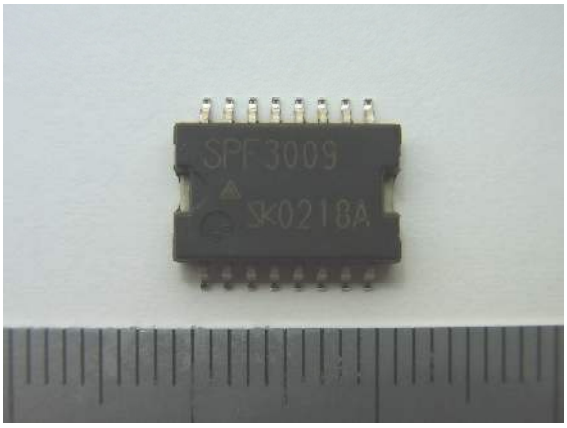
Surface mount type Dual output system series regulator SPF3009

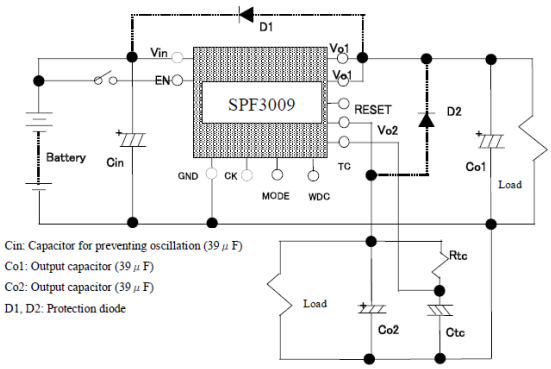
SPF3009 is dual output series regulator mounting the functions needed for automotive ECU. It incorporates dual output (5V/0.4A, 3.3V/0.2A) power elements and has watch dog function, enable function and power ON Reset control function. Also OCP and TSD are incorporated.



Appearance

Features

1 . Composed of single input and dual output
(Ch1: 5V/0.4A, Ch2: 3.3V/0.2A)
Guaranteed ± 2% accuracy of Ch1 output voltage
2 . Built-in Power ON Reset function possible to set power on reset time by external element (Resistor: Rtc/ Capacitor: Ctc)
3 . Built-in watch dog function
4 . Enable function of low consumption current at OFF
5 . Built-in drooping type OCP
6 . Built-in TSD circuit (only Ch1)



Typical connection diagram

Absolute maximum ratings (Ta=25℃)

Characteristics		Symbol	Ratings	Unit	Remarks
DC Input Voltage		Vin	-13 ~ 35	V	Reverse connection 1min (MAX)
			40		1<400mS
Output Control Pin Voltage		EN	-0.3 ~ 35	V	
			40		1<400mS
Output Current	CH1	Io1	0.4	A	
	CH2	Io2	0.2	A	
Junction Temperature		Tj	-40 ~ 150	℃	
Storage Temperature		Tstg	-40 ~ 150	℃	
Thermal Resistance (Junction to Case)		θ j-c	4.1	℃/W	With infinite heat sink
Thermal Resistance (Junction to Ambient)		θ j-a	38	℃/W	*1

*1 Mount with glass epoxy resin + Cu board (size 5.0× 7.4cm, t: glass epoxy=1.6mm, Cu=18μm)

Electrical characteristics (Unless otherwise specified: Tj=-30~125℃, V_{IN}=14V, Io1=0A, Io2=0A, EN=5V)

Characteristics		Symbol	Ratings			Unit	Test condition
			MIN	TYP	MAX		
Input Voltage		Vin	Vo1+Vdif1		35	V	
Output Control Voltage	CH1	Vo1	4.90	5.00	5.10	V	Vin=Vo1+Vdif1~18V Io1=0~0.4A, Tj=-30~125℃
	CH1	Vo1	4.85	5.00	5.15		Vin=Vo1+Vdif1~18V Io1=0~0.4A, Tj=-40~150℃
	CH2	Vo2	3.15	3.30	3.45		Vin=Vo2+Vdif1+Vdif2~18V, Io1=0~0.2A
Dropout Voltage	CH1	Vdif11			0.5	V	Io1=0.4A
	CH2	Vdif2			0.5		Io2=0.2A
Quiescent Current		Iq		10	50	μA	Vin=16V, EN=0V
				50	250		Vin=35V, EN=0V
				5	10	mA	
GND Current		IGND		70	100	mA	Io1=Io2=0.2A
Overcurrent Protection Starting Current	CH1	Is11	0.402		1.80	A	Vo1=4.5V
	CH2	Is21	0.201		0.90		Vo2=2.8V
EN Output Control Voltage		VENth	1.0		3.5	V	Tj=-40~125℃
			0.9		3.5		Tj=-40~150℃
EN Output Control Current	ON	IENH1			70	μA	EN=6.4V, Tj=-40~125℃
		IENH2			40		EN=3.5lV, Tj=-40~125℃
	OFF	IENL	-1.0		1.0		EN=0V, Tj=-40~125℃
RESET Threshold Voltage	CH1	Vo1thH			Vo1× 0.97	V	Vrs, Vfail>4.5V
		Vo1thL	4.50			V	Vrs, Vfail<0.8V
	CH2	Vo2thH			Vo2× 0.985	V	Vrs>3.0V
		Vo2thL	3.00			V	Vrs<0.8V
Power ON Reset Delay Time		tdly	0.76× Rtc× Ctc	0.79× Rtc× Ctc	0.82× Rtc× Ctc	S	Minimum delay time: 6mS
W/D Pulse		twd	0.53× Rtc× Ctc	0.56× Rtc× Ctc	0.59× Rtc× Ctc	S	Minimum W/D time: 4mS
W/D Pulse Time		twdp	0.05× Rtc× Ctc	0.07× Rtc× Ctc	0.09× Rtc× Ctc	S	Minimum W/D pulse time: 400μS