

TOSHIBA SOLID STATE GTR DRIVER MODULE

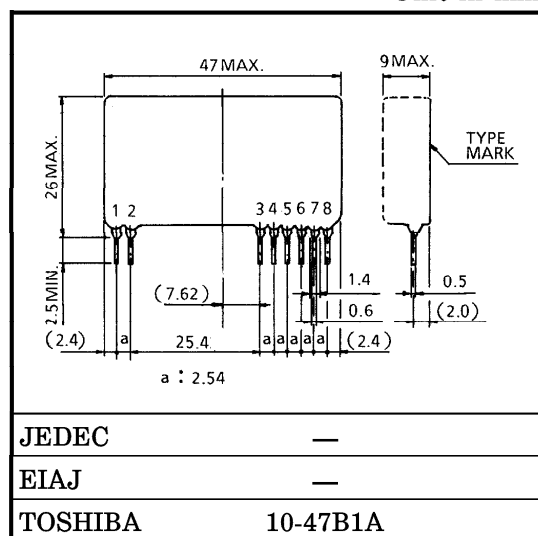
TF1202

TOSHIBA TF1202 is the GTR driver designed for use with TOSHIBA Giant Transistor Module and it includes the optical isolator and GTR driver circuit.

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

- 2000V_{RMS} Optical Isolation
- Logic Compatible Input
- High Speed Switching Response
: $t_{pLH}=2\mu s$, $t_{pHL}=3\mu s$ (Typ.)
- Small Size and Light Weight

Unit in mm

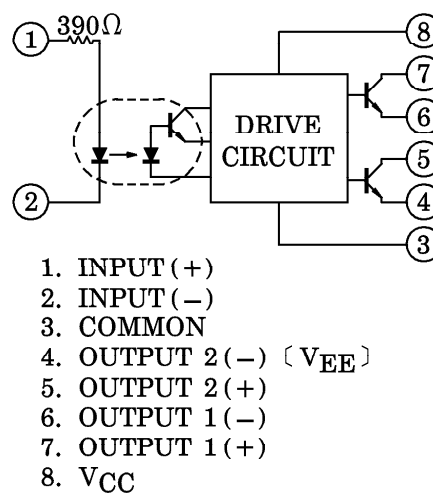


Weight : 12g

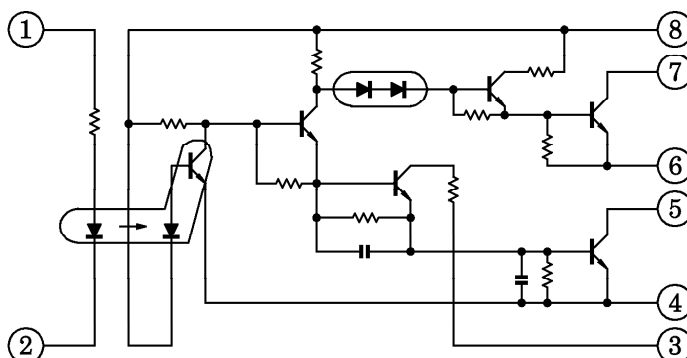
MAXIMUM RATINGS (T_a = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	8.5	V
	V _{EE}	−5	V
Input Voltage	V _{IN}	5.5	V
Reverse Input Voltage	V _{RIN}	5	V
High Level Output Current	I _{OH}	−2	A
Low Level Peak Output Current	I _{OLP}	6 (10μs)	A
Isolation (Input-Output)	BV _S / AC	2000 (1min)	V
Operating Frequency	f	5	kHz
Operating Temperature	T _{opr}	−20~70	°C
Storage Temperature	T _{stg}	−20~100	°C

