



# FP502

N-Channel Silicon MOSFET  
Silicon Schottky Barrier Diode

## DC-DC Converter Applications

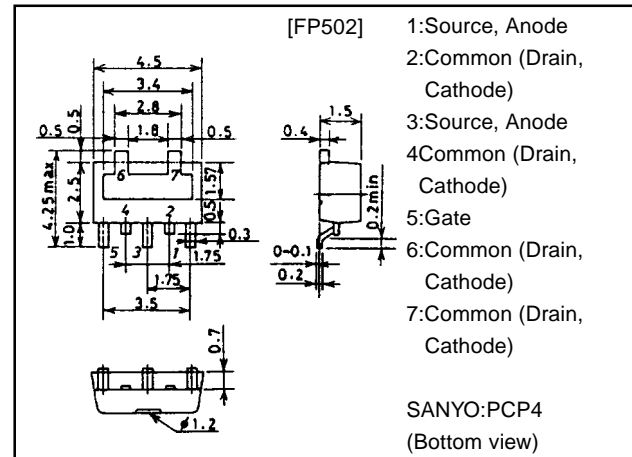
### Features

- Composite type with a high-speed N-channel MOSFET and a low-forward voltage Schottky barrier diode contained in the PCP4 package, saving the mount space greatly.

### Package Dimensions

unit:mm

2132



### Specifications

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Allowable Power Dissipation	P <sub>D</sub>	T <sub>c</sub> =25°C, 1 unit	3.5	W
	P <sub>D</sub>	Mounted on ceramic board (250mm <sup>2</sup> ×0.8mm) 1 unit	1.5	W
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C
[MOS block]				
Drain-to-Source Voltage	V <sub>DSS</sub>		11	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		2	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle ≤1%	8	A
Channel Temperature	T <sub>ch</sub>		150	°C
[Diode block]				
Average Rectified Current	I <sub>O</sub>		500	mA

#### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOS block]						
D-S Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0	11			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =10.4V, V <sub>GS</sub> =0			400	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	1.0		4.0	V
Forward Transfer Admittance	Y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1A	1.2	2.2		S
Static Drain-to-Source ON-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =1A, V <sub>GS</sub> =10V		140	200	mΩ
	R <sub>DS(on)</sub>	I <sub>D</sub> =500mA, V <sub>GS</sub> =4V		200	320	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, f=1MHz		150		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =10V, f=1MHz		200		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =10V, f=1MHz		45		pF

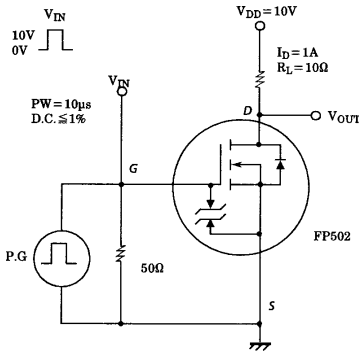
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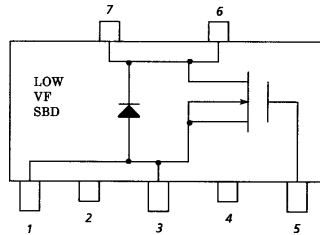
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOS block]						
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		10		ns
Rise Time	$t_r$	See specified Test Circuit.		25		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		25		ns
Fall Time	$t_f$	See specified Test Circuit.		20		ns
[Diode block]						
Forward Voltage	$V_F$	$I_F=500mA$		0.4	0.45	V
Reverse Recovery Time	$t_{rr}$	$I_F=500mA, di/dt=50A/\mu s$		20	30	ns

