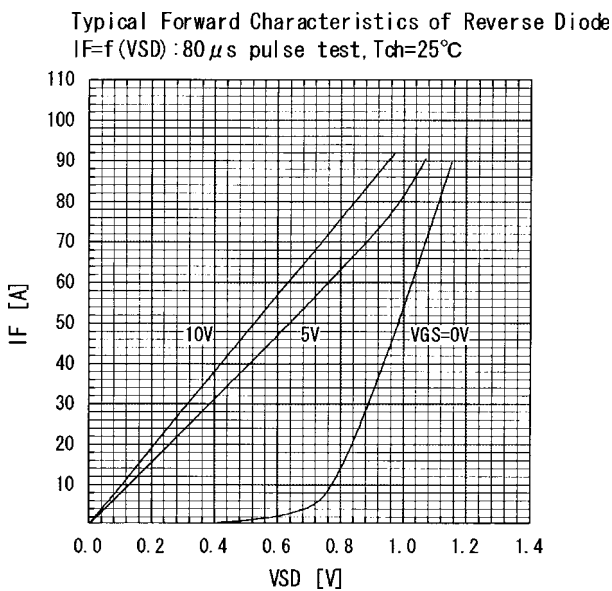
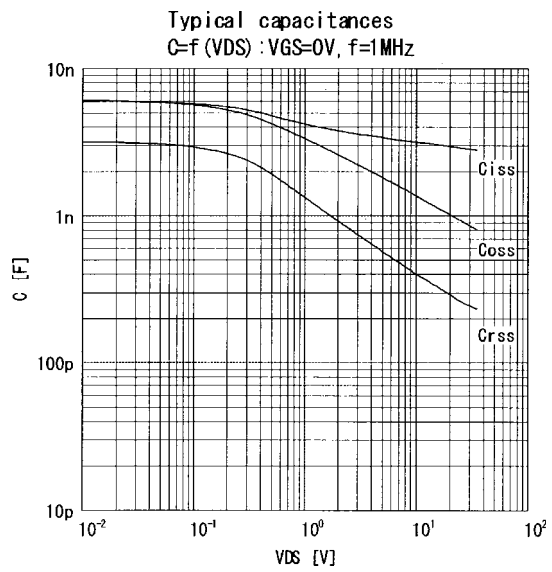
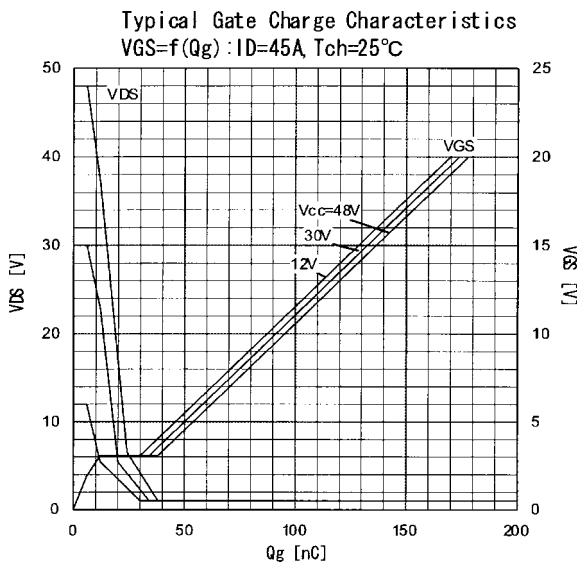
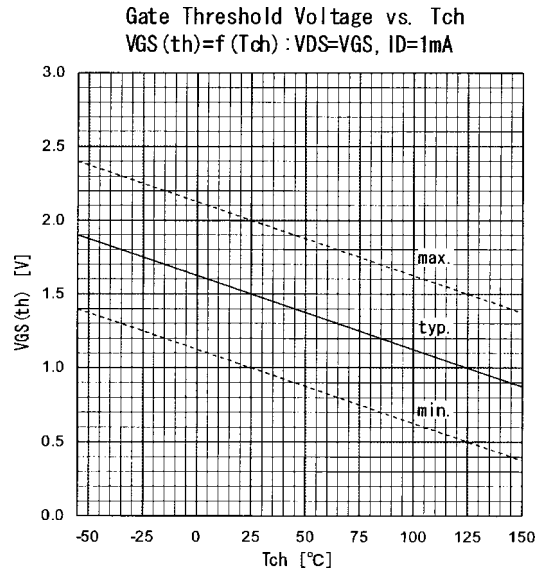
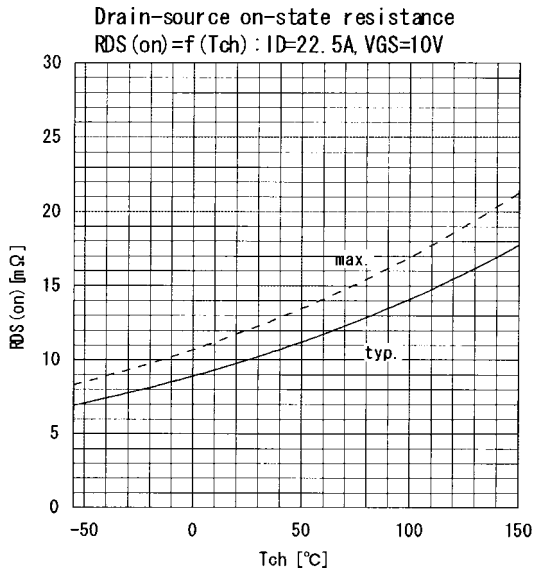