BLOCK DIAGRAM



CIRCUIT DIAGRAM



961001EBA2

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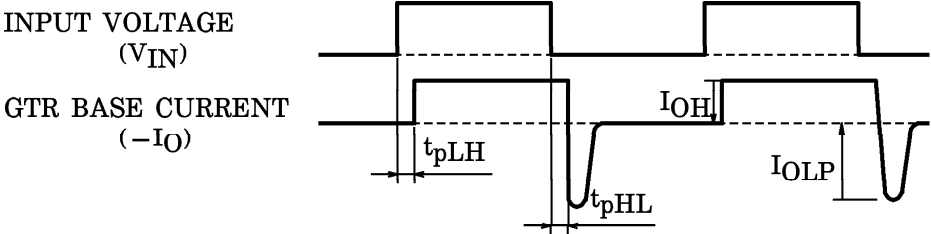
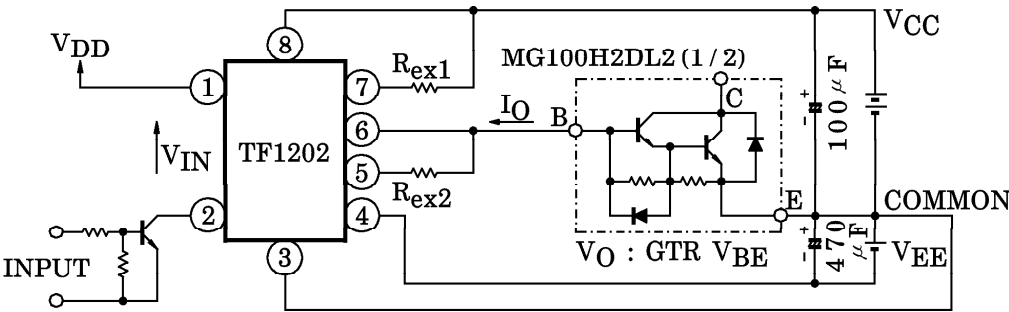
RECOMMENDED OPERATING CONDITIONS (Ta = - 10~50°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{CC}	—	6	7	8	V
	V _{EE}	—	- 3.5	- 4	- 4.5	V
High Level Input Voltage	V _{IH}	—	—	5	—	V
External Resistor	R _{ex1}	—	—	3.3	—	Ω
	R _{ex2}	—	0.22	0.5	—	Ω
Operating Frequency	f	—	—	2	—	kHz

ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{CC} = 7V, V_{EE} = - 4V, R_{ex1} = 2.5Ω, R_{ex2} = 0.22Ω)