## Switching Time Test Circuit

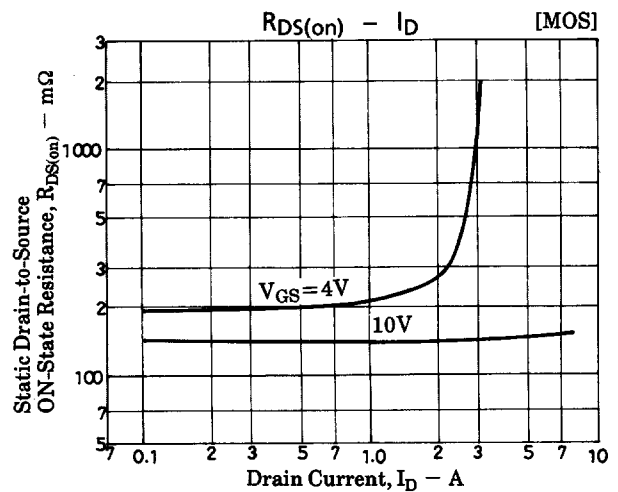
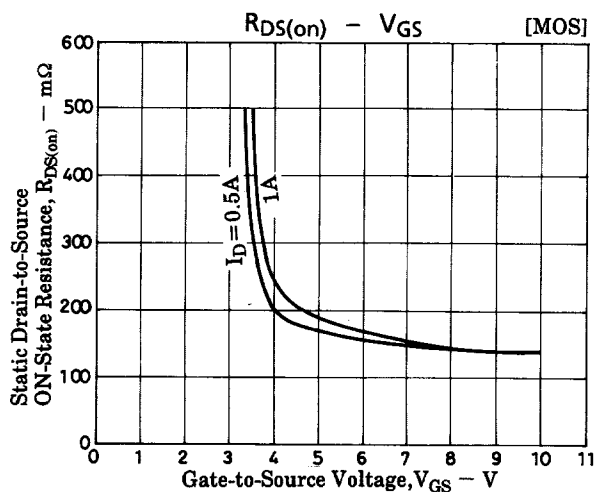
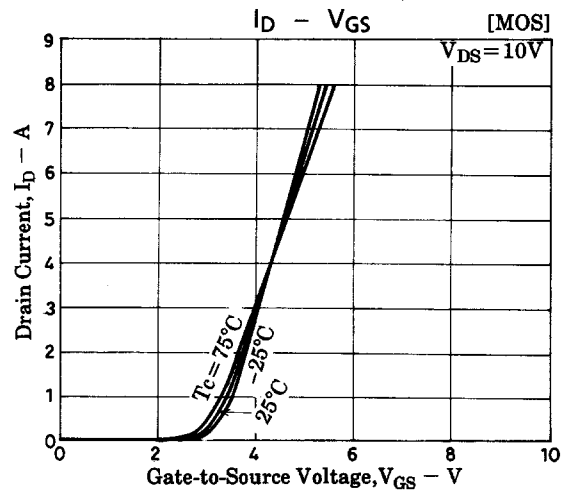
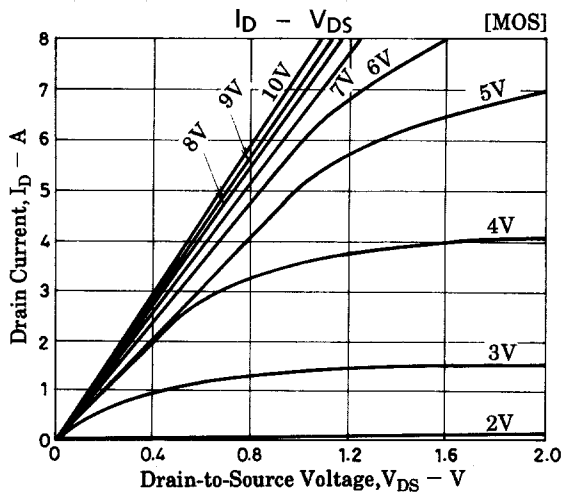


