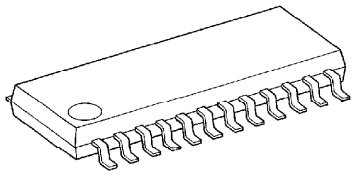
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT MULTI-CHIP

TA8486F

DRIVER FOR LOW-SATURATION VOLTAGE MOTORS

The TA8486F is a multi-chip IC containing ten low-saturation voltage discrete transistors.
The TA8486F is perfect as a driver for low-saturation driven motor drive transistors. 2.0 A is possible as the output current.
Care must be taken over thermal conditions during usage.



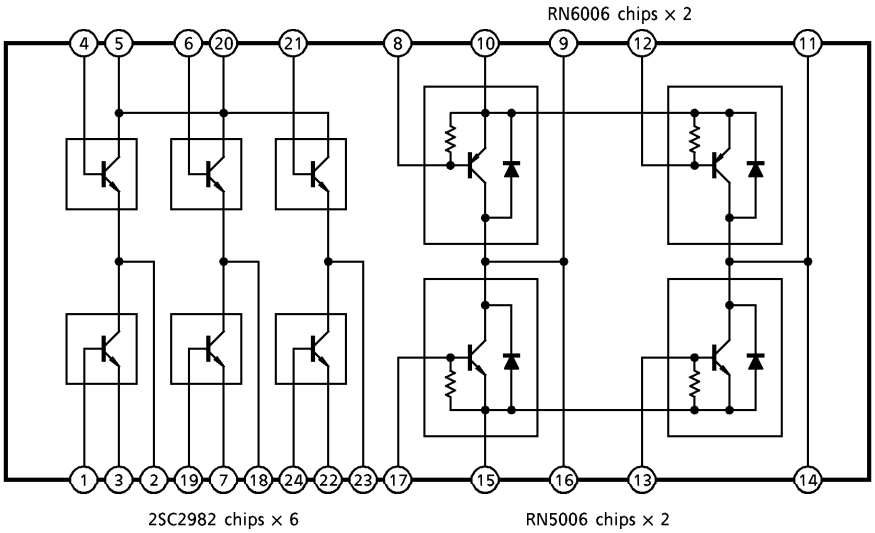
SSOP24-P-300-1.00B

Weight : 0.27 g (Typ.)

FEATURES

- Most suitable as a high-efficiency motor driver circuit
- Enclosed in a compact package: SSOP24

BLOCK DIAGRAM



(Note) Short circuiting between output and line to ground faults may result in damage to the IC. Ensure that great care is taken during the design of the output line, V_{CC} (V_M, V_S, V_{EE}) and the GND line.

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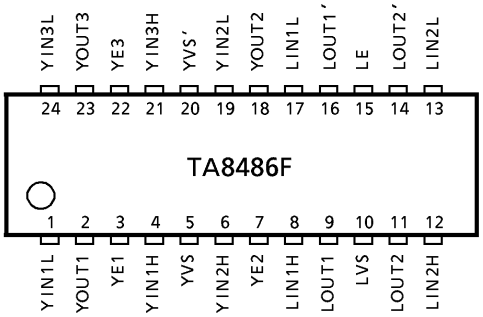
PIN ASSIGNMENTS (TOP VIEW)



MAXIMUM RATINGS (Ta = 25°C)
H-bridge

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Voltage	V_{CC}	10	V
Voltage Between the Collector and Base	V_{CBO}	10	V
Voltage Between the Collector and Emitter	V_{CER}	10	V
Voltage Between the Emitter and Base	V_{EBO}	6	V
Output Transistor Current	I_{OUT}	2	A
Base Current	I_B	±0.4	A
Diode Forward Current	I_F	2 (Note 1)	A
Power Dissipation	P_D	830 (Note 2)	mW
Connection Temperature	T_j	150	°C
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C

(Note 1) T = 10 ms one-shot pulse
(Note 2) Unit (package total)

Three-phase motor

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Voltage	V_{CC}	15	V
Voltage Between the Collector and Base	V_{CBO}	15	V
Voltage Between the Collector and Emitter	V_{CEO}	15	V
Voltage Between the Emitter and Base	V_{BEO}	6	V
Output Transistor Current	I_O	2	A
Base Current	I_B	0.4	A
Power Dissipation	P_D	830 (Note 1)	mW
Connection Temperature	T_j	150	°C
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C

(Note 1) Unit (package total)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)
H-bridge