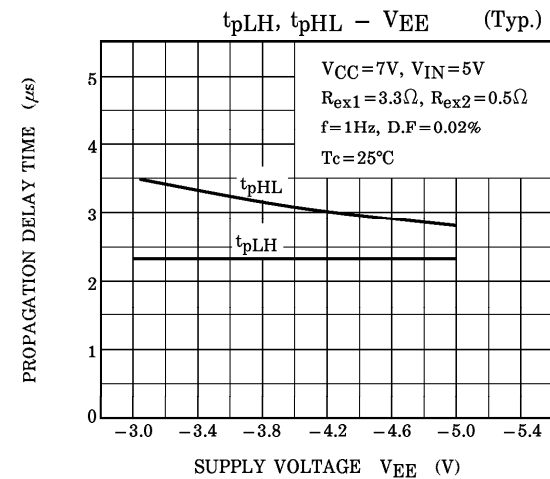
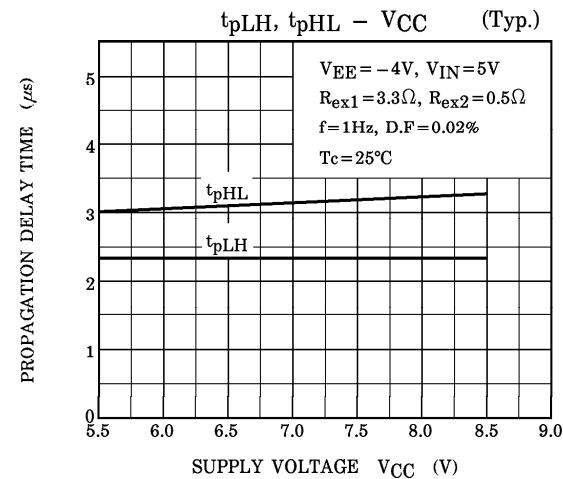
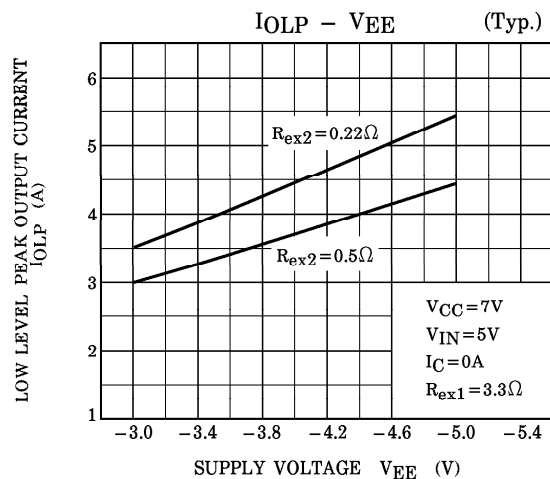
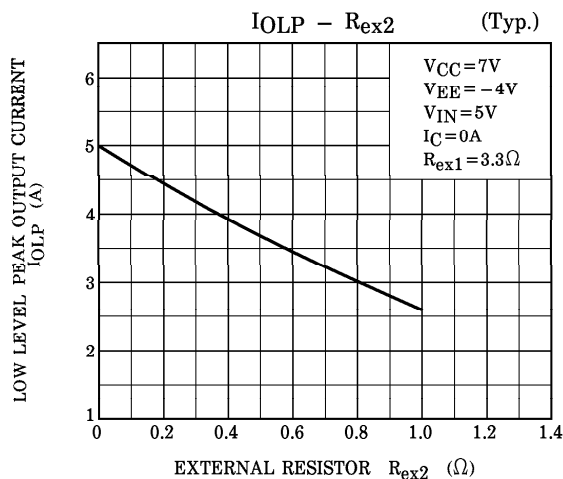
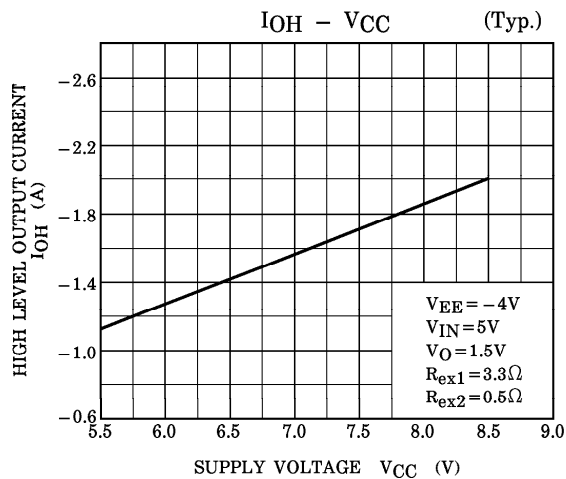
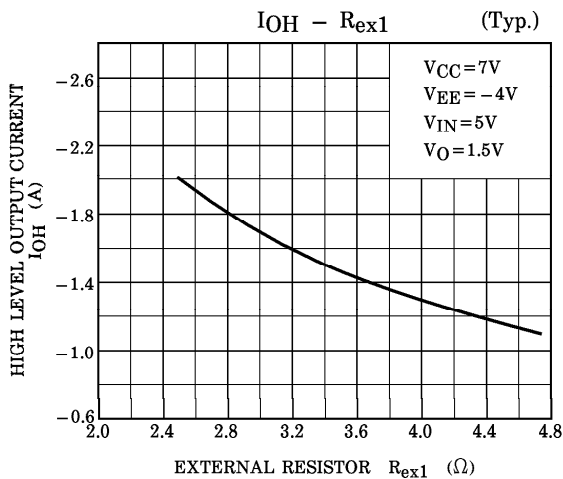
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Current	I _{IN}	V _{IN} = 5V	7	8.5	10	mA
High Level Input Voltage	V _{IH}	I _{OH} = - 2A	—	2.5	4.5	V
Low Level Input Voltage	V _{IL}	I _{OLP} = 5A	1.0	2	—	V
High Level Output Current	I _{OH}	V _{IN} = 5V, V _O = 1.5V	—	- 2	—	A
Low Level Peak Output Current	I _{OLP}	V _{IN} = 0V	—	4.6	—	A
(Low→High) Propagation Delay Time	t _{pLH}	V _{IN} = 0→5V	—	2	7	μs
(High→Low) Propagation Delay Time	t _{pHL}	V _{IN} = 5→0V	—	3	7	μs
Power Dissipation	P _D	f = 2kHz, D.f = 50%	—	0.7	—	W