## Electrical Connection

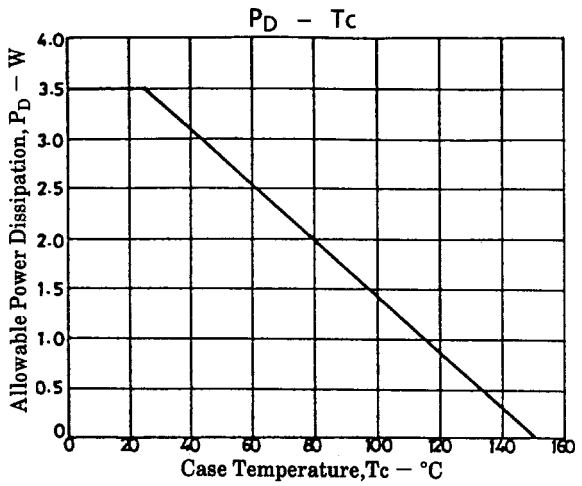
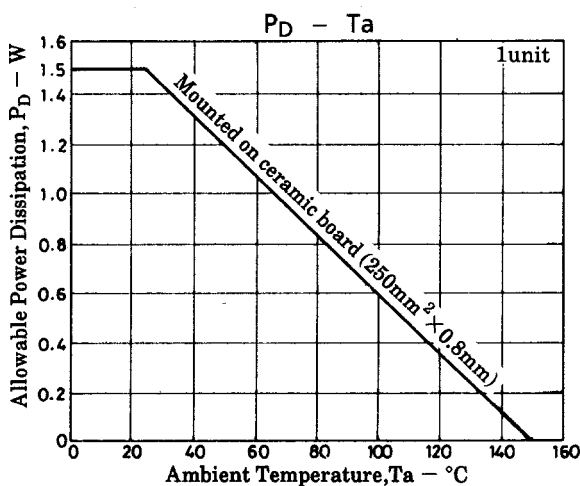
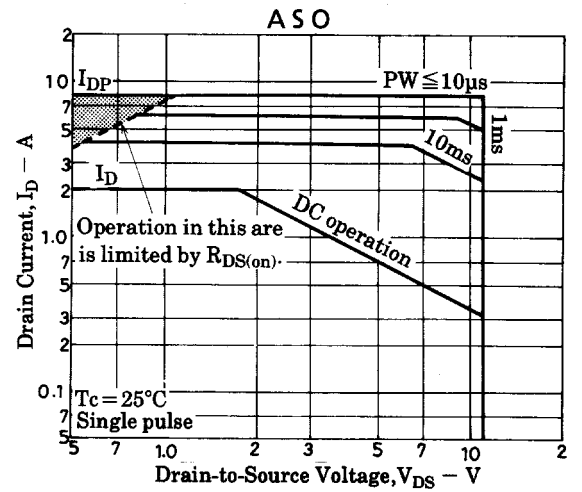
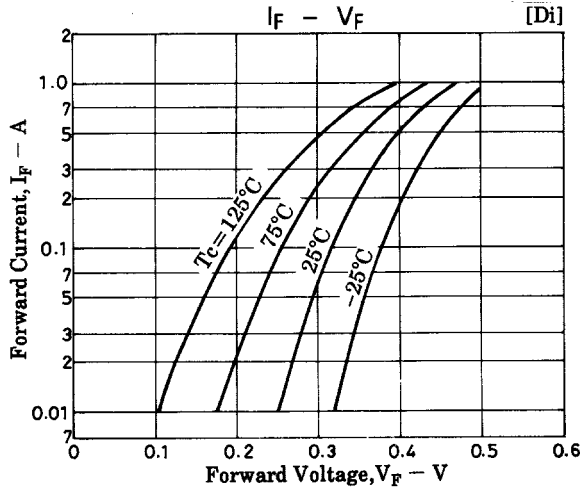
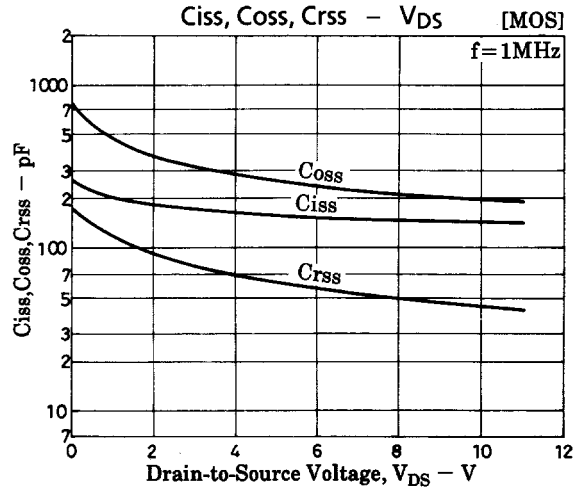
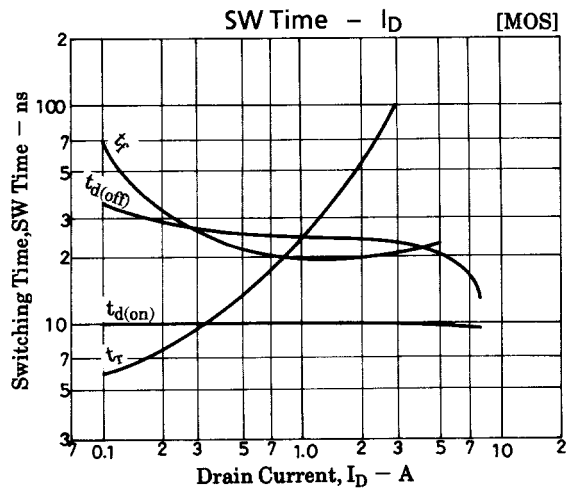
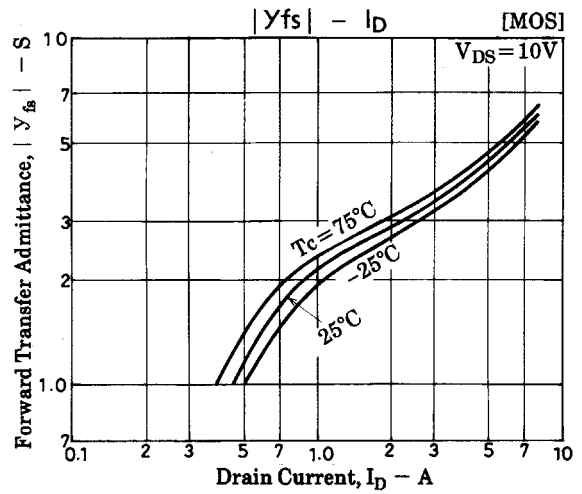
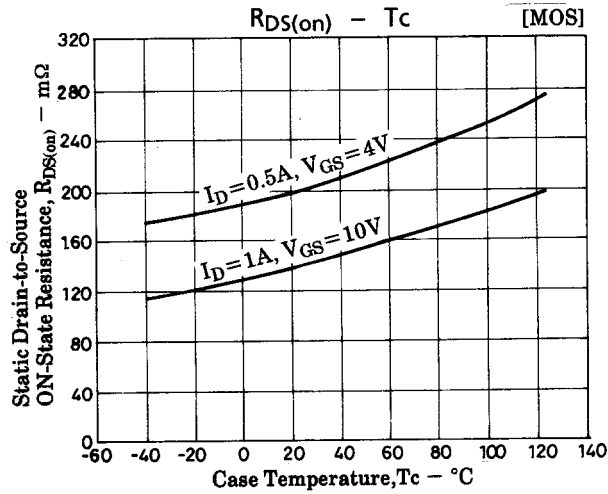


- 1:Source, Anode
- 2:Common (Drain, Cathode)
- 3:Source, Anode
- 4:Common (Drain, Cathode)
- 5:Gate
- 6:Common (Drain, Cathode)
- 7:Common (Drain, Cathode)

(Top view)



# FP502



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