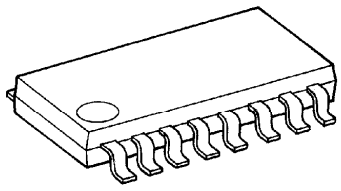
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT MULTI CHIP

TD62M4700F

EXCELLENT LOW SATURATION H-BRIDGE DRIVER

TD62M4700F is low voltage use Multi Chip H-Bridge Driver IC incorporates 4 low saturation discrete Transistors which equipped bias resistor and diode. This IC is designed especially for Camera Winding Motors, FDD Stepper Motors and other portable equipments.



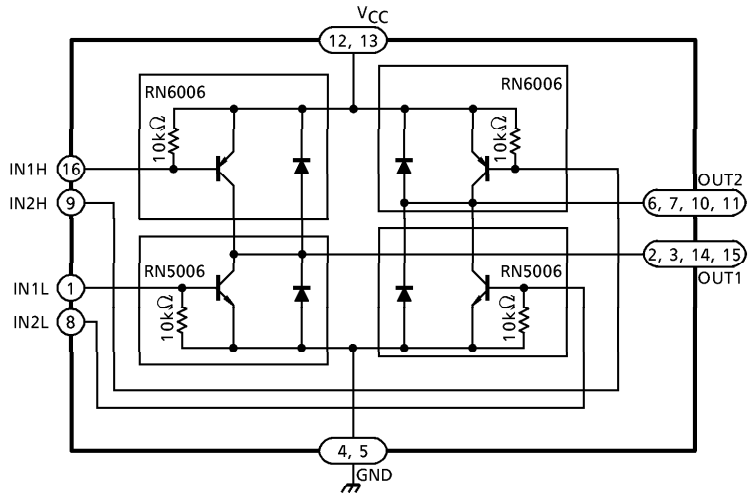
SSOP16-P-225-1.00A

Weight : 0.14g (Typ.)

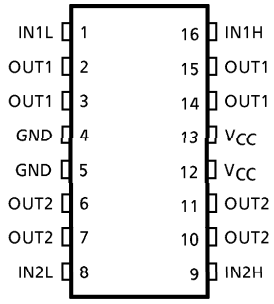
FEATURES

- MFP-16 1mm pitch small package sealed
- Bias resistor and diodes are equipped
  R = 10kΩ
- Excellent low saturation voltage
  $V_{CE\ (SAT)}$ = 0.29V (Typ.) at I_O = 1A
  $V_{CE\ (SAT)}$ = 0.53V (Typ.) at I_O = 2A
  (Upper and lower side total)

BLOCK DIAGRAM



PIN CONNECTION (TOP VIEW)



961001EBA2

MAXIMUM RATINGS (Ta = 25°C)

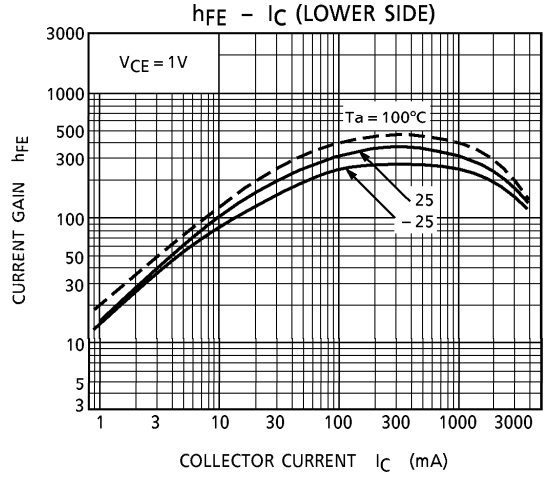
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	10	V
Breakdown Voltage	V_{CBO}	10	V
	V_{CER}	10	V
	V_{EBO}	6	V
Output Current (Average)	I_{OUT}	2	A
Output Current (Peak)	$I_{O\ (PEAK)}$	(*) 4	A
Base Current	I_B	±0.4	A
Base Current (Peak)	$I_{B\ (PEAK)}$	(*) ±0.8	A
Diode Forward Current	I_F	(**) 2	A
Power Dissipation	P_D	490	mW
Junction Temperature	T_j	150	°C
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C

