

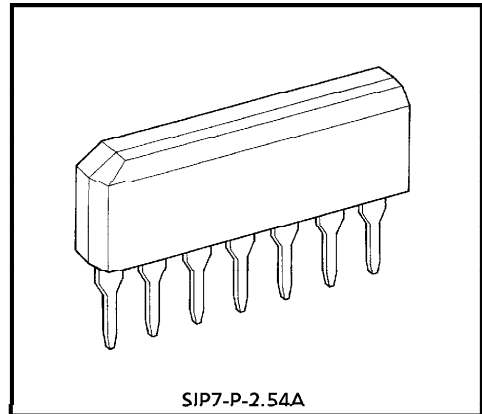
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7510S

EARTH LEAK BREAKER

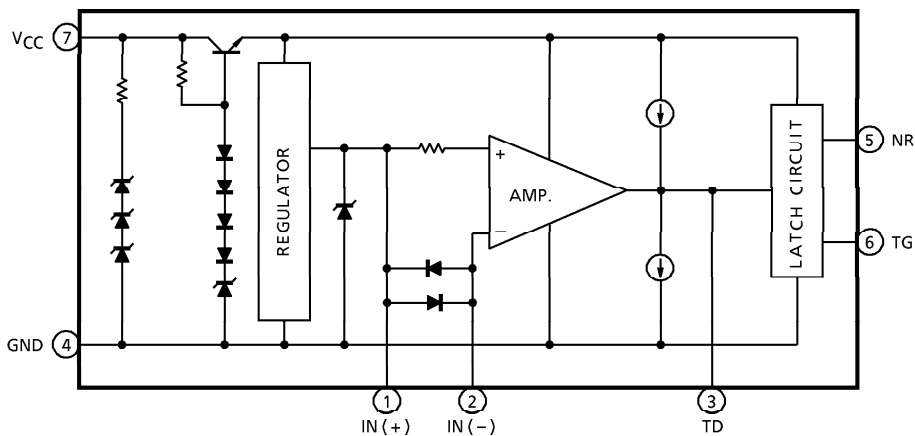
FEATURES

- 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.



Weight : 0.7g (Typ.)

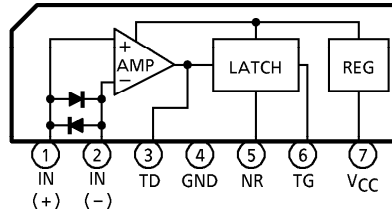
BLOCK DIAGRAM



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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

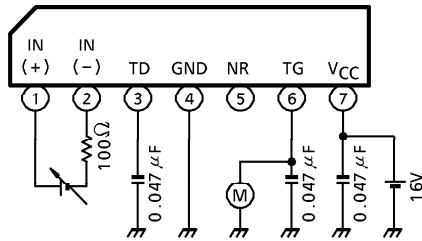
(Note) In case the current between +IN and -IN, Pulse width must be less than 1ms.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

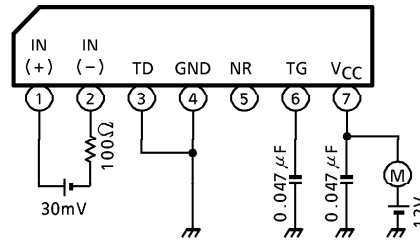
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trip Voltage	V _{TRIP}	1	V _{CC} = 16V, Ta = -30~85°C	4	—	10	mV
Supply Current (1)	I _{CC}	2	V _{CC} = 12V (+IN) - (-IN) = 30mV	—	550	900	μA
Gate Current	I _{TGH}	3	V _{CC} = 16V, V _{TG} = 0.8V Ta = 25°C	100	—	—	μA
			V _{CC} = 16V, 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

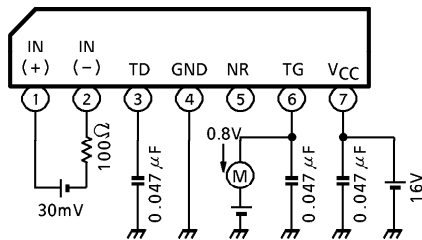
1. Trip voltage V_{TRIP}



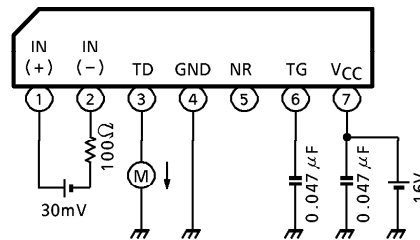
2. Supply current (1)



