

TOSHIBA SOLID STATE I/O INTERFACE MODULE

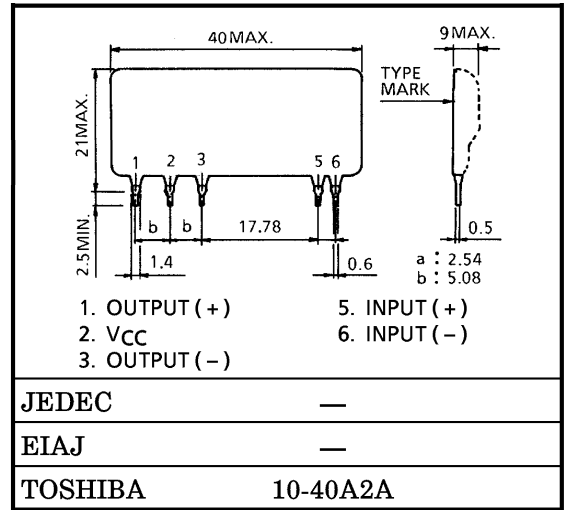
**TF1109**

DC OUTPUT MODULE

Unit in mm

TOSHIBA TF1109 is DC 24V Line Controlled I/O Interface Module and it includes the optical isolator. Using this Module, you can design high reliability and compact system.

- DC Load Current :  $I_O = 1A$  (Max.)
- Recommended DC Load Voltage :  $V_O = 10 \sim 30V$  DC
- Recommended Control Input Voltage :  $V_{F(IN)} = 5V$
- 1500V AC Optical Isolation
- Including Surge Voltage Suppressor
- Input is Compatible with TTL Logic
- Small Size and Light Weight



MAXIMUM RATINGS ( $T_a = 25^\circ C$ )  
INPUT (CONTROL)

Weight : 7.5g

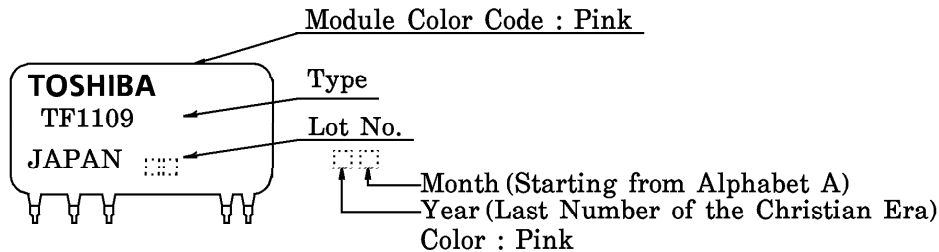
CHARACTERISTIC	SYMBOL	RATING	UNIT
Control Input Voltage (DC) (Note 1)	$V_{F(IN)}$	6	V
Control Input Current	$I_{F(IN)}$	2	mA
Reverse Voltage (DC)	$V_{R(IN)}$	5	V

OUTPUT (DC LOAD)

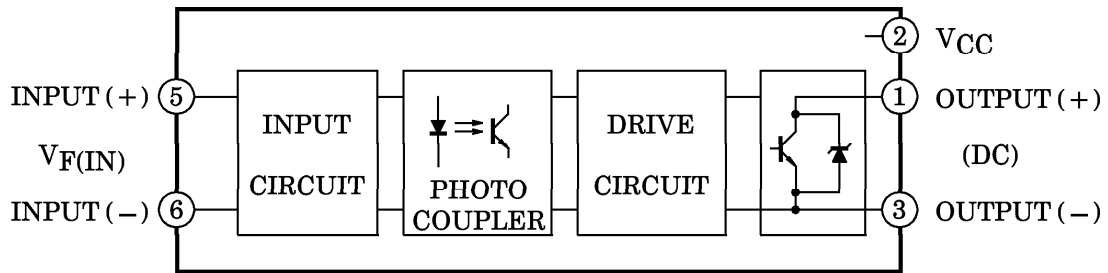
Output Load Voltage	$V_O$	35	V
Output Supply Voltage	$V_{CC}$	35	V
Output Load Current	DC	$I_O$	1
	10ms	$I_{OP}$	2
Operating Frequency Range	f	65	Hz
Isolation Voltage (Input-Output) (AC)	$BV_S / AC$	1500 (1min)	V
Operating Temperature Range	$T_{opr}$	-20~80	$^\circ C$
Storage Temperature Range	$T_{stg}$	-20~80	$^\circ C$
Lead Soldering Temperature (10s)	$T_{sol}$	260	$^\circ C$

Note 1 : Driving input rating : Insert an external resistance into I/O when the power supply over 6V is used.