(*) t = 10ms MAX. and maximum duty is less than 30%.
(**) t = 10ms single pulse

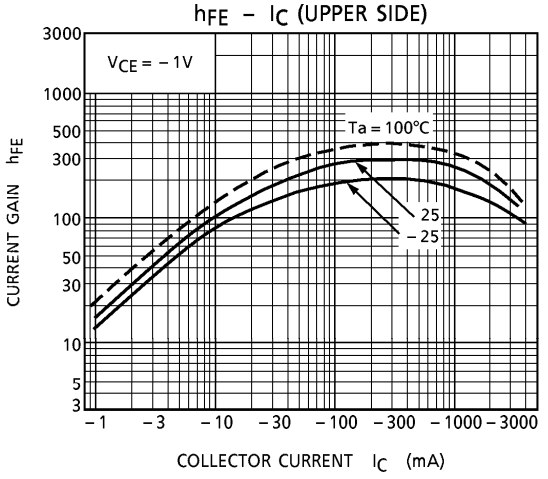
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	CONDITION	MIN.	TYP.	MAX.	UNIT
Current Gain		$h_{FE\ (1)}$	—	V_{CE} = 1V, I_C = 0.5A	160	—	600	—
		$h_{FE\ (2)}$	—	V_{CE} = 1V, I_C = 2.0A	60	130	—	
Saturation Voltage	Upper Side	$V_{CE\ (sat)}$	—	I_C = −1A, I_B = −25mA	—	−0.16	−0.22	V
				I_C = −2A, I_B = −50mA	—	−0.28	−0.45	
	Lower Side			I_C = 1A, I_B = 25mA	—	0.13	0.22	
				I_C = 2A, I_B = 50mA	—	0.25	0.45	
	Summing Total			I_C = 1A, I_B = 25mA	—	0.29	0.42	
				I_C = 2A, I_B = 50mA	—	0.53	0.85	
Transition Frequency		f_T	—	V_{CE} = 2V, I_C = 0.5A	—	150	—	MHz
Leakage Current	Upper Side	I_{OL}	—	V_{CC} = −10V	—	0	−5	μA
	Lower Side			V_{CC} = 10V	—	0	5	
Diode Forward Voltage	Upper Side	V_F	—	I_F = −300mA	—	−0.89	−1.2	V
				I_F = −450mA 10ms pulse	—	−1.60	—	
	Lower Side			I_F = 300mA	—	0.89	1.2	
				I_F = 450mA 10ms pulse	—	1.60	—	
Base-Emitter Resistor		R_{BE}	—	—	7	10	13	kΩ
Base-Emitter Forward Voltage	Upper Side	$V_{BE\ (PNP)}$	—	V_{CE} = −1V, I_C = −2A	—	−0.84	−1.5	V
	Lower Side	$V_{BE\ (NPN)}$	—	V_{CE} = 1V, I_C = 2A	—	0.84	1.5	

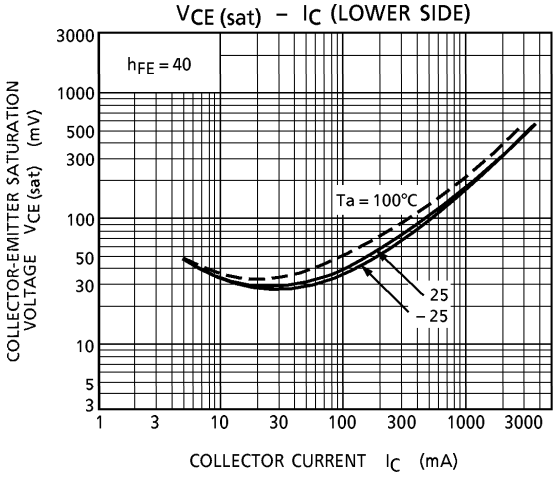
TRANSISTOR (RN5006)
h_{FE} – I_C (LOWER SIDE)



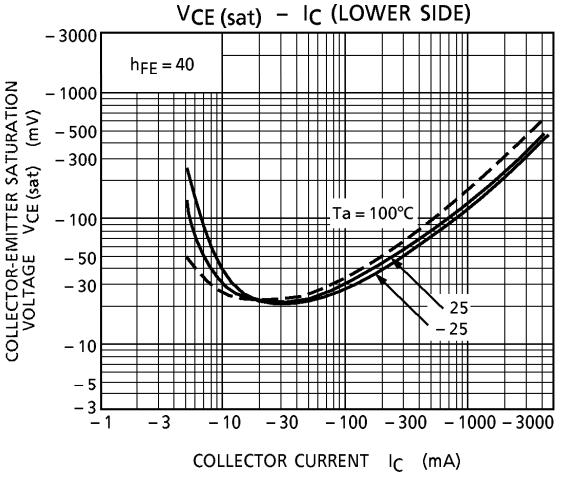
TRANSISTOR (RN6006)
h_{FE} – I_C (UPPER SIDE)



