

TOSHIBA

TF1106

TOSHIBA SOLID STATE I/O INTERFACE MODULE

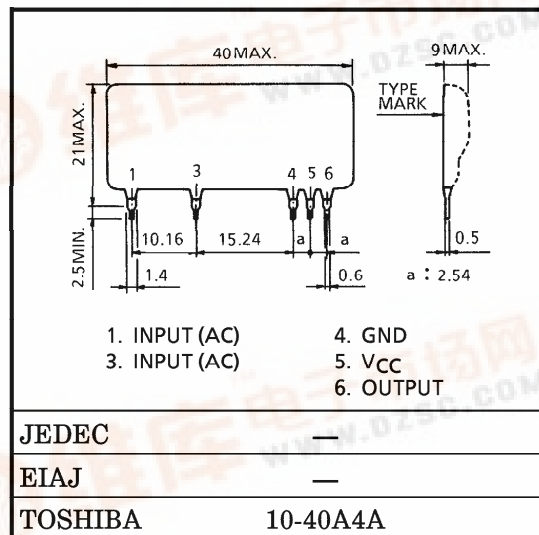
TF1106

AC INPUT MODULE

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 : $V_{IN}=80\sim130V$ AC
- Input Impedance : $Z_{IN}=45k\Omega$
- 1500V AC Optical Isolation
- Wide Supply Voltage : $V_{CC}=5\sim18V$
- Including Delay Time Circuit
- Output is Compatible with TTL and CMOS Logic
- Small Size and Light Weight

Unit in mm



Weight : 7g

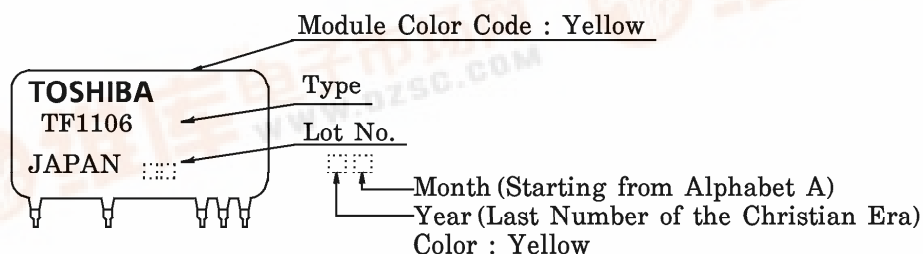
MAXIMUM RATINGS (Ta = 25°C) INPUT (AC LINE VOLTAGE)

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}	$-0.5\sim V_{CC}+0.5$	V
Output Current	I_{OUT}	6	mA
Isolation Voltage (Input-Output) (AC)	BV_S / AC	1500 (1min)	V
Operating Temperature Range	T_{opr}	$-20\sim80$	°C
Storage Temperature Range	T_{stg}	$-20\sim80$	°C
Lead Soldering Temperature (10s)	T_{sol}	260	°C

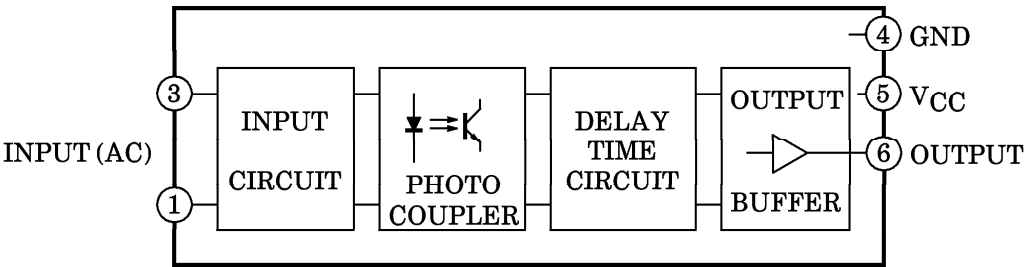
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TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It 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.

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS (Ta = 25°C, VCC = 5V, f = 50Hz)
INPUT (AC LINE VOLTAGE)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Voltage	“H” Level	V _{ILH}	I _{OUT} < 1μA, V _{OUT} > 4.5V	—	51	70	V
	“L” Level	V _{IHL}	I _{OUT} < 1μA, V _{OUT} < 0.5V	30	50	—	
Input Current	“H” Level	I _{ILH}	I _{OUT} < 1μA, V _{OUT} > 4.5V	—	1.07	—	mA
	“L” Level	I _{IHL}	I _{OUT} < 1μA, V _{OUT} < 0.5V	—	1.05	—	
Input Impedance		Z _{IN}	V _{IN} = 100V, f = 50Hz	—	45	—	kΩ

OUTPUT (LOGIC CONTROL)

Output Voltage	“H” Level	V _{OH}	I _{OUT} = -10μA, V _{IN} = 100V	4.5	4.9	—	V
	“L” Level	V _{OL}	I _{OUT} = 2.5mA, V _{IN} = 0V	—	0.3	0.5	
Output Current (sink)		I _{OUT}	V _{OL} = 1.5V, V _{IN} = 0V	6	16	—	mA
Supply Current	“H” Level	I _{CCH}	I _{OUT} < 1μA, V _{IN} = 100V	—	1.0	5	mA
	“L” Level	I _{CCL}	I _{OUT} < 1μA, V _{IN} = 0V	—	1.4	6	
Propagation Delay Time	“H” Level	t _{pLH}	V _{IN} = 0 → 100V	—	7.2	15	ms
	“L” Level	t _{pHL}	V _{IN} = 100 → 0V	—	6.0	15	
Isolation Resistance		R _S	V = 1kV, R.H = 40~60%	—	10 ¹⁰	—	Ω

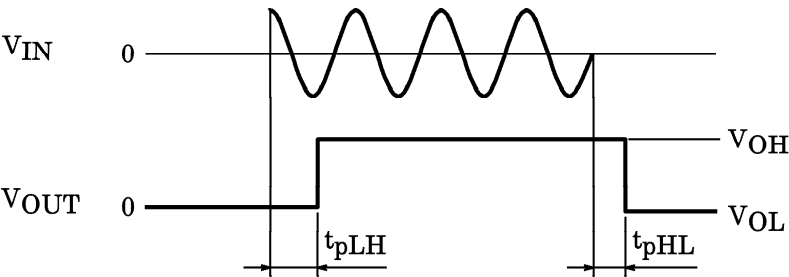


Fig.1 SWITCHING TIME TEST CONDITION