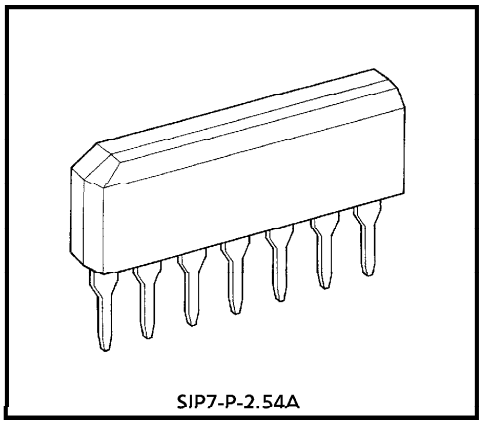
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7510S

EARTH LEAK BREAKER

FEATURES

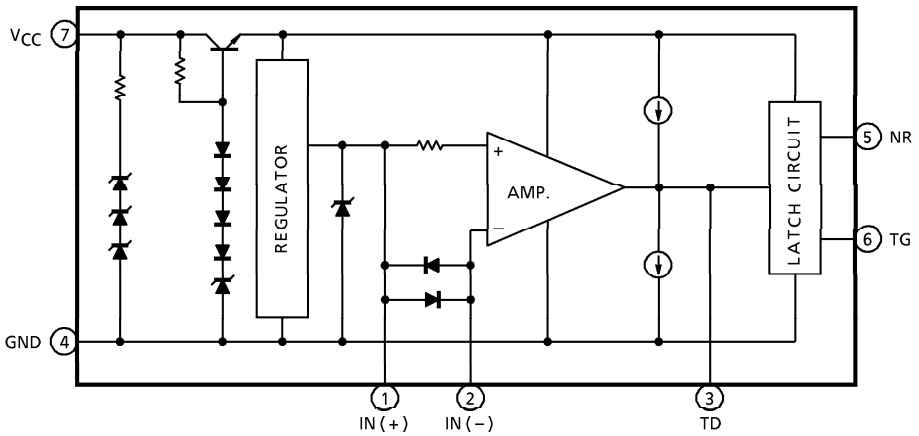
- High Sensibility : V_{Trip} = 7mV (Typ.)
- Compose of Toshiba Original SIP (7Pin) so that it is possible to manufacture very small Earth Leak Breaker by using this device.
- Having High Reliability for the swing of supply voltage.
- Be possible to turn on External Thyristor Because of having Regulator Circuit.
- Having stability Trip Voltage Value.
- High Speed Rising Time.



SIP7-P-2.54A

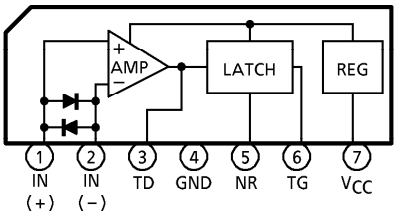
Weight : 0.7g (Typ.)

BLOCK DIAGRAM



961001EBA2

PIN CONNECTION



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	CONDITION	RATING	UNIT
Supply Current	I_{CC}	—	10	mA
Input Current	I_{IM}	+ IN – (– IN)	250 (Note)	mA
		+ IN – GND	30	
		– IN – GND	30	
Power Dissipation	P_D	—	400	mW
Operating Temperature	T_{opr}	—	– 30~85	°C
Storage Temperature	T_{stg}	—	– 55~125	°C

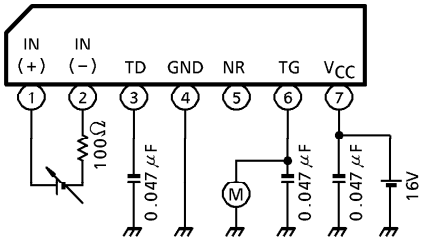
(Note) In case the current between + IN and – IN, Pulse width must be less than 1ms.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

