

N-CHANNEL SILICON POWER MOSFET

FAP-IIS SERIES

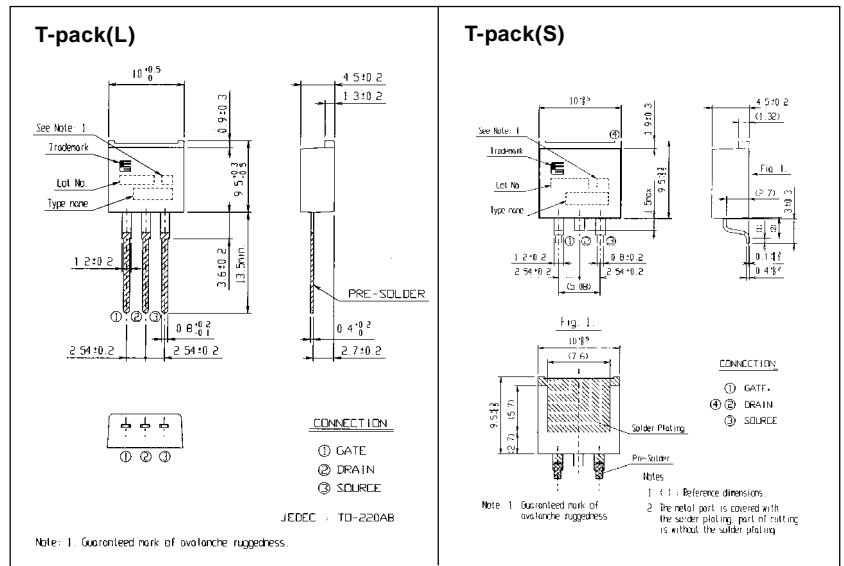
Features

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

Applications

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

Outline Drawings

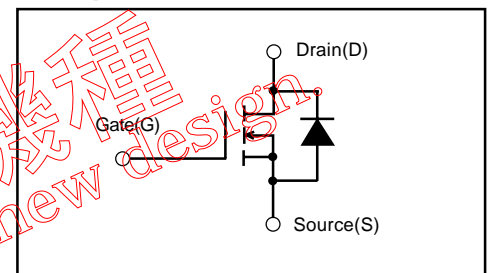


Maximum ratings and characteristics

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

Item	Symbol	Rating	Unit	Remarks
Drain-source voltage	V _{DS}	450	V	
Continuous drain current	I _D	±8	A	
Pulsed drain current	I _D [puls]	±32	A	
Gate-source peak voltage	V _{GS}	±35	V	
Repetitive or non-repetitive	I _{AV}	8	A	T _{ch} ≤ 150°C
Maximum avalanche energy	E _{AV}	215.9	mJ	
Maximum power dissipation	P _D	60	W	
Operating and storage temperature range	T _{ch} T _{stg}	+150 -55 to +150	°C	

