

500V breakdown voltage Full bridge driver C SPF5103 (Negative drive system)

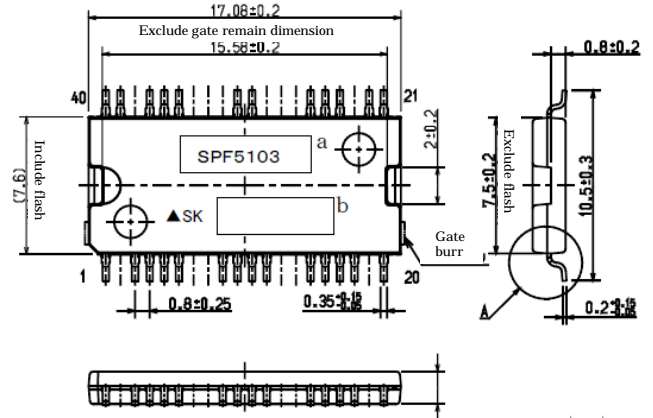
Features

- 500V breakdown voltage negative power supply drive system
- Encapsulate IGBT (4pieces) and a control MIC
- Compact type power surface mount package
- Suitable for inverter element for HID ballast unit

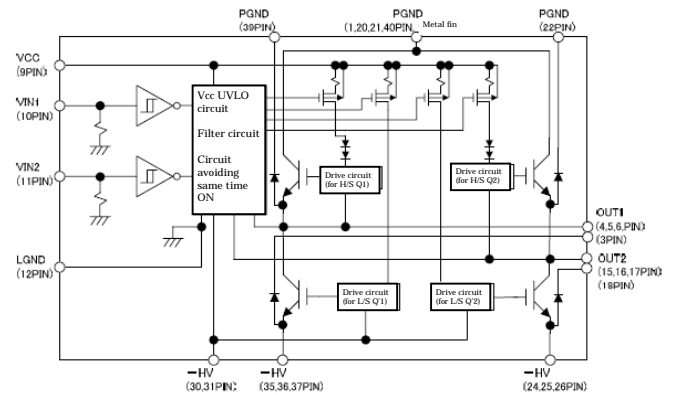
Absolute maximum ratings

No.	Item	Symbol	Unit	Rating	Conditions
1	Power Source Voltage	VM	V	500	between Power GND and -HV Ta=-40 ~ 150
2	Input Voltage	VIN	V	15	Ta=-40 ~ 150
3	Operating Voltage	Vcc	V	15	Ta=-40 ~ 150
4	Output Voltage	VOUT	V	500	Ta=-40 ~ 150
5	Output Current (DC)	IOUT(DC)	A	7	Ta=25
6	Output current (pulse)	IOUT(pulse)	A	22	Ta=125, Pulse width = 15 μ s
7	Total Power Dissipation	PD	W	27.2	Tc=25
8	Thermal Resistance	j-c	/W	4.6	Tc=25
9	Operation Temperature	Topr		-40 ~ +105	
10	Storage Temperature	Tstg		-40 ~ +150	
11	Junction Temperature	Tj		150	

Package



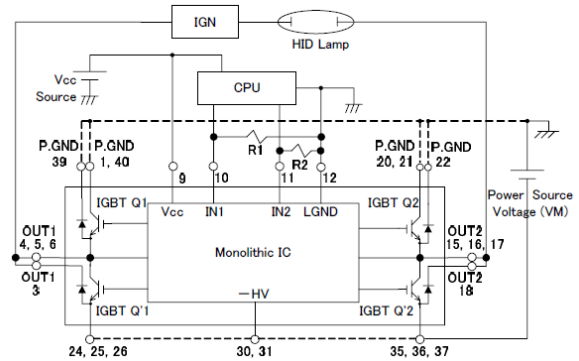
Circuit block diagram



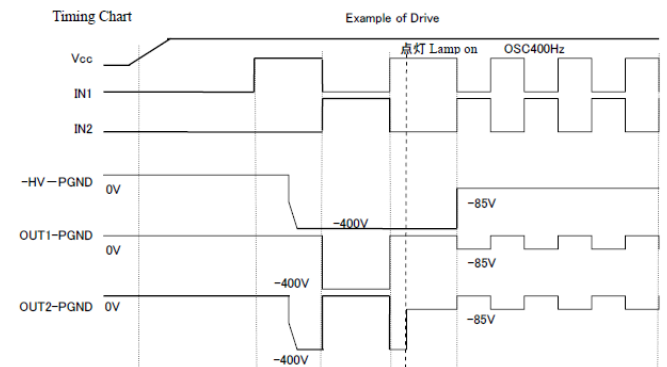
Electrical characteristics

No.	Item	Symbol	Unit	Value			Conditions	
				Min.	Typ.	Max.		
1	IGBT Output Breakdown Voltage	BVOUT	V	570			IOUT=100 μ A, Ta=25	
				500			IOUT=100 μ A, Ta=-40 ~ 150	
2	IGBT Output Leakage Current	IOUT(off)	μ A			100	VOUT=500V, Ta=25	
						300	VOUT=500V, Ta=-40 ~ 150	
3	IGBT Output On-State Voltage	VOUT(on)	V	1.0	1.2		IOUT=0.4A, VIN=10V	
				1.3	1.8		IOUT=2.0A, VIN=10V	
4	Quiescent Circuit Current	Icc1	mA			3.0	Vcc=10V, VM=VIN=0V, Ta=25	
						4.5	Vcc=9 ~ 15V, VM=VIN=0V, Ta=-40 ~ 125	
4	Quiescent Circuit Current	Icc2	mA			4.0	Vcc=10V, VM=450V, VIN=0V, Ta=25	
						7.0	Vcc=9 ~ 15V, VM=450V, VIN=0V, Ta=-40 ~ 125	
5	Operating Circuit Current	Icc3	mA			4.0	Vcc=10V, VM=450V, VIN1(orVIN2)=10V, Ta=25	
						7.0	Vcc=10V, VM=450V, VIN1(orVIN2)=10V, Ta=-40 ~ 125	
6	Input Threshold Voltage	V _{IH}	V	0.8 · Vcc			Vcc=9 ~ 15V	
				V _{IL}	0.2 · Vcc			
7	Delay time	td	μ s		High side	td(on)	2.0	2.3
				td(off)		2.4	2.8	
				td(off)		1.0	1.4	
				Low side	td(on)	1.6	2.1	
					td(off)			
					td		3.0	
8	UVLO Voltage	V _{UVLO}	V	5.7	6.2	6.7	Vcc=9 ~ 15V	
				5.3	5.9	6.6		
9	UVLO start voltage Hysteresis width	V _{UVLO}	V	0.1	0.2	0.4	V _{UVLO} = V _{UVLO} - V _{UVLO}	
10	Operating Voltage	VCC	V	9		15	Ta=-40 ~ +105	

Typical connection diagram



Timing chart



Recommended operation

No.	Item	Symbol	Unit	Value			Conditions
				Min.	Typ.	Max.	
1	Stable operation dV/dt	dV/dt	V/μs			30	Ta = -40 ~ 150 Vcc=9 ~ 15V, VM=400V
2	Recommended dead time	td	μ s	3			Ta = -40 ~ 150