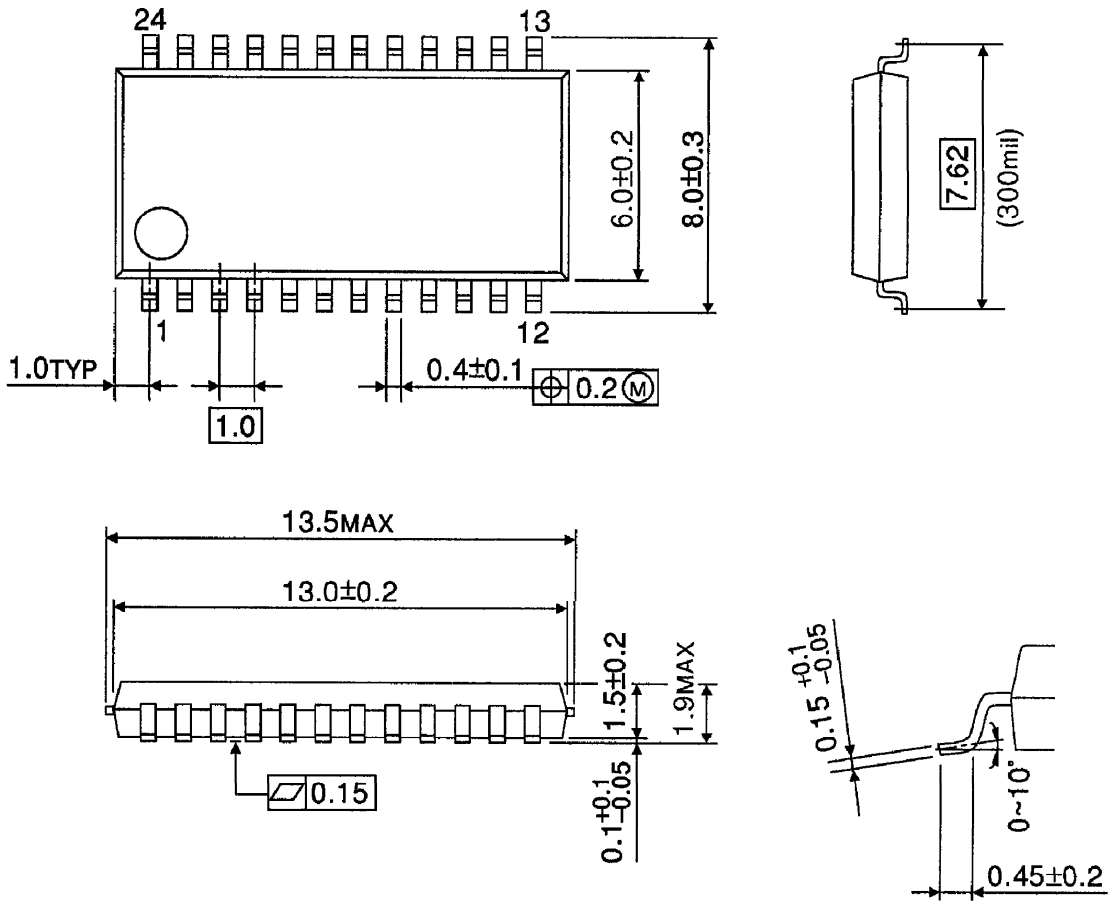
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Direct Current Amplification		h_{FE} (1)	—	V_{CE} = 1 V, I_C = 0.5 A	160	—	600	—
		h_{FE} (2)	—	V_{CE} = 1 V, I_C = 2.0 A	60	130	—	
Output Saturation Voltage	Upper	V_{CE} (sat)	—	I_C = −1 A, I_B = −25 mA	—	−0.15	−0.25	V
	Lower			I_C = 1 A, I_B = 25 mA	—	0.25	0.35	
	Upper and Lower			I_C = 1 A, I_B = 25 mA	—	0.4	0.6	
Transition Frequency		f_T	—	V_{CE} = 2 V, I_C = 0.5 A	—	150	—	MHz
Output Leak Current	Upper	I_{OL}	—	V_{CC} = −10 V	—	0	−5	μA
	Lower			V_{CC} = 10 V	—	0	5	
Diode Forward Voltage	Upper	V_F	—	I_F = 300 mA	—	1.1	1.3	V
	Lower			I_F = 300 mA	—	1.1	1.3	
Resistance Between the Base and Emitter		R_{BE}	—	—	7	10	13	kΩ
Voltage Between the Base and Emitter		V_{BE} (PNP)	—	V_{CE} = −1 V, I_C = −2 A	—	−0.84	−1.5	V
		V_{BE} (NPN)	—	V_{CE} = 1 V, I_C = 2 A	—	0.84	1.5	

Three-phase motor

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Direct Current Amplification		h_{FE} (1)	—	V_{CE} = 0.4 V, I_C = 30 mA	160	—	600	—
		h_{FE} (2)	—	V_{CE} = 0.4 V, I_C = 0.2 A	160	—	600	
h_{FE} Ratio		h_{FE} (1) / h_{FE} (2)	—	V_{CE} = 0.4 V, I_C = 30 mA / V_{CE} = 0.4 V, I_C = 0.2 A	0.75	—	1.25	—
Output Saturation Voltage	Upper	V_{CE} (sat)	—	I_C = 1 A, I_B = 25 mA	—	0.2	0.35	V
	Lower			I_C = 1 A, I_B = 25 mA	—	0.2	0.35	
	Upper and Lower			I_C = 1 A, I_B = 25 mA	—	0.4	0.7	
Transition Frequency		f_T	—	V_{CE} = 2 V, I_C = 0.5 A	—	140	—	MHz
Output Leak Current	Upper	I_{OL}	—	V_{CC} = 15 V	—	0	10	μA
	Lower			V_{CC} = 15 V	—	0	10	
Voltage Between the Base and Emitter		V_{BE} (NPN)	—	V_{CE} = 1 V, I_C = 2 A	—	0.84	1.5	V

PACKAGE DIMENSIONS

SSOP24-P-300-1.00B Unit : mm



Weight : 0.27 g (Typ.)