Equivalent circuit schematic



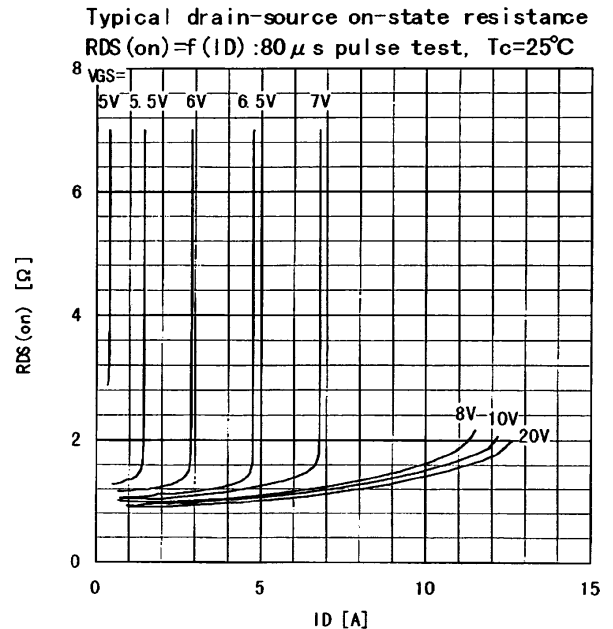
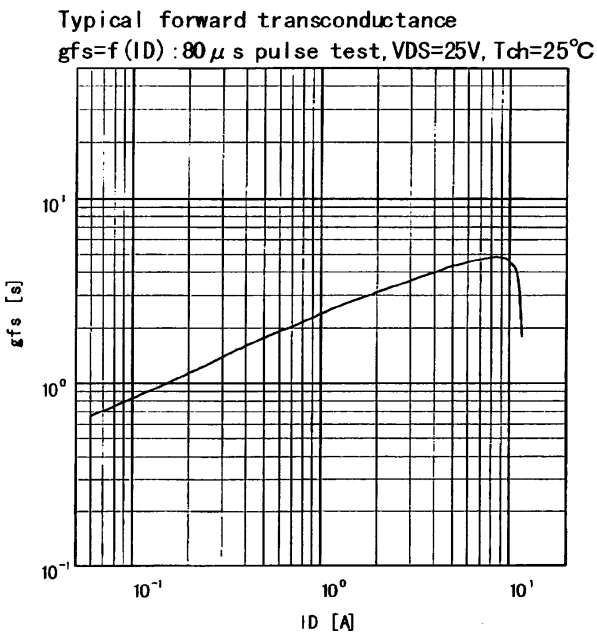
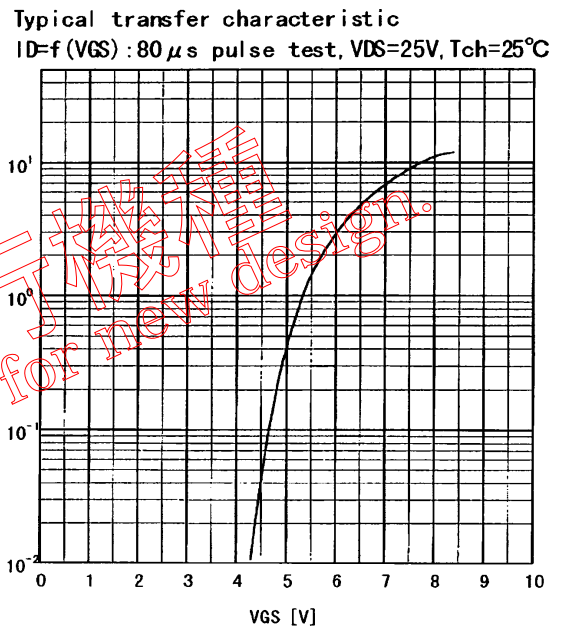
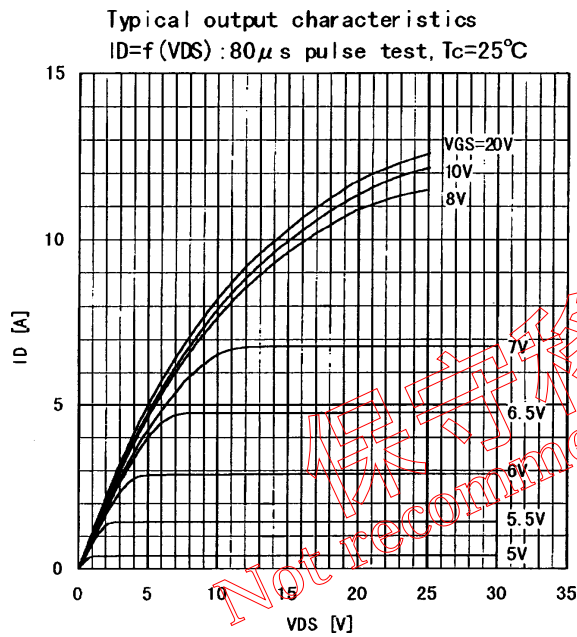
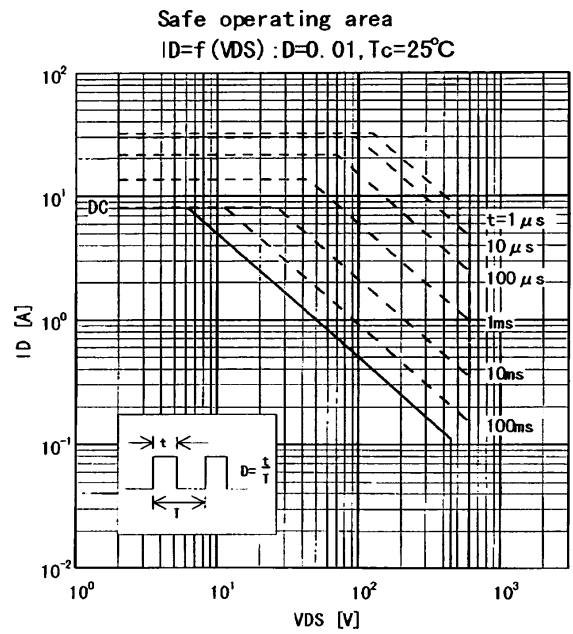
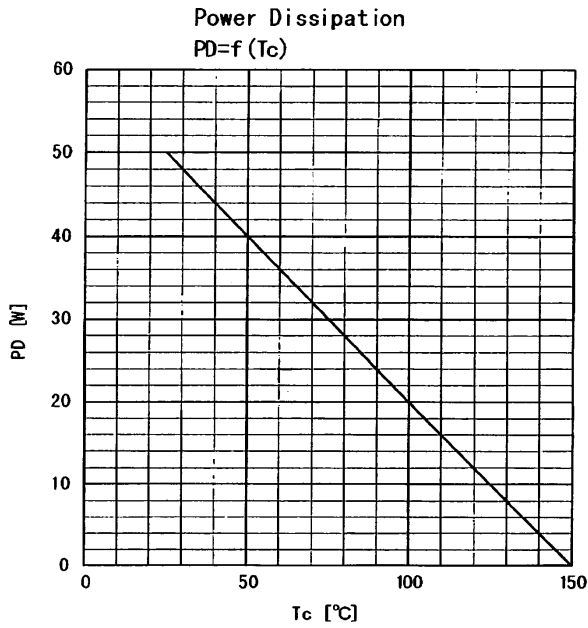
Electrical characteristics (Tc = 25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units	
Drain-source breakdown voltage	V(BR)DSS	I _D =1mA V _{GS} =0V	450			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} =450V 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} =±35V V _{DS} =0V		10	100	nA	
Drain-source on-state resistance	R _{DS(on)}	I _D =4A V _{GS} =10V V _{GS} =4V		1.0	1.2	Ω	
Forward transconductance	g _{fs}	I _D =4A V _{DS} =25V	2	4		S	
Input capacitance	C _{iss}	V _{DS} =25V		540	810	pF	
Output capacitance	C _{oss}	V _{GS} =0V		100	150		
Reverse transfer capacitance	C _{rss}	f=1MHz		45	70		
Turn-on time	t _{d(on)}	V _{CC} =300V R _G =10 Ω		13	20	ns	
			I _D =8A	45	70		
	t _r	V _{GS} =10V	40	60			
Turn-off time	t _{d(off)}		25	40			
	t _f						
Avalanche capability	I _{AV}	L=6.19mH T _{ch} =25°C	8			A	
Diode forward on-voltage	V _{SD}	I _F =2I _{DR} V _{GS} =0V T _{ch} =25°C		1.10	1.65	V	
Reverse recovery time	t _{rr}	I _F =I _{DR} V _{GS} =0V		450		ns	
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		3.7		μC	