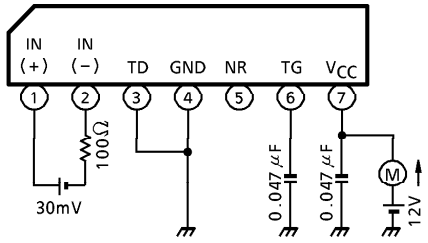
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trip Voltage	V_{TRIP}	1	V_{CC} = 16V, Ta = −30~85°C	4	—	10	mV
Supply Current (1)	I_{CC}	2	V_{CC} = 12V (+IN) − (−IN) = 30mV	—	550	900	μA
Gate Current	I_{TGH}	3	V_{CC} = 16V, V_{TG} = 0.8V Ta = 25°C	100	—	—	μA
			V_{CC} = 16V, V_{TG} = 0.8V Ta = −30~85°C	90	—	—	
Time Current	I_{TDH}	4	V_{CC} = 16V, V_{TD} = 0V	30	—	100	μA
TD Terminal "L" Current	I_{TDL}	5	V_{CC} = 16V, V_{TD} = 0.8V (+IN) − (−IN) Short	20	—	70	μA
ON Voltage Of Internal Latch Circuit	$V_{ON (SCR)}$	6	V_{CC} = 16V	0.7	—	1.6	V
Output "L" Current	I_{TGL}	7	V_{CC} = 12V, V_{TG} = 0.2V Ta = −30~85°C	100	—	—	μA
Input Clamp Voltage	V_{INC}	8	V_{CC} = 12V, I_{IN} = 30mA	4.6	—	6.9	V
Differential Input Clamp Voltage	V_{DFC}	9	I_{DF} = 100mA	0.7	—	1.3	V
V_{CC} Terminal Voltage	V_{CCM}	10	I = 10mA	22	—	30	V
Operating Supply Current (2)	$I_{CC (ON)}$	11	V_{CC} = 16V, V_{TG} = 0.8V Ta = −30~85°C	—	—	2.5	mA
Output "OFF" Supply Voltage	$V_{CC (OFF)}$	12	—	—	4.5	—	V
Operating Time	t_{ON}	13	V_{CC} = 16V (+IN) − (−IN) = 0.3V	—	1	—	ms

TEST CIRCUIT

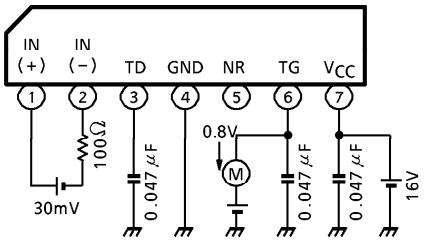
1. Trip voltage V_{TRIP}



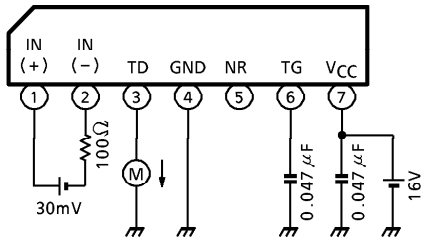
2. Supply current (1)



