

N-CHANNEL SILICON POWER MOSFET

FAP-IIA SERIES

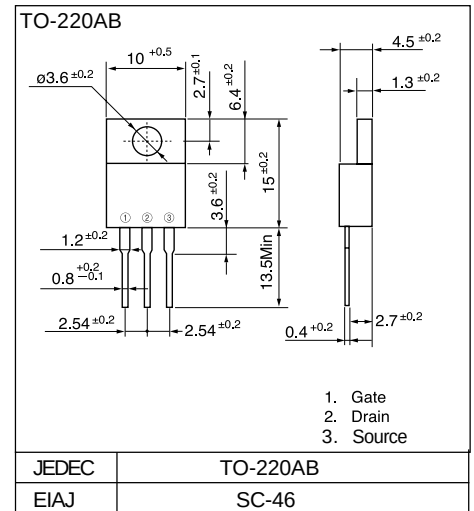
■ Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage
- $V_{GS}=\pm 30V$ Guarantee
- Avalanche-proof

■ Applications

- Switching regulators
- UPS
- DC-DC converters
- General purpose power amplifier

■ Outline Drawings

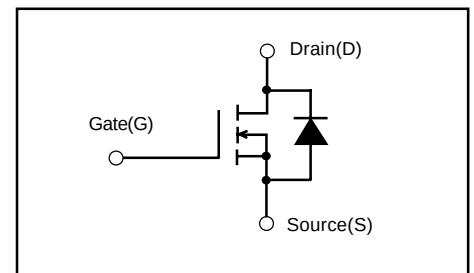


■ Maximum ratings and characteristics

- Absolute maximum ratings (Tc=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	600	V
Continuous drain current	I_D	3	A
Pulsed drain current	$I_{D(puls)}$	12	A
Continuous reverse drain current	I_{DR}	3	A
Gate-source peak voltage	V_{GS}	± 30	V
Max. power dissipation	P_D	40	W
Operating and storage temperature range	T_{ch}	+150	$^{\circ}C$
	T_{stg}	-55 to +150	$^{\circ}C$

■ Equivalent circuit schematic



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

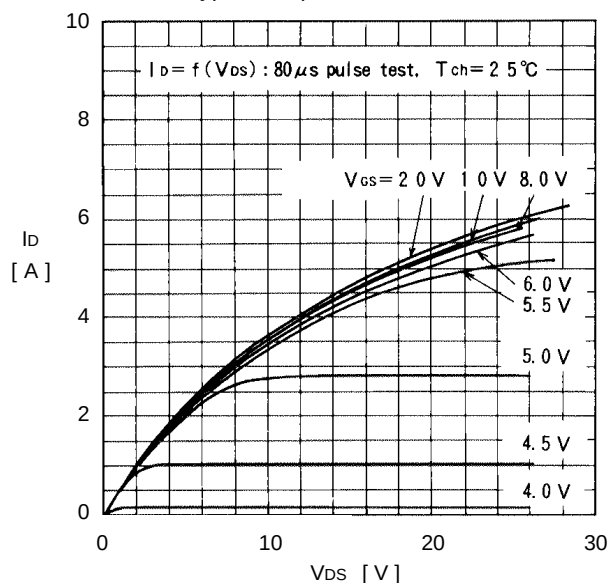
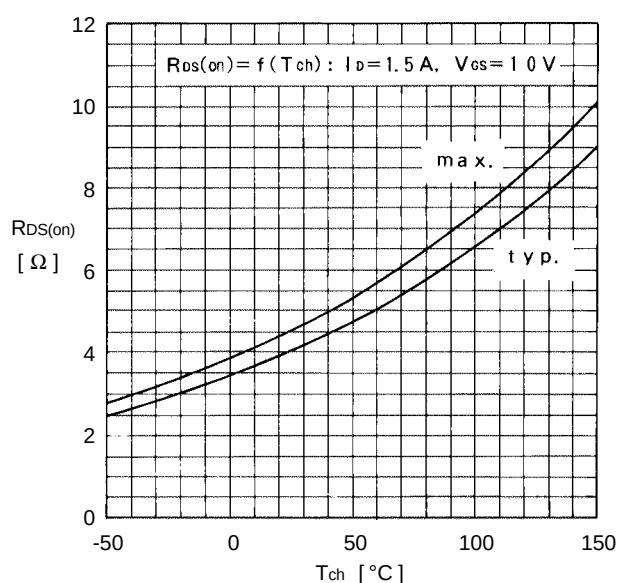
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V(BR)DSS	ID=1mA VGS=0V		600			V
Gate threshold voltage	VGS(th)	ID=1mA	VDS=VGS	2.5	3.0	3.5	V
Zero gate voltage drain current	IDSS	VDS=600V VGS=0V	Tch=25°C		10	500	μA
			Tch=125°C		0.2	1.0	mA
Gate-source leakage current	IGSS	VGS=±30V VDS=0V			10	100	nA
Drain-source on-state resistance	RDS(on)	ID=1.5A VGS=10V			4.0	4.5	Ω
Forward transconductance	gfs	ID=1.5A VDS=25V		1.5	3.0		S
Input capacitance	Ciss	VDS=25V			600	900	pF
Output capacitance	Coss	VGS=0V			50	75	
Reverse transfer capacitance	Crss	f=1MHz			10	15	
Turn-on time ton (ton=td(on)+tr)	td(on)	Vcc=300V RG=10 Ω			15	25	ns
	tr	ID=3A			10	15	
Turn-off time toff (toff=td(off)+tr)	td(off)	VGS=10V			40	60	
	tr				10	15	
Avalanche capability	IAV	L=100μH Tch=25°C		3			A
Diode forward on-voltage	VSD	IF=2xIDR VGS=0V Tch=25°C			1.1	1.65	V
Reverse recovery time	trr	IF=IDR VGS=0V			400		ns
Reverse recovery charge	Qrr	-di/dt=100A/μs Tch=25°C			15		μC