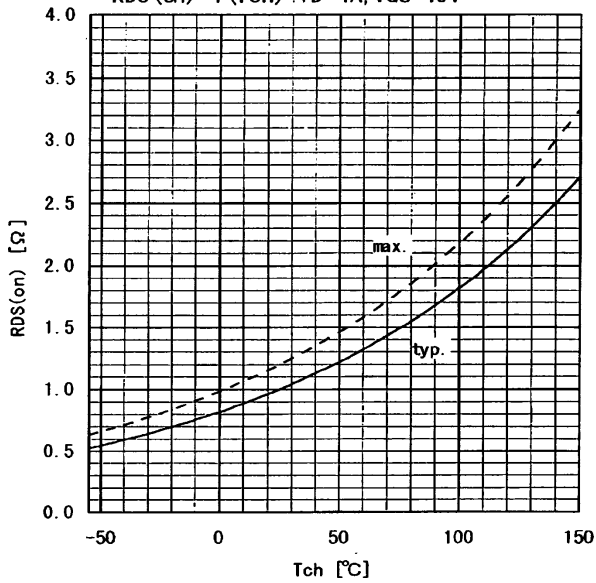
Thermal characteristics

Item	Symbol	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}			2.50	°C/W
	R _{th(ch-a)}			125.0	°C/W

