

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°C~150°C
2	Input Voltage	VIN	V	15	Ta=-40°C~150°C
3	Operating Voltage	VCC	V	15	Ta=-40°C~150°C
4	Output Voltage	VOU	V	500	Ta=-40°C~150°C
5	Output Current (DC)	IOUT(DC)	A	7	Ta=25°C
6	Output current (pulse)	IOUT(pulse)	A	22	Ta=125°C, Pulse width = 15 μs
7	Total Power Dissipation	PD	W	27.2	Tc=25°C
8	Thermal Resistance	θj-c	°C/W	4.6	Tc=25°C
9	Operation Temperature	Topr	°C	-40~+105	
10	Storage Temperature	Tstg	°C	-40~+150	
11	Junction Temperature	Tj	°C	150	

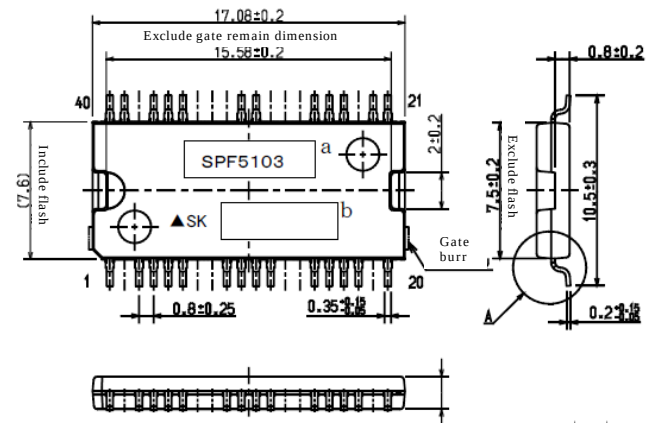
Electrical characteristics

No.	Item	Symbol	Unit	Value			Conditions
				Min.	Typ.	Max.	
1	IGBT Output Breakdown Voltage	BVOUT	V	570			IOUT=100 μA, Ta=25°C IOUT=100 μA, Ta=-40~150°C
2	IGBT Output Leakage Current	IOUT(off)	μA			100	VOU=500V, Ta=25°C VOU=500V, Ta=-40~150°C
3	IGBT Output On-State Voltage	VOUT(on)	V	1.0	1.2		IOUT=0.4A, VIN=10V IOUT=2.0A, VIN=10V
4	Quiescent Circuit Current	Icc1	mA			3.0	Vcc=10V, VM=VIN=0V, Ta=25°C Vcc=9~15V, VM=VIN=0V, Ta=-40~125°C
		Icc2	mA			4.0	Vcc=10V, VM=450V, VIN=0V, Ta=25°C Vcc=9~15V, VM=450V, VIN=0V, Ta=-40~125°C
		Icc3	mA			7.0	Vcc=10V, VM=450V, VIN1(=VIN2)=10V, Ta=25°C Vcc=10V, VM=450V, VIN1(=VIN2)=10V, Ta=-40~125°C
5	Operating Circuit Current	Icc3	mA			7.0	Vcc=10V, VM=450V, VIN1(=VIN2)=10V, Ta=25°C Vcc=10V, VM=450V, VIN1(=VIN2)=10V, Ta=-40~125°C
6	Input Threshold Voltage	V _{IH}	V	0.8 · Vcc			Vcc=9~15V
		V _{IL}	V			0.2 · Vcc	
7	Delay time	High side	td(on)		2.0	2.3	VM=85V, I _c =0.41A V _{CE} =10V
					2.4	2.8	V _{IN} =10V(Out Stage=ON) V _{IN} =0V(Out Stage=OFF)
		Low side	td(on)		1.0	1.4	Δtd=H/S td(off) - L/S td(on) or L/S td(off) - H/S td(on)
					1.6	2.1	
			Δtd			3.0	
8	UVLO Voltage	V _{UVLO+}	V	5.7	6.2	6.7	
		V _{UVLO-}	V	5.3	5.9	6.6	
9	UVLO start voltage Hysteresis width	ΔV _{UVLO}	V	0.1	0.2	0.4	ΔV _{UVLO} = V _{UVLO+} - V _{UVLO-}
10	Operating Voltage	VCC	V	9		15	Ta=-40~+105°C

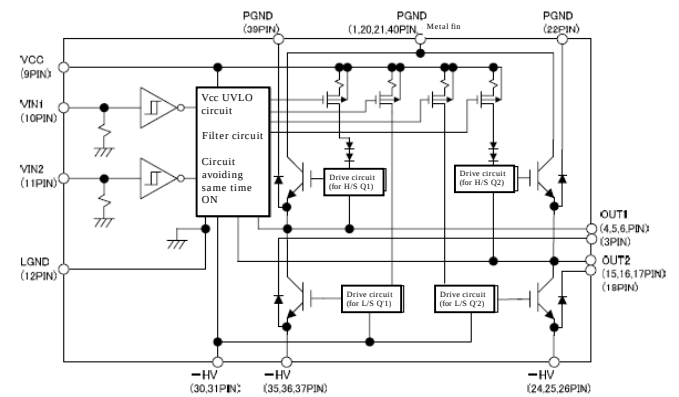
Recommended operation

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

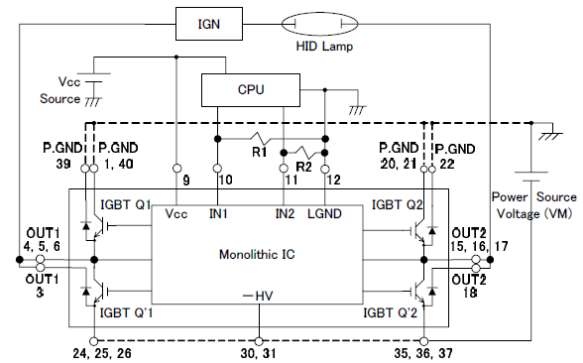
Package



Circuit block diagram



Typical connection diagram



Timing chart

