TOSHIBA TF1106

TOSHIBA SOLID STATE I/O INTERFACE MODULE

TF1106

AC INPUT MODULE

Unit in mm

TOSHIBA TF1106 is AC Line Voltage Input I/O Interface Module and it includes the optical isolator.

Using this Module, you can design high reliability and compact system.

Recommended Input Voltage : $V_{IN} = 80 \sim 130 V$ AC

Input Impedance $: Z_{IN} = 45k\Omega$

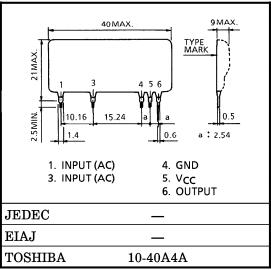
1500V AC Optical Isolation

Wide Supply Voltage $: V_{CC} = 5 \sim 18V$

Including Delay Time Circuit

Output is Compatible with TTL and CMOS Logic

Small Size and Light Weight



Weight: 7g

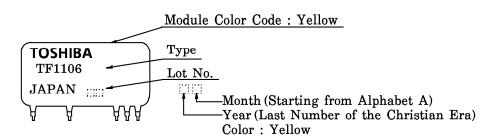
MAXIMUM RATINGS (Ta = 25°C) INPUT (AC LINE VOLTAGE)

CHARACTERISTIC	SYMBOL	RATING	UNIT	
Input Voltage (AC)	V_{IN}	140	V	
Input Current (AC)	I _{IN}	10	mA	
Operating Frequency Range	f	45~65	Hz	

OUTPUT (LOGIC CONTROL)

Logic Supply Voltage	v_{CC}	20	V
Output Voltage	V _{OUT}	$-0.5 \sim V_{\text{CC}} + 0.5$	V
Output Current	I _{OUT}	6	mA
Isolation Voltage (Input-Output) (AC)	BVS/AC	1500 (1min)	V
Operating Temperature Range	T_{opr}	-20~80	°C
Storage Temperature Range	$T_{ m stg}$	-20~80	$^{\circ}\mathrm{C}$
Lead Soldering Temperature (10s)	T _{sol}	260	$^{\circ}\mathrm{C}$

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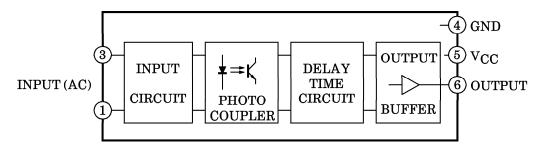


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TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

TOSHIBA TF1106

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS (Ta = 25° C, $V_{CC} = 5V$, f = 50Hz) INPUT (AC LINE VOLTAGE)

CHARACTER	RISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Voltage	"H" Level	$ m v_{ILH}$	$ I_{OUT} < 1\mu A$, $V_{OUT} > 4.5V$	_	51	70	\mathbf{v}
input voitage	"L" Level	$ m v_{IHL}$	$ I_{ m OUT} $ <1 μ A, $V_{ m OUT}$ <0.5 V	30	50		'
Input Current	"H" Level	${ m I_{ILH}}$	$ I_{ ext{OUT}} < 1 \mu \text{A}, V_{ ext{OUT}} > 4.5 \text{V}$	_	1.07	_	m 1
	"L" Level	${ m I}_{ m IHL}$	$ I_{OUT} < 1\mu A$, $V_{OUT} < 0.5V$	_	1.05	_	mA
Input Impedance		$ m z_{IN}$	$V_{IN} = 100V, f = 50Hz$	_	45	_	$\mathbf{k}\Omega$

OUTPUT (LOGIC CONTROL)

Output Voltage	"H" Level	v_{OH}	$I_{OUT} = -10 \mu A, V_{IN} = 100 V$	4.5	4.9	_	v
	"L" Level	$v_{ m OL}$	I_{OUT} =2.5mA, V_{IN} =0V	_	0.3	0.5	
Output Current(s	ink)	$I_{ m OUT}$	$V_{OL}=1.5V, V_{IN}=0V$	6	16	l	mA
Supply Current	"H" Level	I_{CCH}	$ I_{OUT} < 1\mu A$, $V_{IN} = 100 V$	_	1.0	5	mA
	"L" Level	I_{CCL}	$ I_{OUT} < 1\mu A, V_{IN} = 0V$	_	1.4	6	
Propagation	"H" Level	${ m t_{pLH}}$	$V_{IN} = 0 \rightarrow 100V$	_	7.2	15	****
Delay Time	"L" Level	t_{pHL}	$V_{IN} = 100 \rightarrow 0V$	_	6.0	15	ms
Isolation Resistan	ce	$R_{\mathbf{S}}$	$V = 1kV, R.H = 40 \sim 60\%$	_	10^{10}		Ω

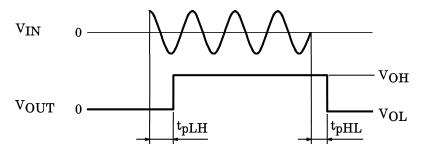


Fig.1 SWITCHING TIME TEST CONDITION

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