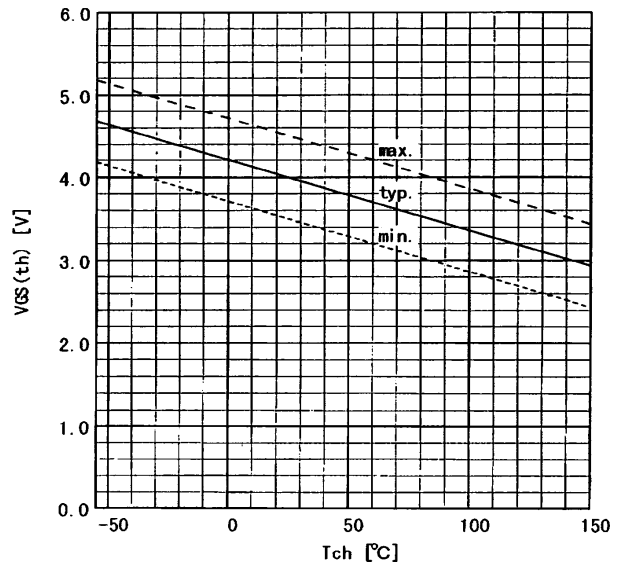
Characteristics



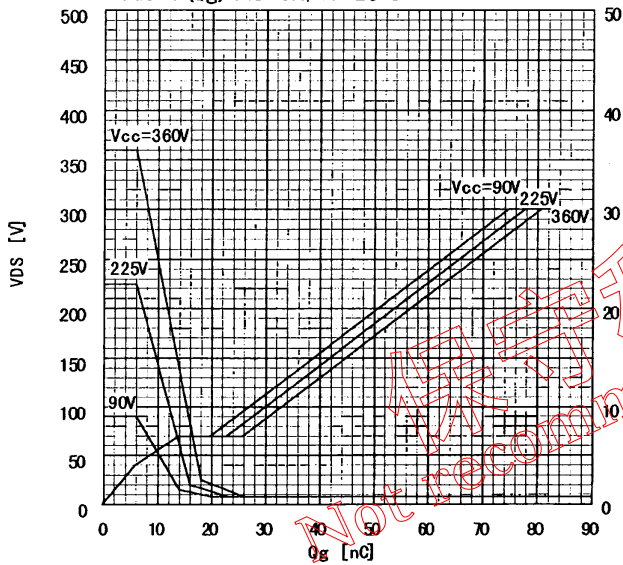
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 4A, V_{GS} = 10V$



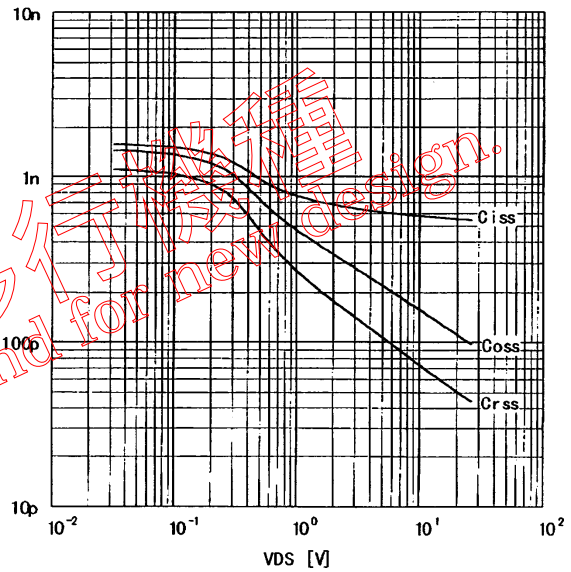
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$