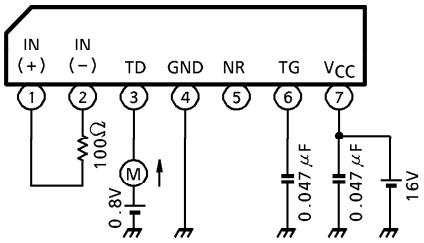
3. Gate current I_{TGH}



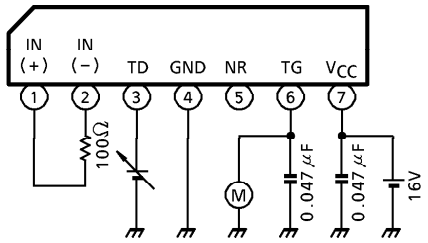
4. Time current I_{TDH}



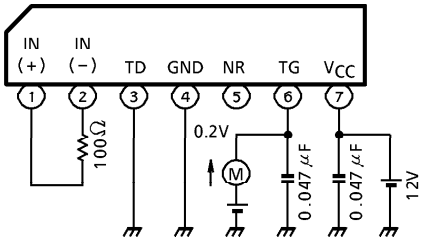
5. TD terminal "L" current I_{TDL}



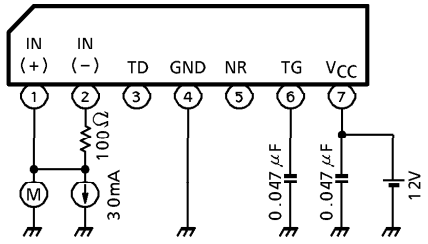
6. On voltage of internal latch circuit $V_{ON\ (SCR)}$



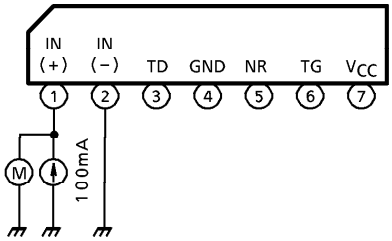
7. Output "L" current I_{TGL}

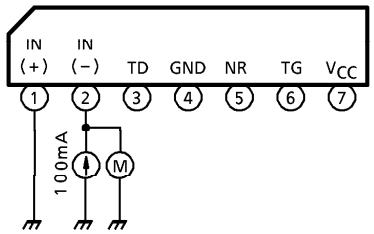


8. Input clamp voltage V_{INC}

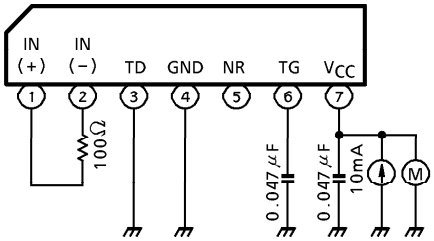


9. Differential input clamp voltage V_{DFC}

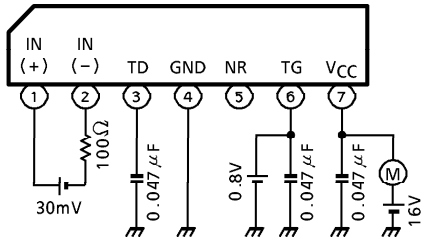




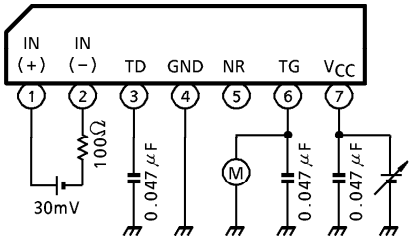
10. V_{CC} terminal voltage V_{CCM}



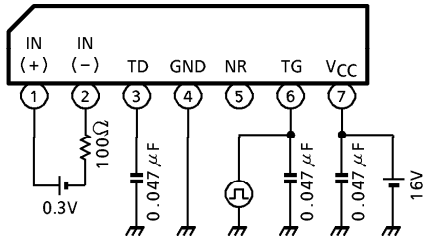
11. Operating current (2)



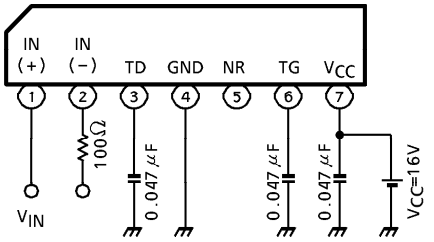
12. Latch "OFF" supply voltage $V_{CC\,(OFF)}$

