



SK6908

LINEAR INTEGRATED CIRCUIT

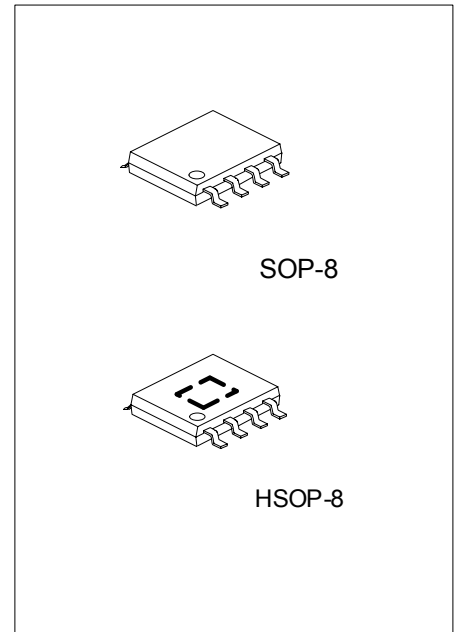
SINGLE-PHASE DC-FAN MOTOR DRIVER

DESCRIPTION

SK6908 is a single-phase driver for dc-fan motors. It provides high efficiency, low noise output and supports the functions of motor lock protection, auto restart and rotation detection.

FEATURES

- *Wide supply voltage range of 2.5V to 20V
- *Output current $I_{O(MAX)}=600mA$
- *Operate with Hall element
- *Lock protection
- *Auto-restart when the motor lock is undone
- *FG(frequency generator) output
- *Package type SOP-8 and HSOP-8 expose pan



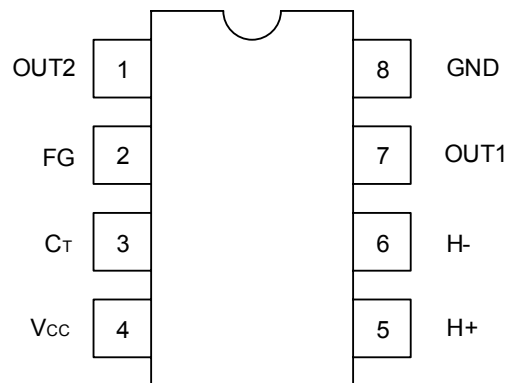
*Pb-free plating product number: SK6908L

ORDERING INFORMATION

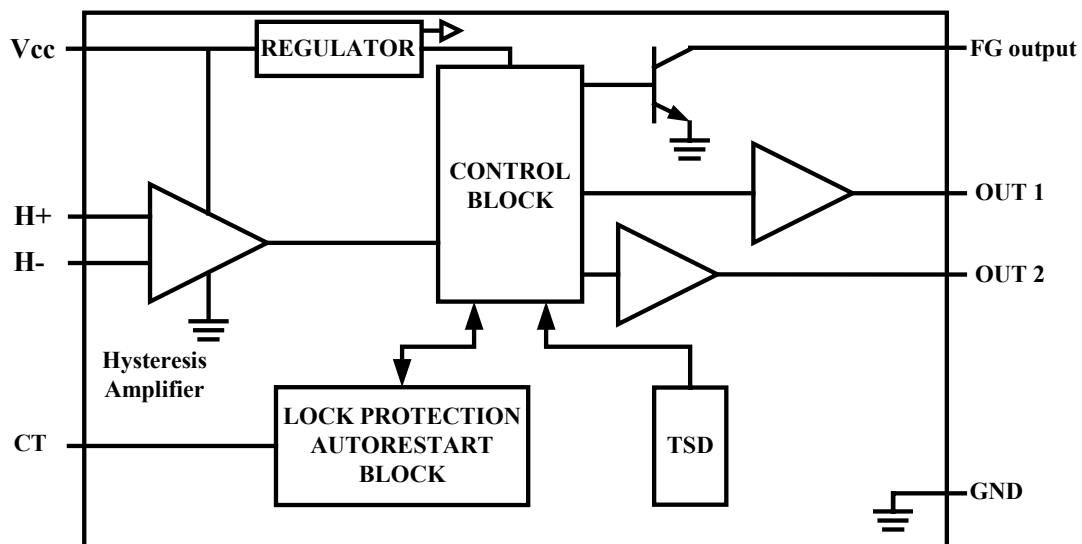
| Order Number | | Package | Packing |
|--------------|-------------------|---------|-----------|
| Normal | Lead Free Plating | | |
| SK6908-S08-R | SK6908L-S08-R | SOP-8 | Tape Reel |
| SK6908-S08-T | SK6908L-S08-T | SOP-8 | Tube |
| SK6908-SM1-R | SK6908L-SM1-R | HSOP-8 | Tape Reel |
| SK6908-SM1-T | SK6908L-SM1-T | HSOP-8 | Tube |