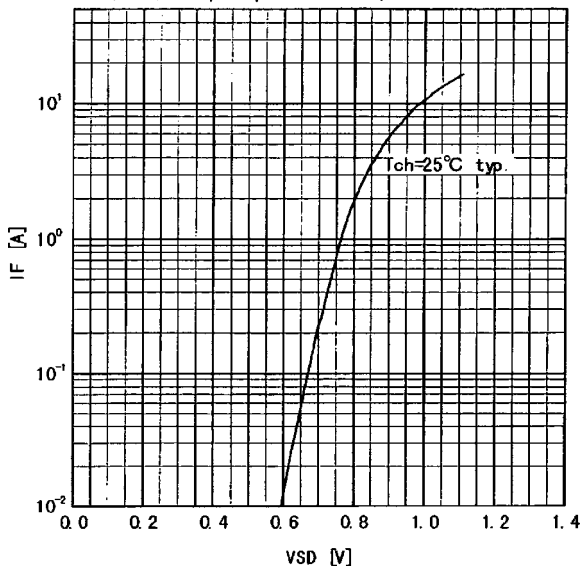
Typical gate charge characteristic
 $V_{GS} = f(Q_g) : I_D = 8A, T_c = 25°C$



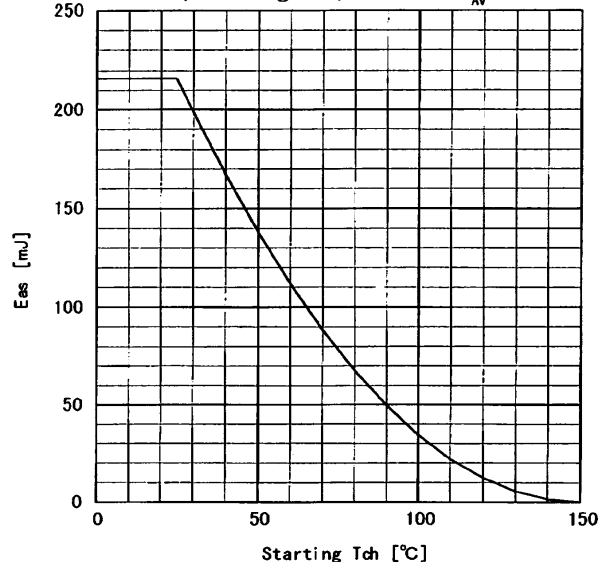
Typical capacitances
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$

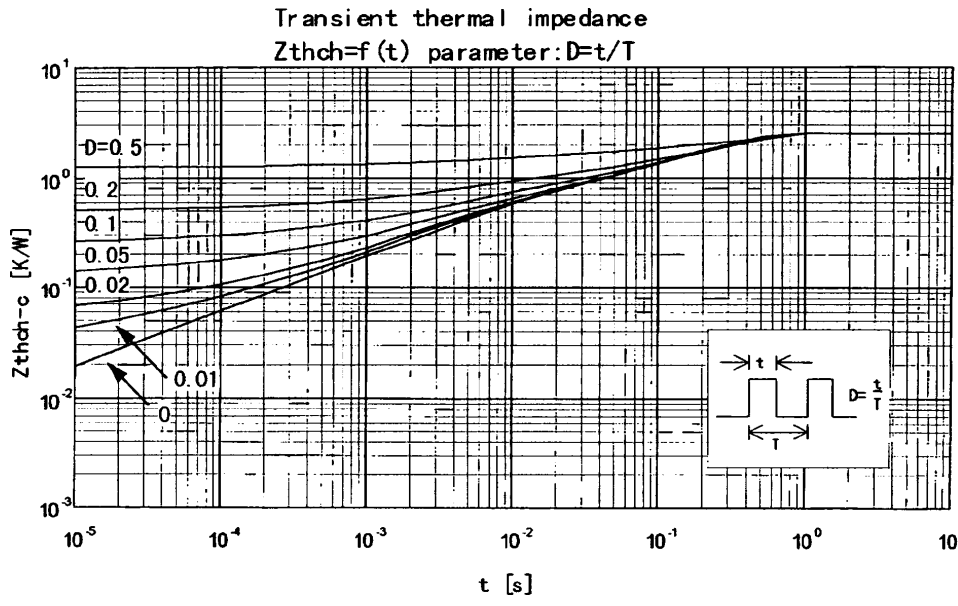


Forward characteristic of reverse of diode
 $I_F = f(V_{SD}) : 80 \mu s \text{ pulses test}, V_{GS} = 0V$



Avalanche energy derating
 $E_{as} = f(\text{starting } T_{ch}) : V_{CC} = 45V, I_{AV} = 8A$





保守移行機種
Not recommend for new design.