

N-CHANNEL SILICON POWER MOSFET

FAP-IIA SERIES

■ Features

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

■ Applications

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

■ 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	2	A
Pulsed drain current	I _D (puls)	6	A
Continuous reverse drain current	I _{DR}	2	A
Gate-source peak voltage	V _{GS}	±25	V
Max. power dissipation	P _D	30	W
Operating and storage temperature range	T _{ch} T _{stg}	+150 -55 to +150	°C

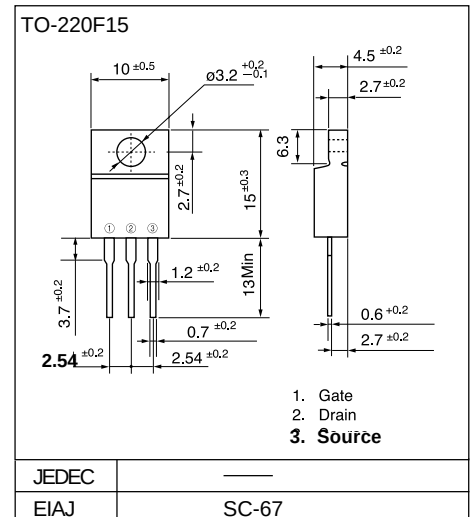
● Electrical characteristics (Tc =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =1mA V _{GS} =0V	600			V
Gate threshold voltage	V _{GS(th)}	I _D =10mA V _{DS} =V _{GS}	2.1	3.0	4.0	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =600V 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} =±25V V _{DS} =0V		10	100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D =1A V _{GS} =10V		5.5	6.5	Ω
Forward transconductance	g _{fs}	I _D =1A V _{DS} =25V	1.0	1.8		S
Input capacitance	C _{iss}	V _{DS} =25V		270	400	pF
Output capacitance	C _{oss}	V _{GS} =0V		32	48	
Reverse transfer capacitance	C _{rss}	f=1MHz		15	23	
Turn-on time t _{on} (t _{on} =t _{d(on)} +t _r)	t _{d(on)}	V _{CC} =300V R _G =25 Ω I _D =2A V _{GS} =10V		4	6	ns
	t _r			12	18	
Turn-off time t _{off} (t _{off} =t _{d(off)} +t _f)	t _{d(off)}			25	40	
	t _f			20	30	
Diode forward on-voltage	V _{SD}	I _F =2I _{DR} V _{GS} =0V T _{ch} =25°C		0.92	1.41	V
Reverse recovery time	t _{rr}	I _F =I _{DR} di/dt=100A/μs T _{ch} =25°C		500		ns

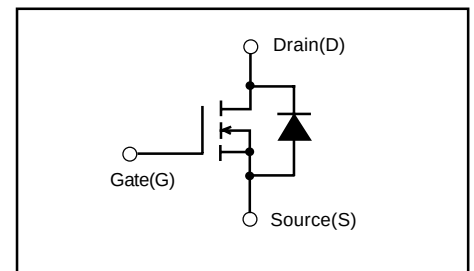
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-a)}	channel to ambient			62.5	°C/W
	R _{th(ch-c)}	channel to case			4.167	°C/W

■ Outline Drawings

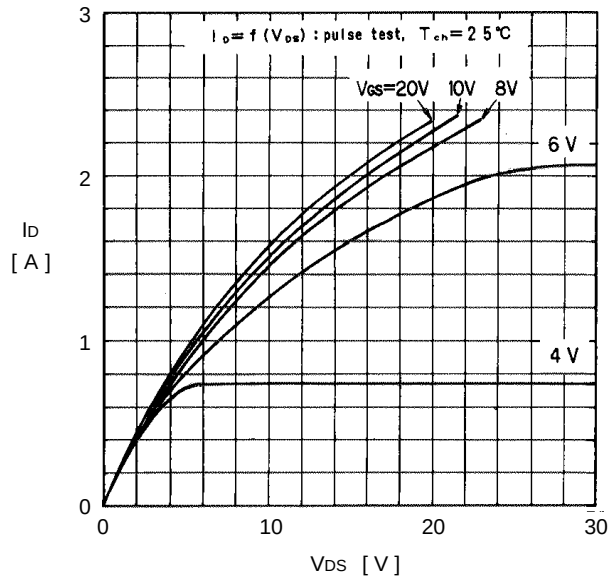
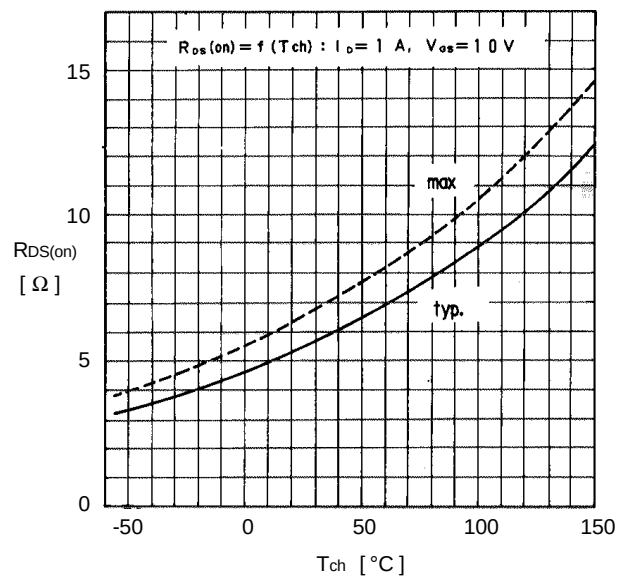