| | |
|---|--|
| <p>SK6908L-S08-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p> | <p>(1) R: Tape Reel, T: Tube (2) S08: SOP-8, SM1: HSOP-8 (3) L: Lead Free Plating Blank: Pb/Sn</p> |
|---|--|

■ PIN CONFIGURATION



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT | |
|---|------------------|----------------------------|------|----|
| Supply voltage | V _{CC} | 20 | V | |
| Supply current | I _{CC} | 20 | mA | |
| Circuit current | I _O | 600 | mA | |
| FG output current | I _{FG} | 20 | mA | |
| Power dissipation (Derate at Ta=25°C reduce 5.5mW/°C) | SOP-8 | P _D | 700 | mW |
| | HSOP-8 | P _D | 1000 | mW |
| Output Voltage | V _{OUT} | 20 | V | |
| Hall input common mode voltage range | V _{HIC} | 1.0 ~ V _{CC} -0.5 | V | |
| Operating ambient temperature | T _{OPR} | -20 ~ +100(Note1) | °C | |
| Storage temperature | T _{STG} | -55 ~ +150 | °C | |

Note 1. For operation in ambient temperatures above 25°C, the driver device must be derated based on a 150°C maximum temperature

Note 2. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Note 3. The device is guaranteed to meet performance specification within 0°C~+70°C operating temperature range and assured by design from -20°C~+100°C.

■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V_{CC}=5V)

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|-----------------------|--|-----|-----|-----|------|
| Current drain | I _{CC} | In drive mode (C _T =L) | | 8 | | mA |
| | | In lockup protection mode (C _T =H) | | 4.1 | | mA |
| Lockup detection capacitor charge current | I _{CT1} | V _{1PIN} = 1.1V | 2 | 2.8 | 4 | µA |
| Capacitor discharge current | I _{CT2} | V _{1PIN} = 1.1V | 0.3 | 0.5 | 0.8 | µA |
| Capacitor charge/discharge current ratio | R _{CT} | | | 5.6 | | |
| CT charge voltage | V _{CT1} | | | 1.9 | | V |
| CT discharge voltage | V _{CT2} | | | 0.7 | | V |
| Output low level voltage | V _{OL} | I _O =200mA | | 0.3 | 0.7 | V |
| Output high level voltage | V _{OH} | I _O =200mA | 3.9 | 4.1 | | V |
| Hall input sensitivity | V _{HIN} | Zero peak value (including offset and hysteresis) | 3 | | 15 | mV |
| Hall input-output gain | G _{HO} | | 320 | 500 | 680 | |
| FG output pin low voltage | V _{FG} | I _{FG} =5mA | | 0.3 | 0.5 | V |
| FG output pin leakage current | I _{FG(LEAK)} | V _{FG} =15V | | 0 | 10 | µA |