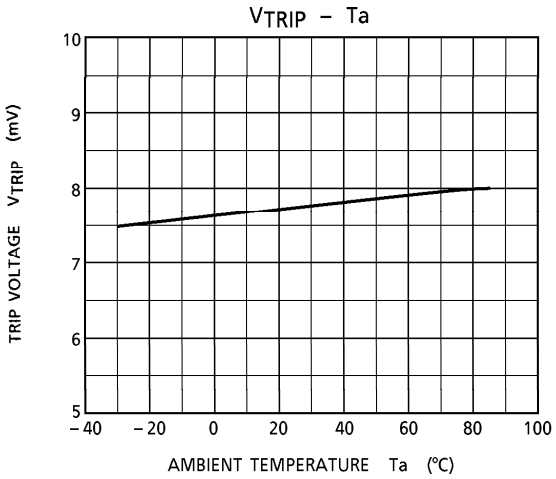


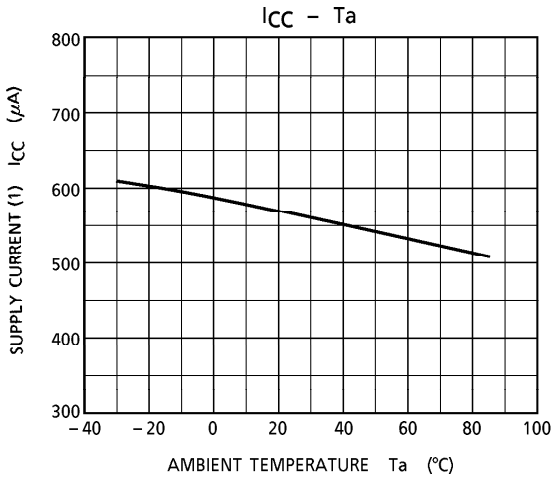
13. Operating time

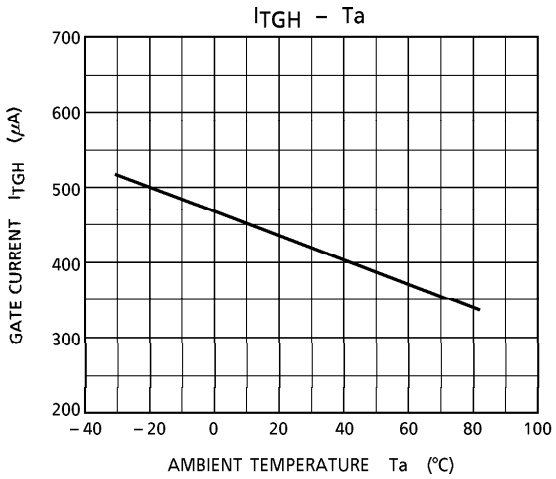


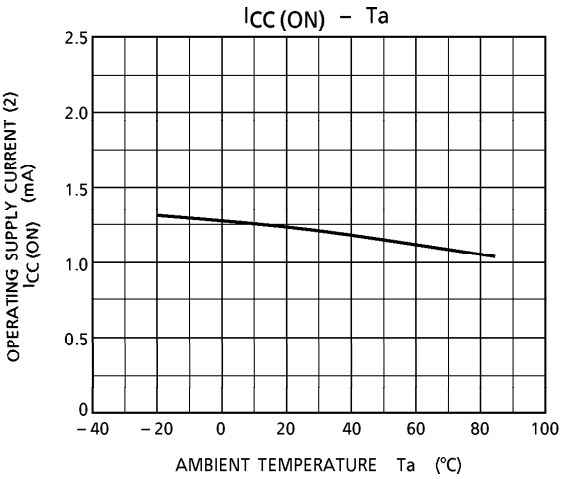
14. Latch operation



