Photo couplers for Home Appliance

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TOSHIBA CORPORATION
Semiconductor Company
Discrete Semiconductor Division
Induction Heating Cooker

- **Control Circuit**
  - TLP3616
  - TLP3062 (S)
  - TLP250, TLP350 (under development)

- **AC Line**
- **Fan Motor**
- **Heater**
- **Coil**
- **Triac**
- **IGBT**
Inverter Air Conditioner

Controller in outdoor unit

Controller in indoor unit

AC Line

TLP3616

Fan Motor

Control Air-flow Motor

TLP3052 (S)

TLP3052 (S)

TLP3616

Four-way Valve

Compressor Motor

IGBT x 6

Fan Motor
Refrigerator

Control Circuit

AC Line

TLP3616

TLP3616

TLP3616

TLP3616

TLP351 x 6

Fan Motor

Defroster Heater

Damper Motor

Interior Lamp

Compressor Motor

IGBT x 6
Refrigerator (Inverter) (DC)

Driver IC
- Inside cooling fan (brushless DC motor)
- Freezer cooling fan (brushless DC motor)
- Compressor cooling fan (brushless DC motor)
- Damper motor (stepping motor)

Motor Driver IC
- TA84005F

Motor
- TLP 3502

Defrost heater
- TD62783AP

Compressor
- 2SK3316 x 6
- (3-phase)

Motor (brushless DC motor)
- TLP 351

6 PWM output

Protection
- signal input

Emergency
- overload protection

Position
detect function

Communications
- Sensors
- Key input
- Display
- Buzzer

Defrost heater
- TA84005F

Inside lamp
- TA84005F

Inside lamp
- TA7774P

Rotor position detect circuit by resistor
Refrigerator (Inverter)(AC)

- Inside lamp
- Defrost heater
  - Heater
- Motor Driver IC: TA84005F
- Driver IC: TD62783AP
- Inside cooling fan (brushless DC motor)
- Freezer cooling fan (brushless DC motor)
- 6 PWM output
- 3-phase PWM output
- Protection signal input
- 2 Communications
- Sensors
- Key input
- Display
- Buzzer
- TMP86 CS43F
- TMP88 CH41****
- Compressor
  - 3-phase AC motor
  - 2SK3316 x 6
- Refrigerator (Inverter)(AC)
  - Compressor
  - 3-phase AC motor
  - 2SK3316 x 6
Washing Machine

Control Circuit

Inverter circuit

TLP351 x 6

Compressor motor

Load sensing

AC Line

IGBT x 6

TLP421
Washing Machine (Inverter)(DC)

- Power supply
- 6 PWM output
- 3-Phase
- Rotor position detect circuit by Hall sensor
- Protection signal input
- Rotor position detect signal input
- GT10J303 x 6
- TLP351
- TD62930P
- TLP3530
- TMP88CS43F

- Emergency overload protection
- Position detect function

- Drain valve motor
- Water supply valve
- Softener supply valve
- Cover switch
- Water level sensor
- Volume sensor
- Operating panel
- Water turbidity sensor
- LED
- M
Washing Machine (Inverter)(AC)

- **Power supply**: U10LC48, TLP351 x 6
- **3-phase induction motor**: GT10J303 x 6
- **6 PWM output**: TD62930P
- **Protection signal input**: TMP88CS43F
- **Emergency overload protection**: TLP351
- **3-phase PWM output**: TLP351

**Components**:
- **Drain valve motor**: M
- **Water supply valve**: M
- **Softener supply valve**: M
- **Water turbidity sensor**: LED
- **Operating panel**: Water turbidity sensor
- **Water level sensor**: Cover switch
- **Volume sensor**: Water supply valve

**Flowchart Details**:
- **Power supply**: Connects to the 3-phase induction motor through TLP351 x 6.
- **Protection signal input**: Connects to the TMP88CS43F, which includes emergency overload protection.
- **6 PWM output**: Connects to the operating panel and water level sensor.
- **Drain valve motor**: Connects to the power supply and water supply valve.
- **Water supply valve**: Connects to the drain valve motor and volume sensor.

**Additional Notes**:
- **3-phase PWM output**: Important for controlling the motor's speed and direction.
- **Emergency overload protection**: Ensures safety during operation.
- **Water turbidity sensor**: Measures the clarity of water for purification.
- **Water level sensor**: Monitors water levels for automatic control.
- **Volume sensor**: Tracks water volume for efficiency in the washing process.
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