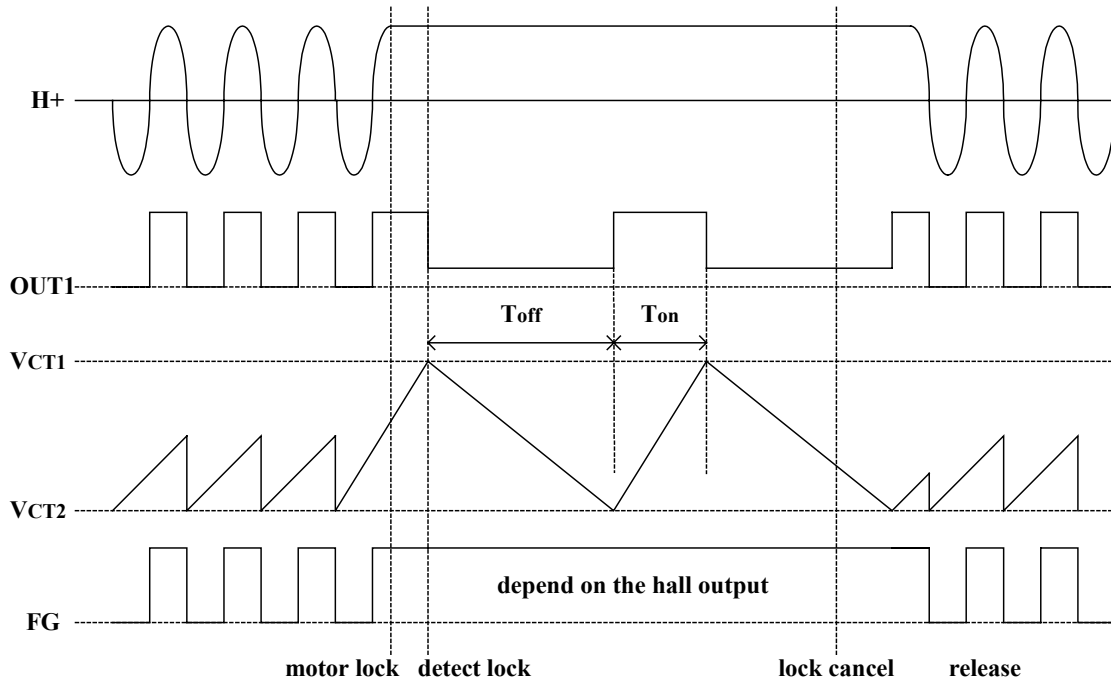
■ HALL SINGLE INPUT-OUTPUT TRUTH VALUE TABLE

| H+ | H- | OUT1 | OUT2 | FG |
|----|----|------|------|----|
| H | L | H | L | H |
| L | H | L | H | L |

* CT=0V

■ LOCKUP PROTECTION / AUTOMATIC RECOVERY

Fig. 1



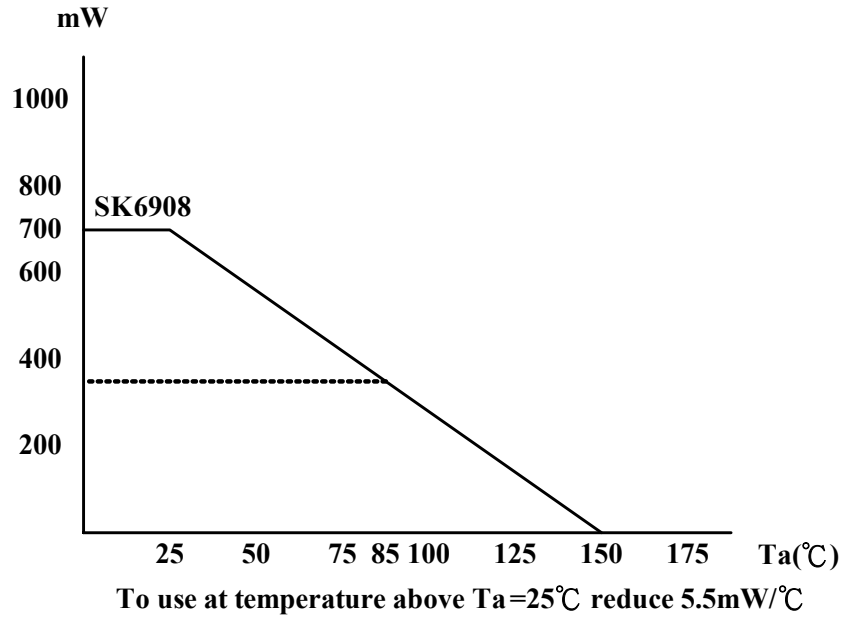
$$T_{on} \text{ (charge time)} = \frac{C \times (V_{CT1} - V_{CT2})}{I_{CT1}}$$