● Thermal characteristics

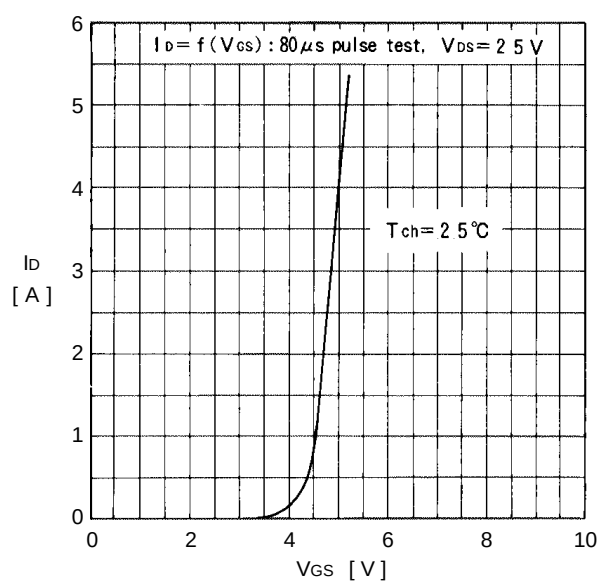
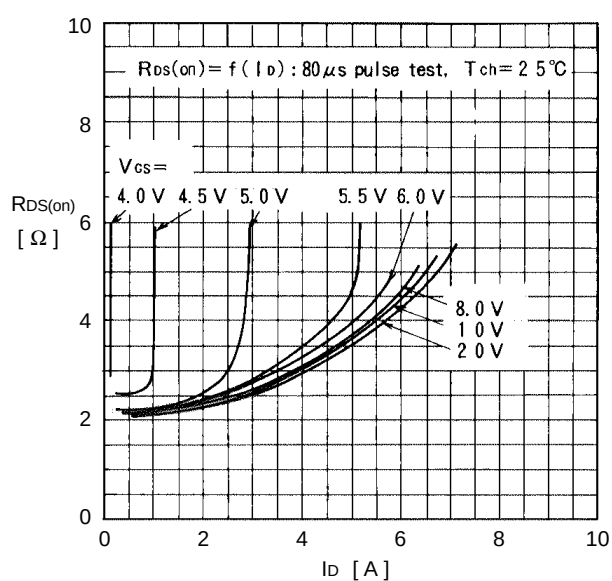
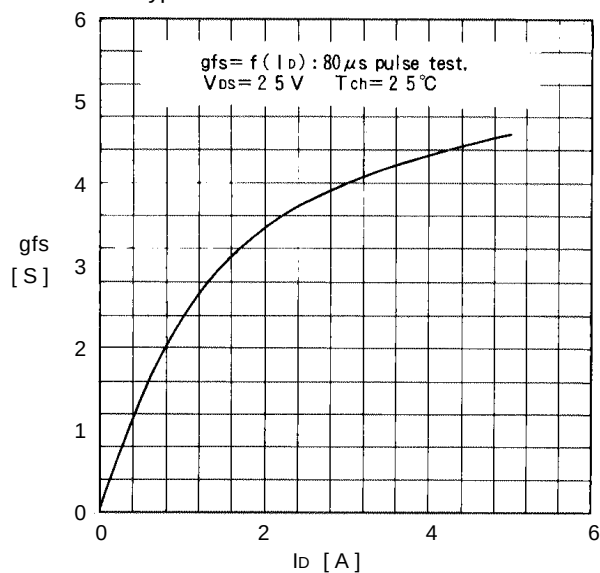
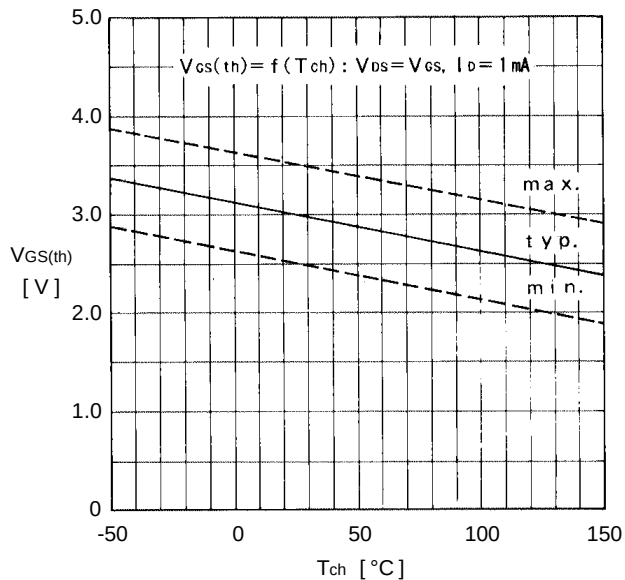
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-a)}	channel to ambient			75.0	°C/W
	R _{th(ch-c)}	channel to case			3.125	°C/W