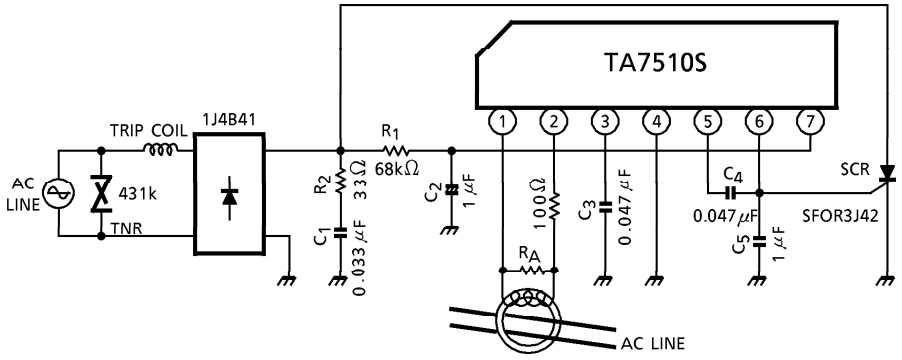








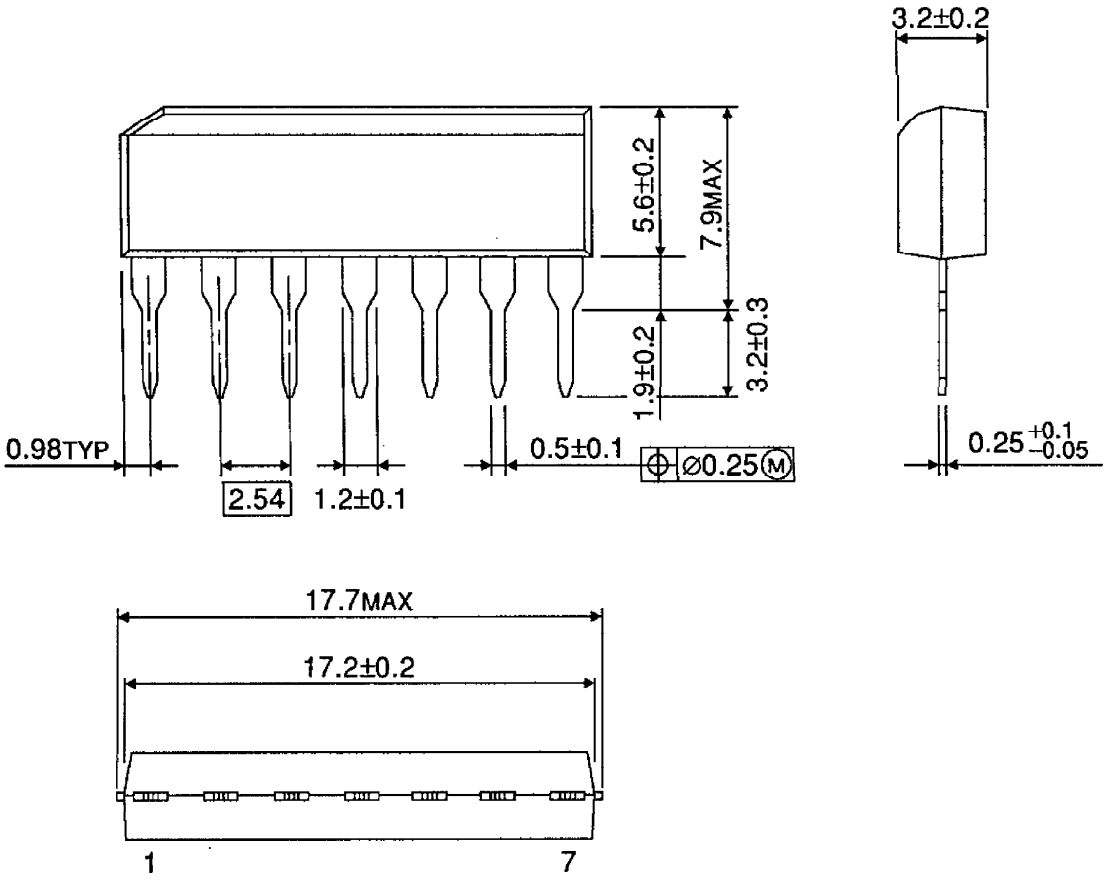
APPLICATION CIRCUIT (High speed earth leak breaker at 100V or 200V)



OUTLINE DRAWING

SIP7-P-2.54A

Unit : mm



Weight : 0.7g (Typ.)