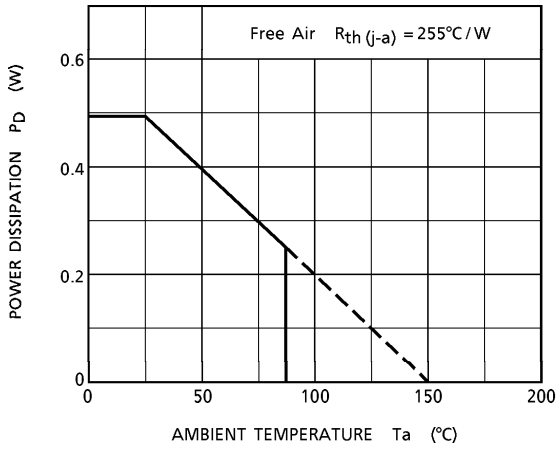
TRANSISTOR (RN5006)
$V_{CE\,(sat)}$ – I_C (LOWER SIDE)



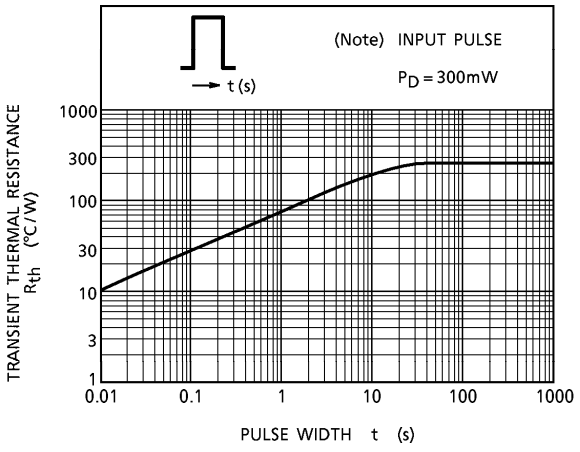
TRANSISTOR (RN6006)
$V_{CE\,(sat)}$ – I_C (LOWER SIDE)



P_D – Ta

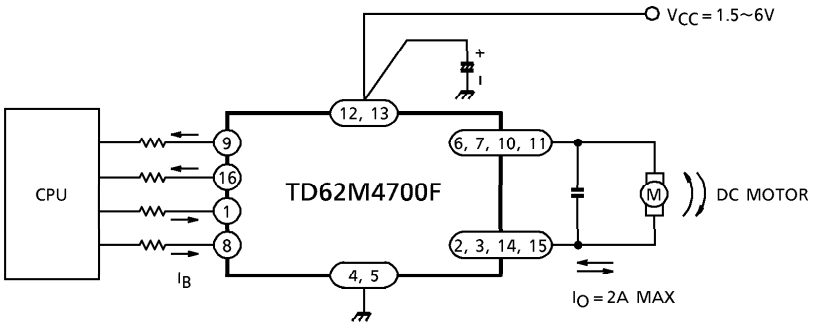


R_{th} – t



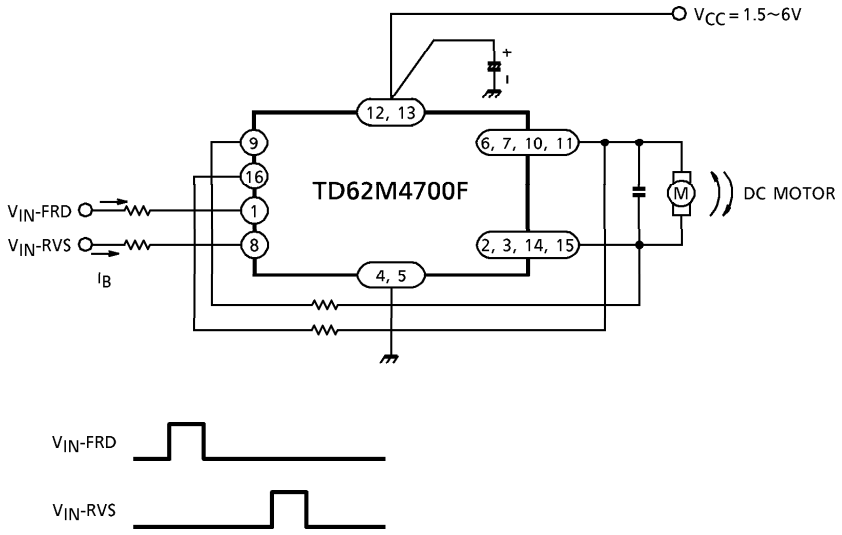
APPLICATION CIRCUIT

(1)