Characteristics

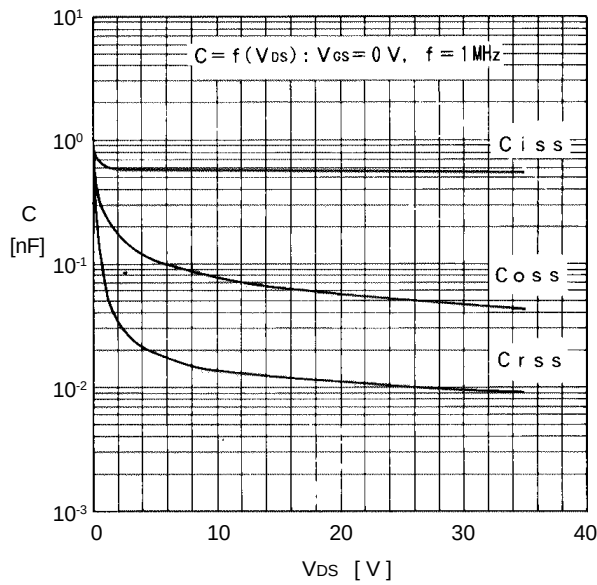
Typical output characteristics

On state resistance vs. T_{ch} 

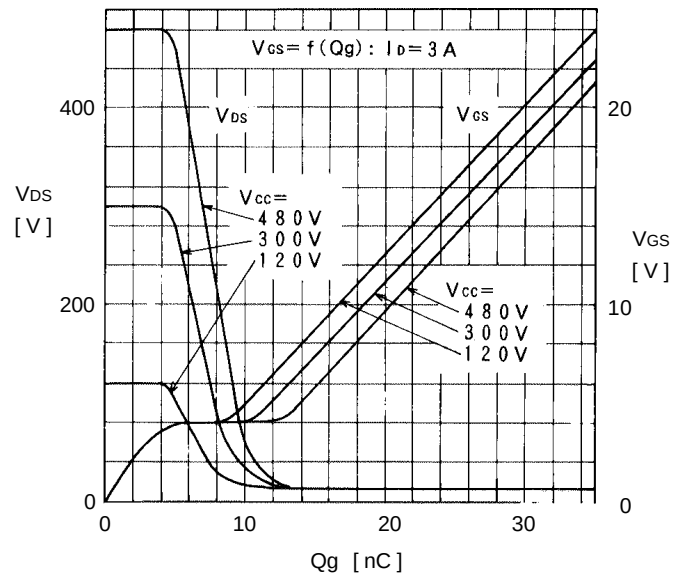
Typical transfer characteristics

Typical Drain-Source on state resistance vs. I_D Typical forward transconductance vs. I_D Gate threshold voltage vs. T_{ch} 