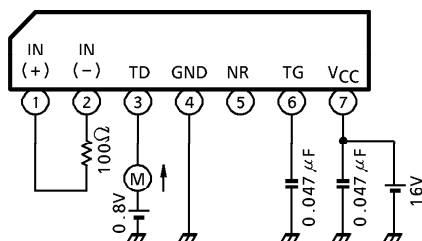
3. Gate current I_{TGH}



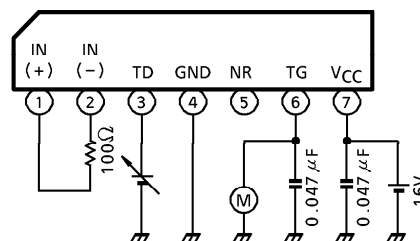
4. Time current I_{TDH}



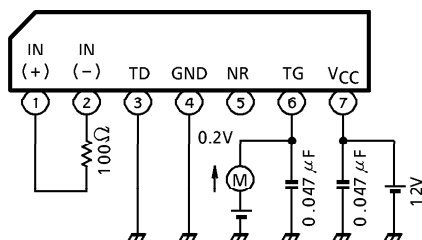
5. TD terminal "L" current I_{TDL}



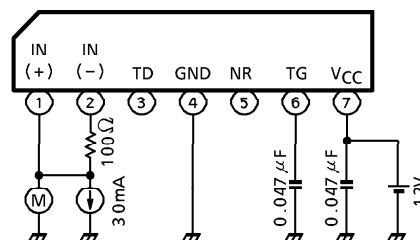
6. On voltage of internal latch circuit $V_{ON(SCR)}$



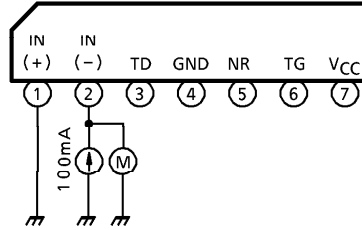
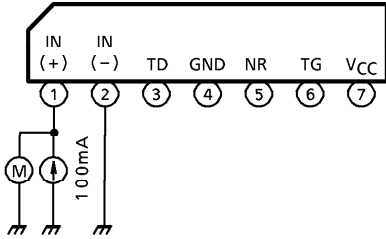
7. Output "L" current I_{TGL}



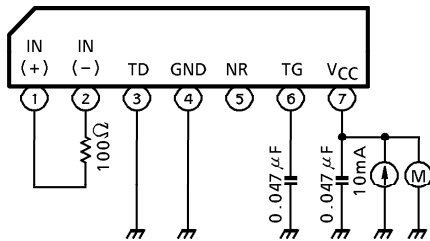
8. Input clamp voltage V_{INC}



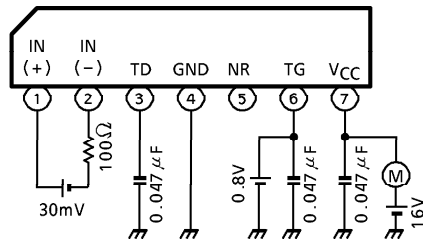
9. Differential input clamp voltage V_{DFC}



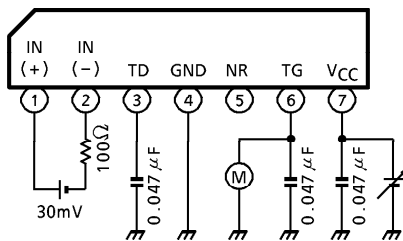
10. V_{CC} terminal voltage V_{CCM}



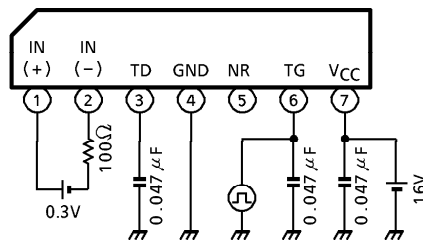
11. Operating current (2)



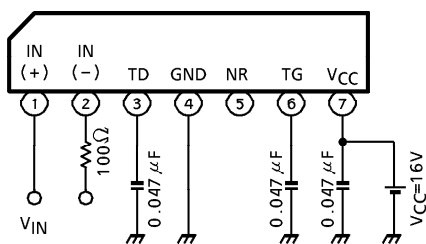
12. Latch "OFF" supply voltage V_{CC} (OFF)