■ Equivalent circuit schematic

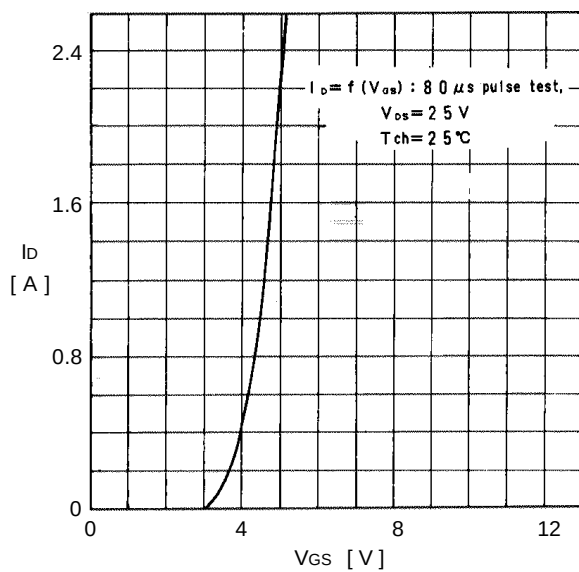
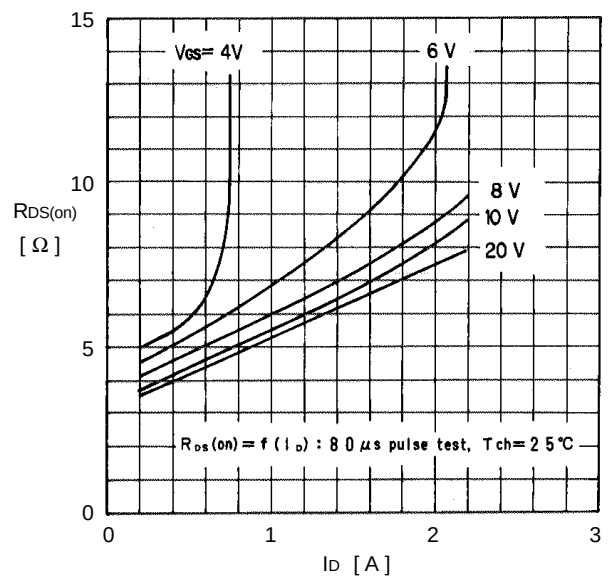
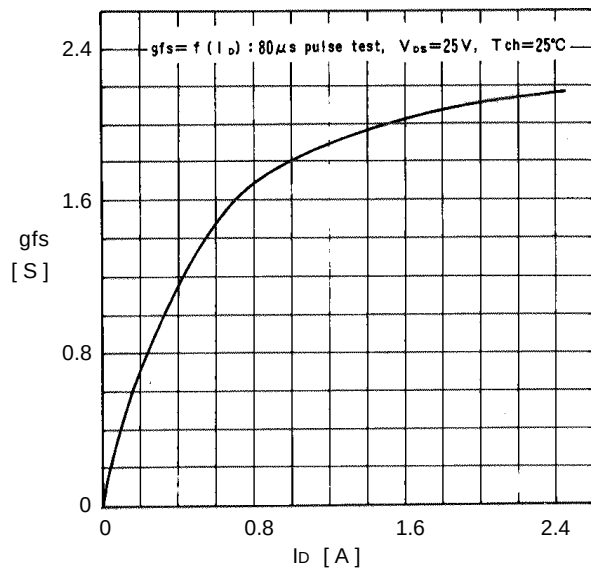
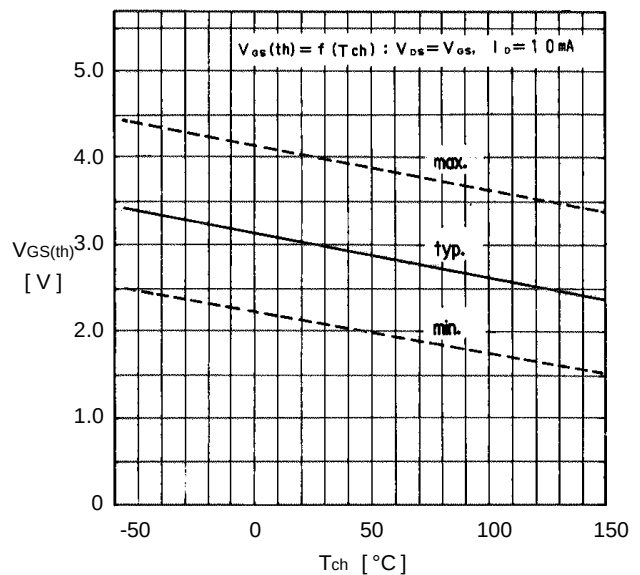