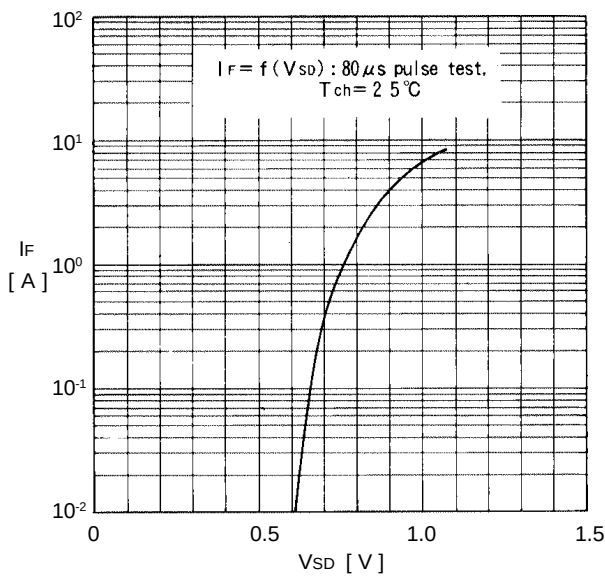
Typical capacitance vs. V_{DS}



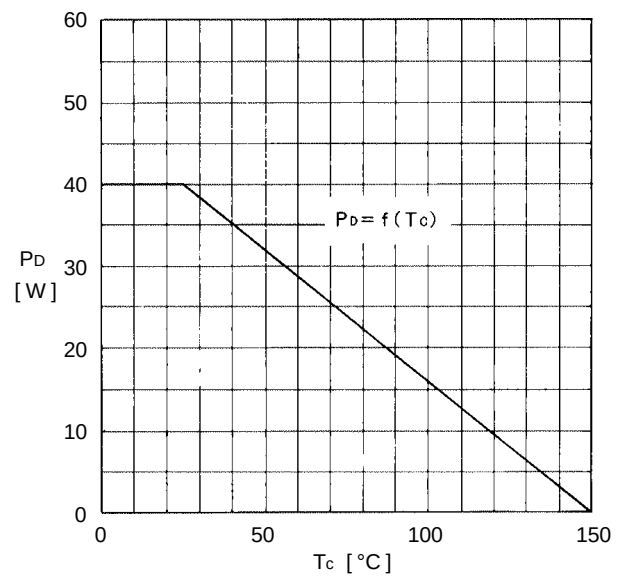
Typical input charge



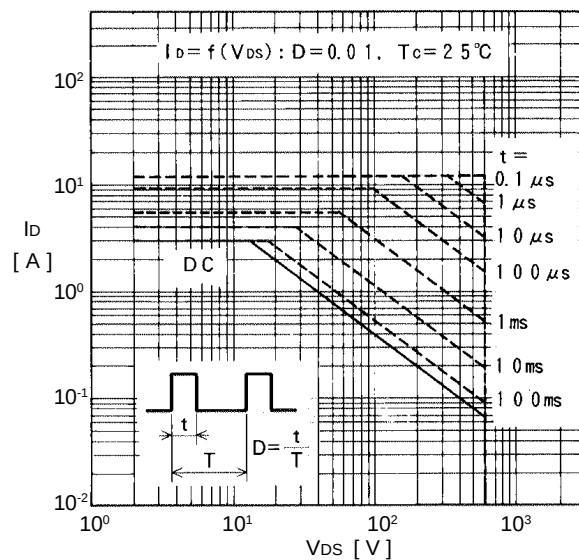
Forward characteristics of reverse diode



Allowable power dissipation vs. T_c



Safe operating area



Transient thermal impedance

