

# 500V breakdown voltage Full bridge driver IC SMA2404M (Negative drive system)

## Features

- 500V breakdown voltage negative power supply drive system
- Encapsulate MOSFET (4pieces) and a control MIC
- Sanken original ZIP package
- Suitable for inverter element for HID ballast unit

## Absolute maximum ratings

No.	Item	Symbol	Unit	Rating	Conditions
1	Power Source Voltage	VM	V	480	between Power GND and -HV Tj=-40 ~ -20
				500	between Power GND and -HV Tj=-20 ~ +150
2	Input Voltage	VIN	V	15	Tj=-40 ~ +150
3	Operating Voltage	Vcc	V	15	Tj=-40 ~ +150
4	Output Voltage	VOUT	V	500	Ta=25
5	Output Current	IOUT(DC)	A	7	Ta=25
6	Total Power Dissipation	PD	W	4	Ta=25
				20	Tc=25
7	Operation Temperature	Topr		-40 ~ +150	35W HID Lamps Driver
8	Storage Temperature	Tstg		-40 ~ +150	
9	Junction Temperature	Tj		150	

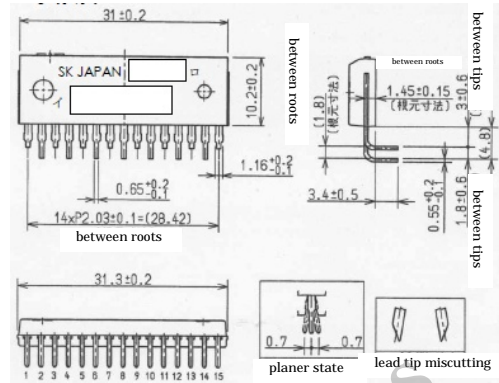
## Electrical characteristics (Tj=25 °C)

No.	Item	Symbol	Unit	Value			Conditions
				Min.	Typ.	Max.	
1	Power MOSFET Output Breakdown Voltage	BVOUT	V	500			IOUT=100 μA
2	Power MOSFET Output Leakage Current	IOUT(off)	μA			100	VOUT=500V
3	Power MOSFET Output On-State Voltage	VOUT(on)	V	0.28	0.40	0.52	IOUT=0.4A, VIN(or VGL)=10V
				1.4	2.0	2.6	IOUT=2.0A, VIN(or VGL)=10V
4	Quiescent Circuit Current	Icc1	mA			3.0	Vcc=10V, VM=VIN=0V
		Icc2	mA			4.0	Vcc=10V, VM=400V, VIN=0V
5	Operating Circuit Current	Icc3	mA			4.0	Vcc=10V, VM=400V, VIN1(or VIN2)=10V
6	Input Threshold Voltage	VIH	V	0.8 · Vcc			Vcc=7 ~ 15V
		VIL	V		0.2 · Vcc		
7	Low side MOSFET Gate Drive Voltage	VGL	V	0.7 · Vcc		8.0	Vcc=7 ~ 15V
8	Delay time	td(on)	μs		1.5		Vcc=VIN=10V, VM=85V, IO=0.41A
		td(off)	μs		2.0		
		td	μs		2.5		td=td(off)-td(on)
9	Power MOSFET On-State Resistance	RDS(on)		0.7	1.0	1.3	ID=0.4A, VGS=10V
10	Power MOSFET Input Capacitance	Ciss	pF		860		VDS=10V, f=1MHz, VGS=0V
11	Diode Reverse Recovery Time	trr	ns		300		ISD= ± 100mA

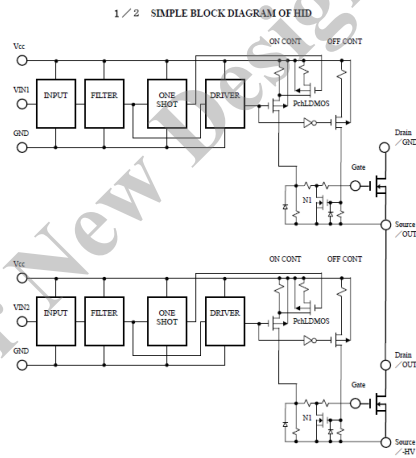
## Recommended input signal dead time

No.	Item	Symbol	Unit	Value			Conditions
				Min.	Typ.	Max.	
1	dV/dt	dV/dt	V/μs			2	Ta=25 °C, Vcc=10V, VM=400V
2	Recommended dead time	td	μs	4.5			Ta= -40 ~ 150

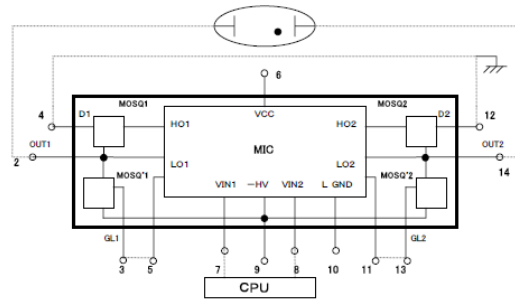
## Package



## Circuit block diagram



## Typical connection diagram



## Timing Chart