Equivalent circuit schematic

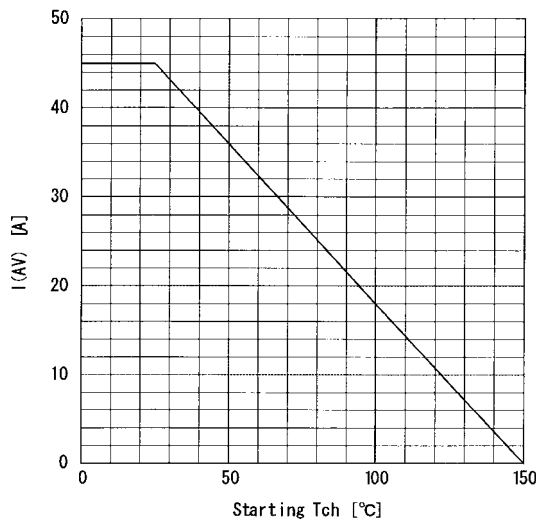


Characteristics

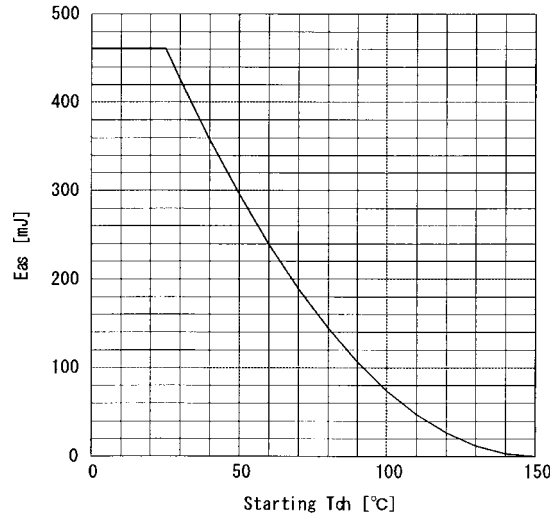




Maximum Avalanche Current vs. starting Tch
 $I_{(AV)} = f(\text{starting Tch})$



Maximum Avalanche energy vs. starting Tch
 $E_{as} = f(\text{starting Tch}) : V_{cc} = 24V, I_{AV} \leq 45A$



Transient thermal impedance
 $Z_{thch} = f(t)$ parameter: $D = t/T$