$$I_B > K_O - \frac{I_O}{h_{FE}} \qquad K_O : \text{OVER DRIVE FACTOR} \geq 2$$

(2)



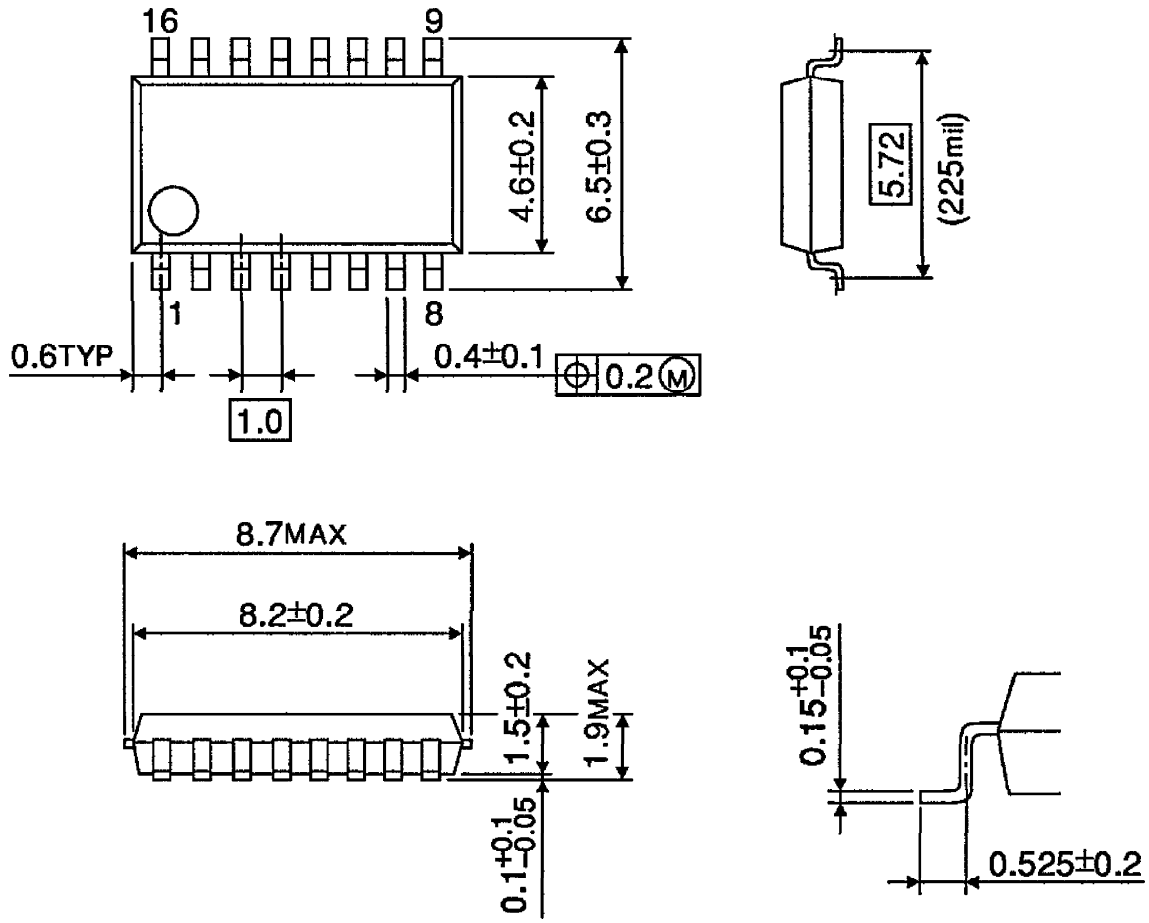
PRECAUTIONS for USING

Utmost care is necessary in the design of the output line, V_{CC} and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

OUTLINE DRAWING

SSOP16-P-225-1.00A

Unit : mm



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