$$T_{off} \text{ (charge time)} = \frac{C \times (V_{CT1} - V_{CT2})}{I_{CT2}}$$

C : Value of capacitor at CT terminal

■ **POWER DISSIPATION**

Fig.-2



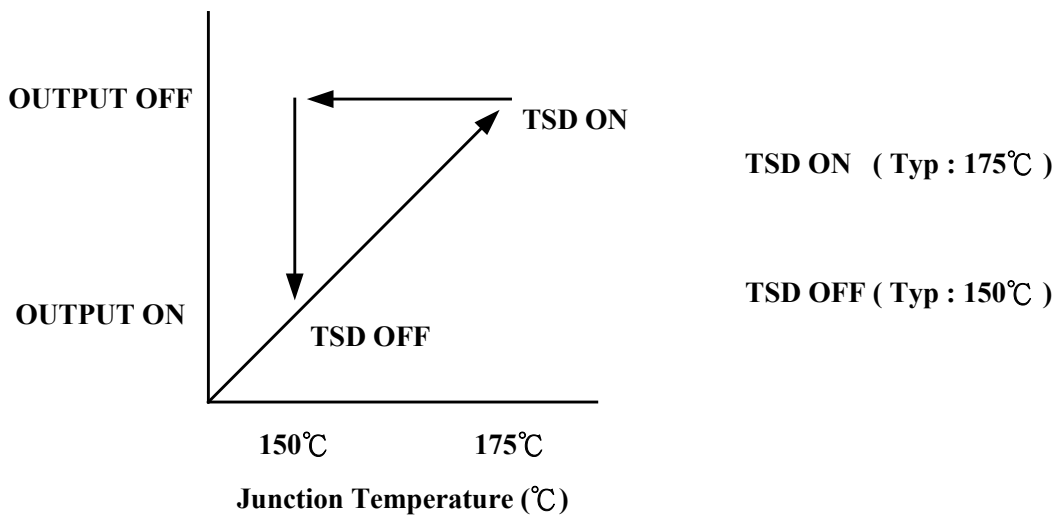
The maximum junctions temperature is 150°C in plastic packages, but for reasons of reliability, a lower number may be mandated.

$$P_T = (T_{J(MAX)} - T_{a(MAX)}) / \theta_{JA}$$

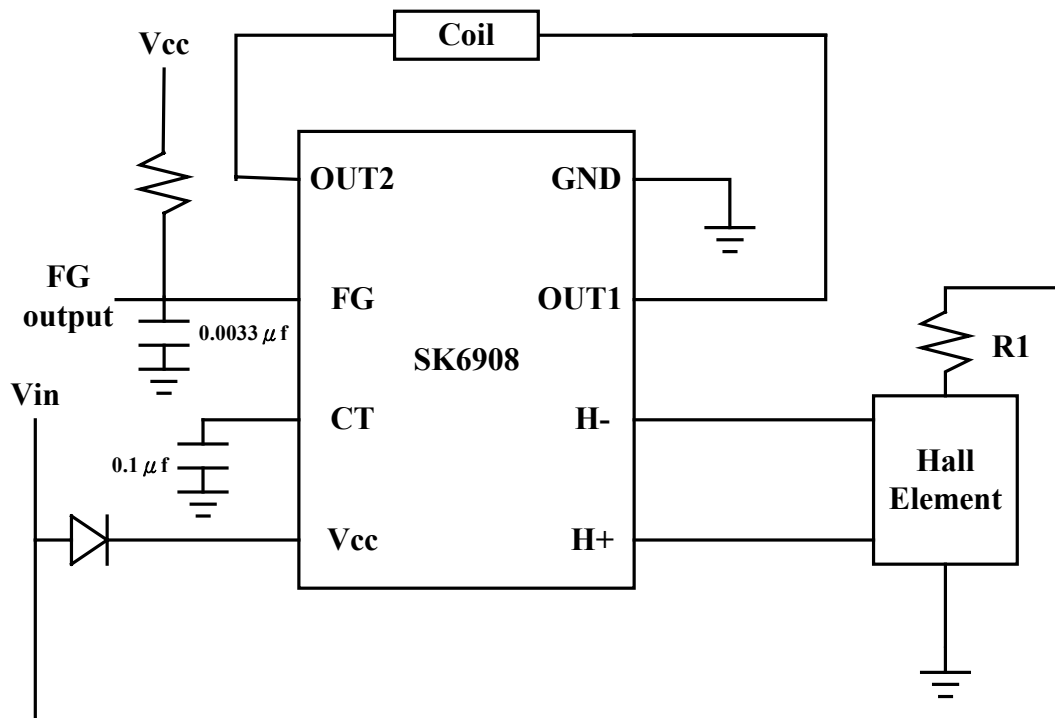
P_T = Total Power Dissipated by the Device
 $T_{J(MAX)}$ = Maximum Junction Temperature
 $T_{a(MAX)}$ = Maximum Ambient Temperature
 θ_{JA} = 175°C/W

■ **THERMAL SHUTDOWN(TSD)**

Fig.-3



■ TYPICAL APPLICATION CIRCUIT



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