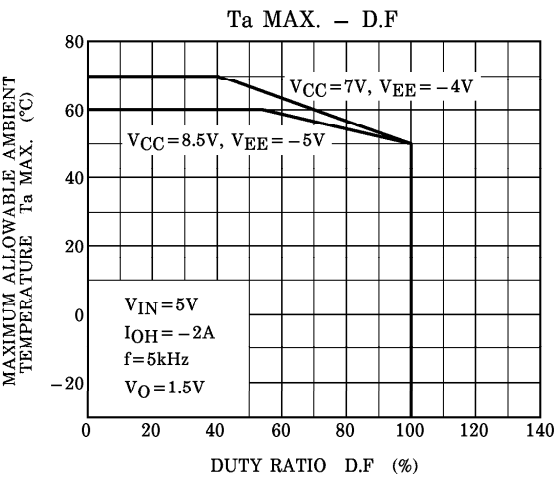
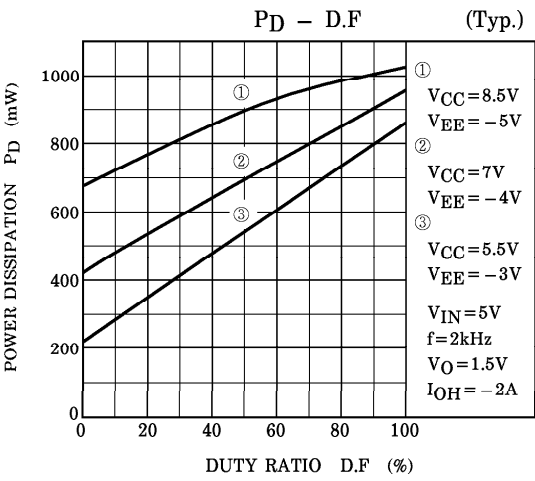
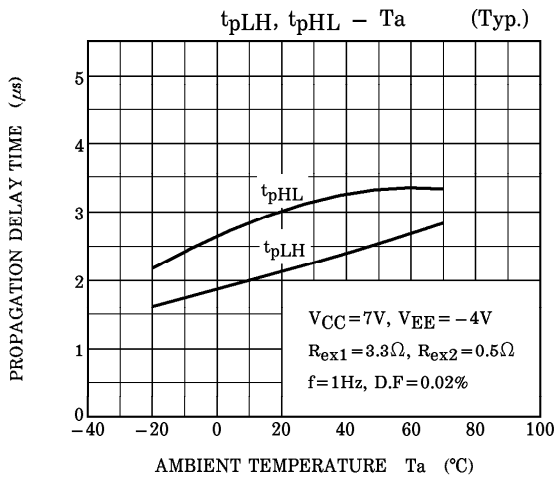
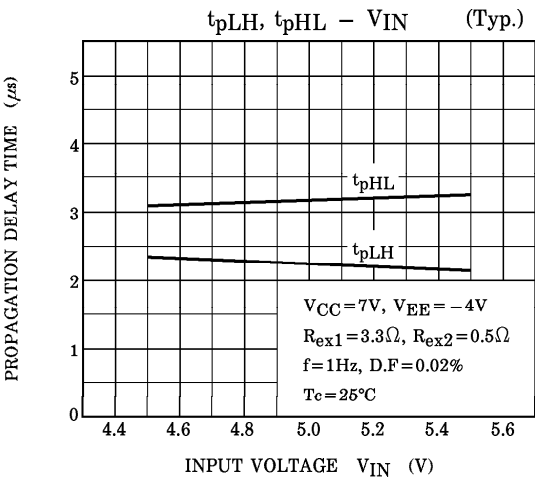
TEST CIRCUIT