MARK



**BLOCK DIAGRAM**

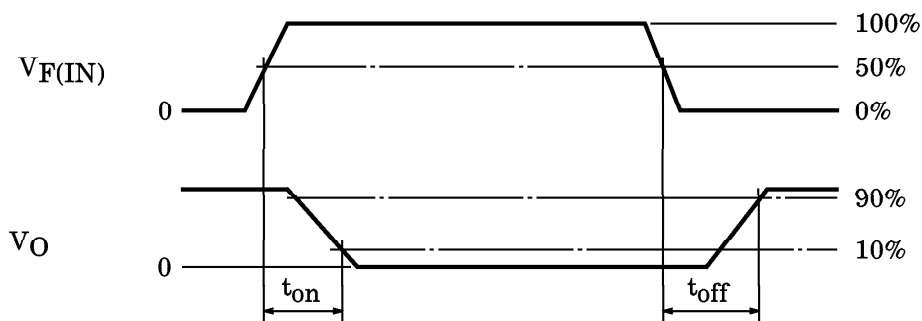


**ELECTRICAL CHARACTERISTICS (Ta = 25°C, VCC = 24V)  
INPUT (CONTROL)**

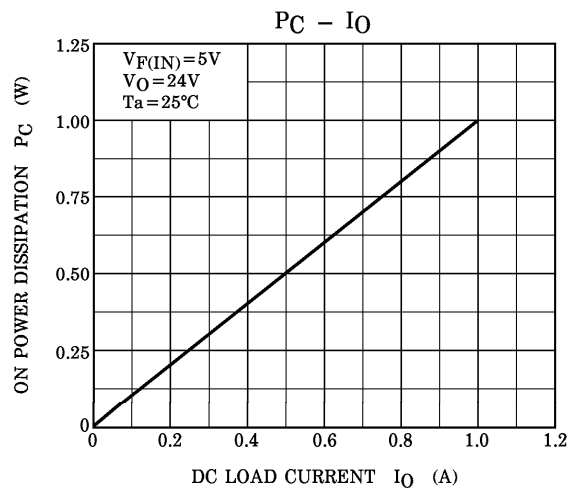
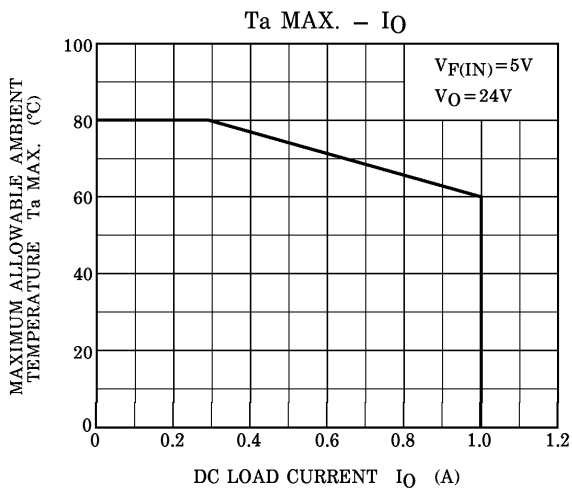
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Pick Up Voltage	$V_{FT}$	$V_O = 24V, I_O = 1A$ Resistive Load	—	2.3	4.5	V
Drop Out Voltage	$V_{FD}$		0.6	1.5	—	
Input Resistance	$R_{IN}$	—	—	3	—	k $\Omega$

**OUTPUT (DC LOAD)**

Off-State Leakage Current	$I_{OD}$	$V_O = 24V$	—	—	0.5	mA
Peak On-State Voltage	$V_{SAT}$	$I_O = 1A, V_{F(IN)} = 5V, V_O = 24V$	—	0.45	0.65	V
Breakdown Voltage	$V_{BR}$	$I_{OD} = 9mA, 3pin\ to\ 1pin$	35	—	40	V
Turn-On Time	$t_{on}$	$V_{F(IN)} = 0 \rightarrow 5V$ $V_O = 24V, I_O = 1A,$ Resistive Load	—	20	100	$\mu s$
Turn-Off Time	$t_{off}$	$V_{F(IN)} = 5 \rightarrow 0V$ $V_O = 24V, I_O = 1A,$ Resistive Load	—	0.5	1	ms
Isolation Resistance	$R_S$	$V = 1kV, R.H = 40 \sim 60\%$	—	$10^{10}$	—	$\Omega$



**Fig.1 SWITCHING TIME TEST CONDITION**



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