

Surface-mount 4-circuit Low-side Switch Array SPF5001

Features

- DMOS 4ch output
- Allows ON/OFF using C-MOS logic level
- Built-in overcurrent, overvoltage and thermal protection circuits

Absolute Maximum Ratings

(Ta = 25°C)

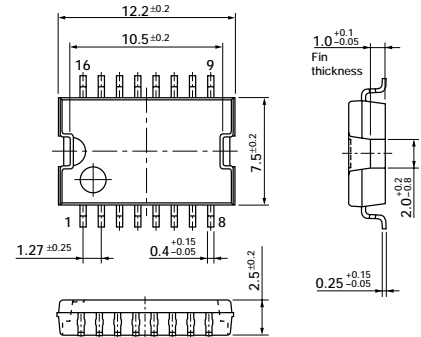
Parameter	Symbol	Ratings	Unit	Conditions
Power supply voltage	V _B	40	V	
Output terminal voltage	V _{OUT}	40	V	
Input terminal voltage	V _{IN}	-0.5 to +7.5	V	
Output current	I _O	1.8	A	
Power Dissipation	P _D	2	W	
Storage temperature	T _{stg}	-40 to +150	°C	
Channel temperature	T _{ch}	150	°C	
Output avalanche capability	E _{AV}	100	mJ	Single pulse

Electrical Characteristics

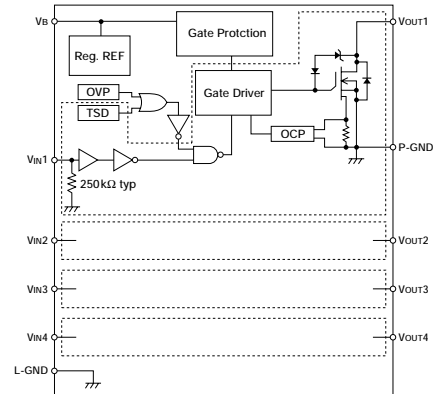
(V_B = 14V, T_C = -40 to +125°C unless otherwise specified)

Parameter	Symbol	Ratings			Unit	Conditions
		min	typ	max		
Power supply voltage	V _{Bopr}	5.5		32	V	
Quiescent circuit current	I _q		4	6	mA	All outputs are OFF
Input voltage	Hi output V _{IN}	3.5		5.5	V	I _O = 1.5A
	Lo output V _{IN}	-0.5		1.5	V	
Input current	Hi output I _{IN}			50	μA	V _{IN} = 5V
	Lo output I _{IN}			30	μA	V _{IN} = 0V
Output ON voltage	V _{DS(on)}		0.42	0.55	V	I _O = 1A
			0.64	0.75	V	I _O = 1.5A
Output ON resistance	R _{DS(on)}		0.25	0.3	Ω	Ta = 25°C
			0.3	0.4	Ω	Ta = 25°C, V _B = 5.5V
Output clamp voltage	V _{OUT(clamp)}	41	45	55	V	V _B = 14V, I _D = 1A
Output leak current	I _{OH}			100	μA	V _O = 30V
Forward voltage of output stage diode	V _F			1.5	V	I _F = 1.5A
Overvoltage protection starting voltage	V _{B(ovp)}	32		40	V	
Thermal protection starting temperature	T _{TSD}	151	165		°C	
Overcurrent protection starting current	I _S	1.9			A	
Output transfer time	T _{ON}			15	μS	R _L = 14Ω, I _O = 1A
	T _{OFF}			15	μS	R _L = 14Ω, I _O = 1A
Output rise time	T _r			15	μS	R _L = 14Ω, I _O = 1A
Output fall time	T _f			15	μS	R _L = 14Ω, I _O = 1A

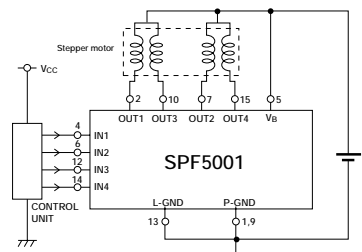
External Dimensions (unit: mm)



Equivalent Circuit Diagram



Circuit Example

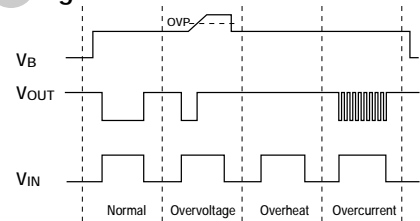


Use L-GND and P-GND being connected.

Truth table

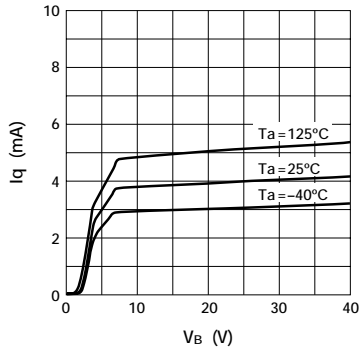
V _{IN}	V _O
H	L
L	H

Timing Chart

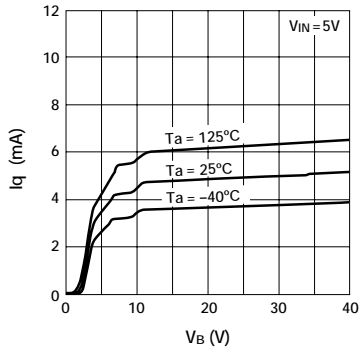


* Self-excited frequency is used in the overcurrent protection.

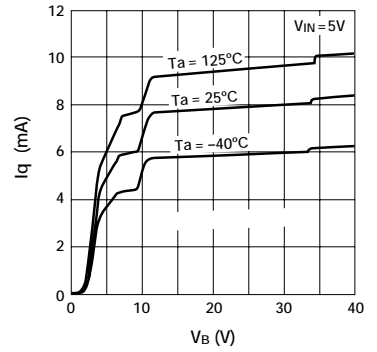
■ Quiescent Circuit Current



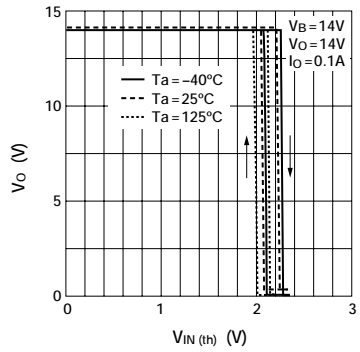
■ Circuit Current (single circuit)



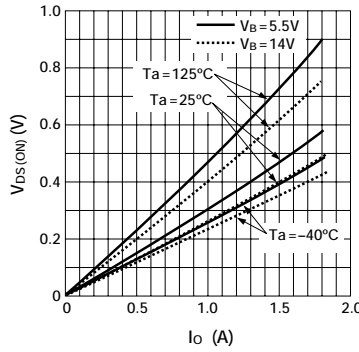
■ Circuit Current (4 circuits)



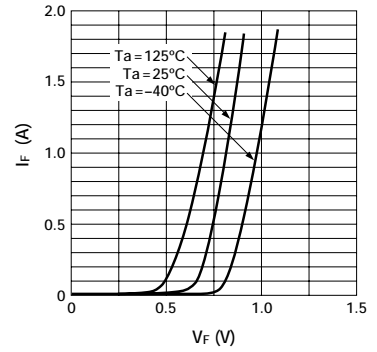
■ Threshold Input Voltage



■ Output ON Voltage



■ Forward Voltage of Output Stage Diode



■ Overvoltage Protection Starting Voltage