961001EBA2'

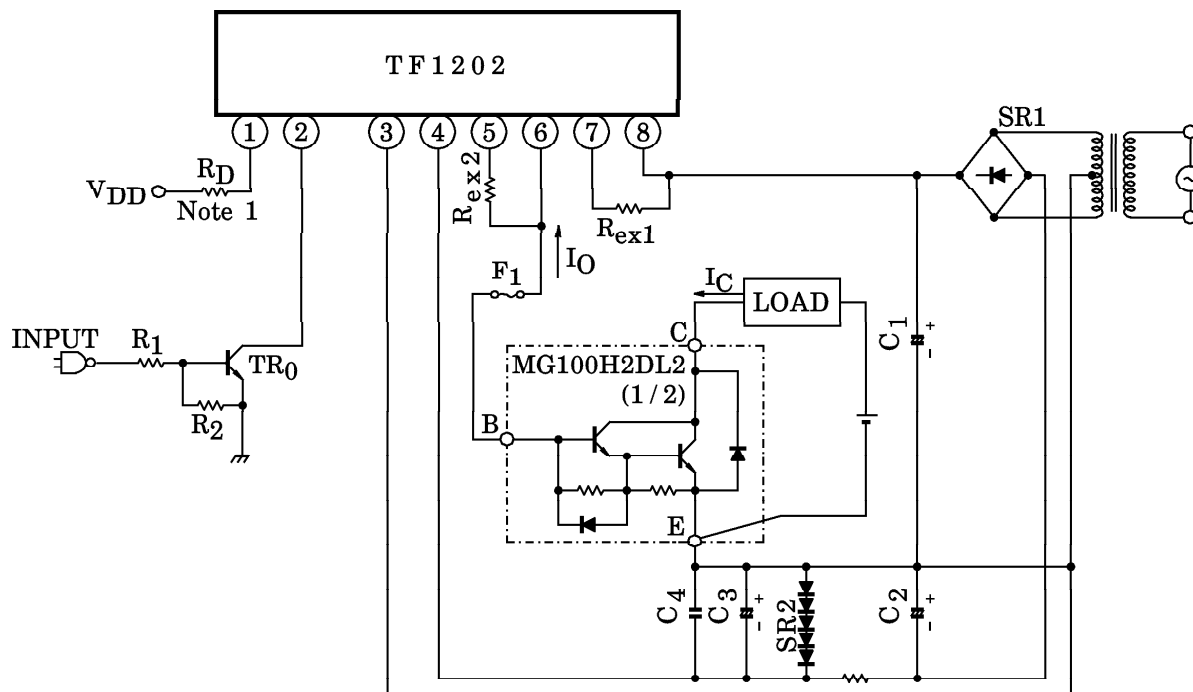
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EXAMPLE OF APPLIED CIRCUIT

MG100H2DL2 BASE DRIVE CIRCUIT



RECOMMENDED CONSTANTS

ITEM	SYMBOL	CONSTANTS	UNIT
External Resistor	R_D	Note 1	Ω
—	R_1	10	$k\Omega$
—	R_2	10	$k\Omega$
Transistor	TR_0	2SC1815	—
Capacitor	C_1	10000	μF
Capacitor	C_2	3300	μF
Bridge Rectifier	SR1	4G4B41	—
Rectifier	SR2	1N4001 $\times$ 5	—
Capacitor	C_3	100	μF
Capacitor	C_4	0.1	μF

Note 1 : Insert an external resistor R_D in V_{DD} bias line when the power supply over 5.5V is used.

(Calculating Formula)

$$R_D = \frac{V_{DD} - V_F}{I_{IN}} - R_{IN}$$

V_F : Forward voltage of LED (≈ 1.6 [V])

R_{IN} : Input resistor (390 [Ω])

I_{IN} : Input current (8.5 [mA])