Characteristics

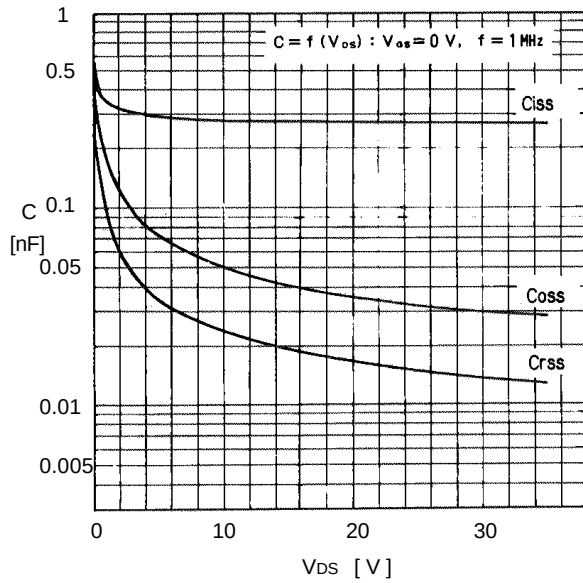
Typical output characteristics

On state resistance vs. T_{ch} 

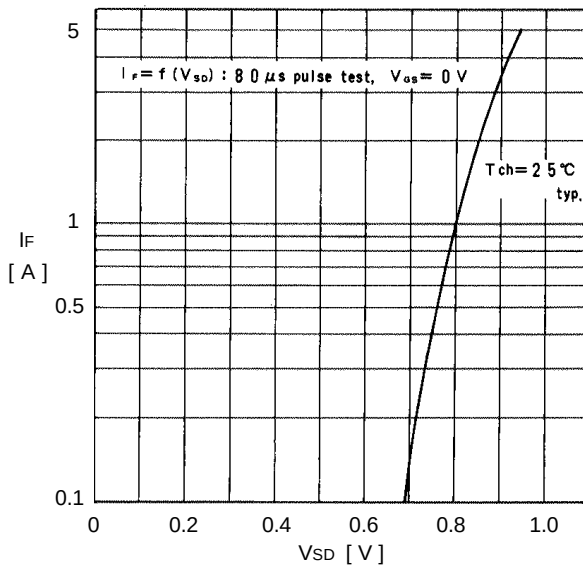
Typical transfer characteristics

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

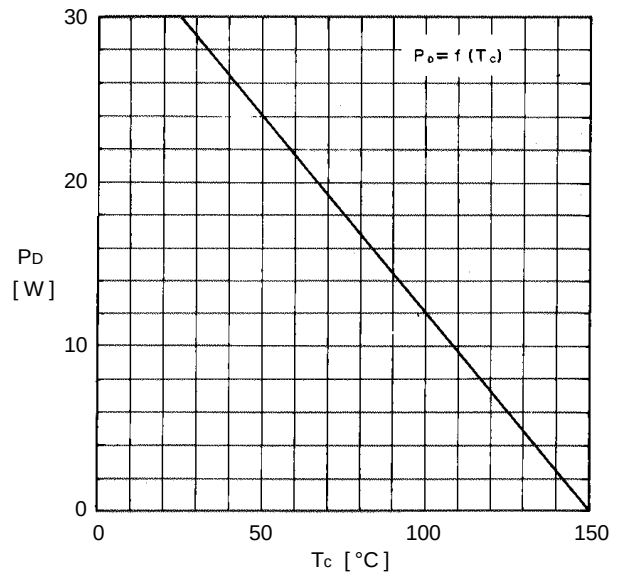
Typical capacitance vs. V_{DS}



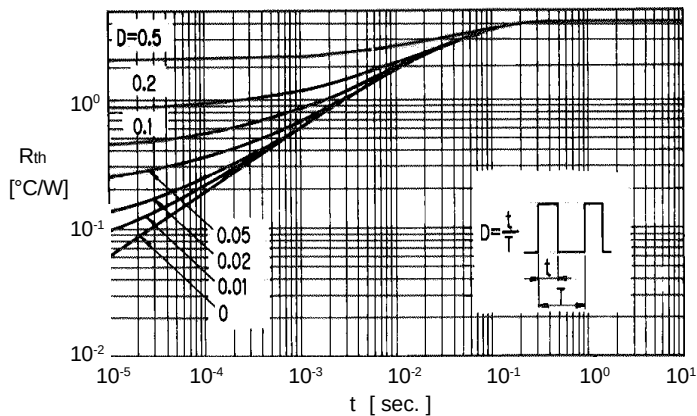
Forward characteristics of reverse diode



Allowable power dissipation vs. T_c



Transient thermal impedance



Safe operating area