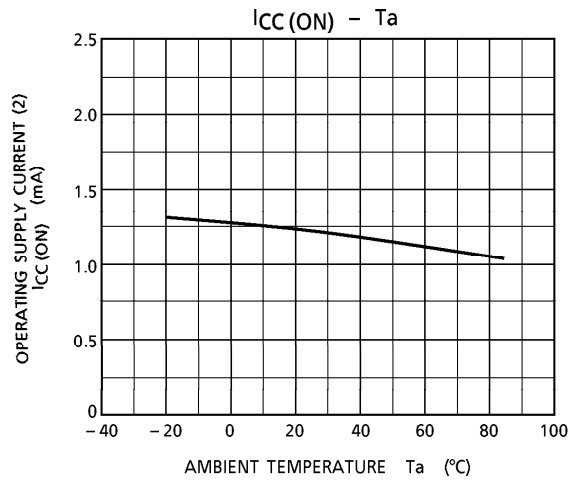
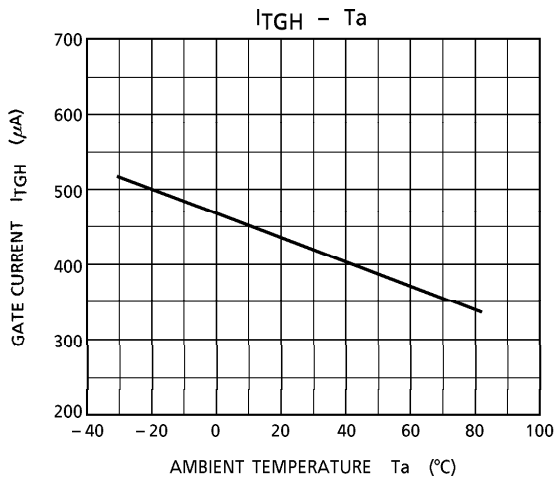
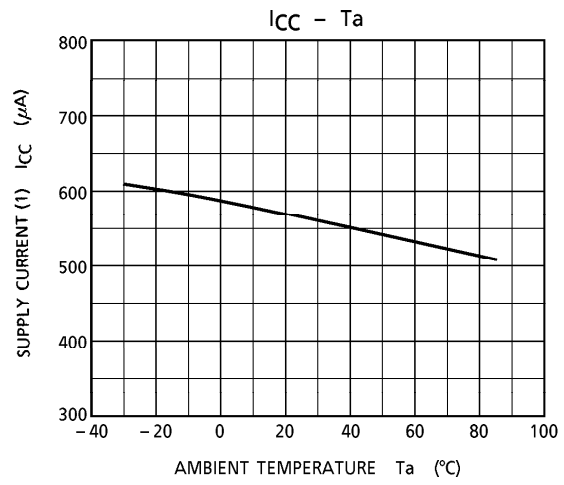
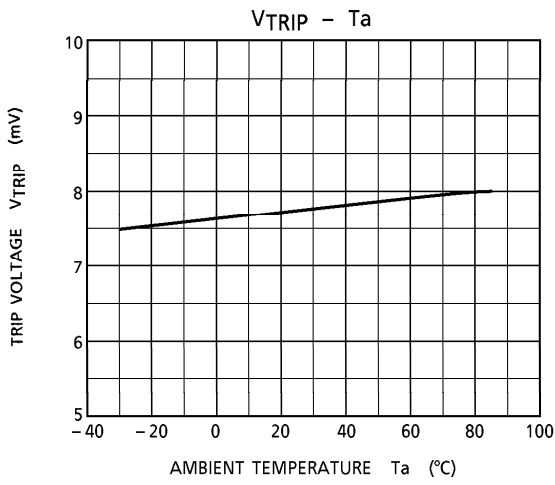


13. Operating time

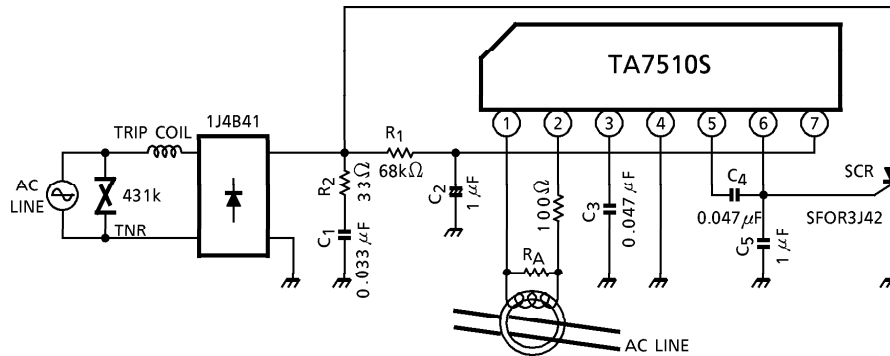


14. Latch operation



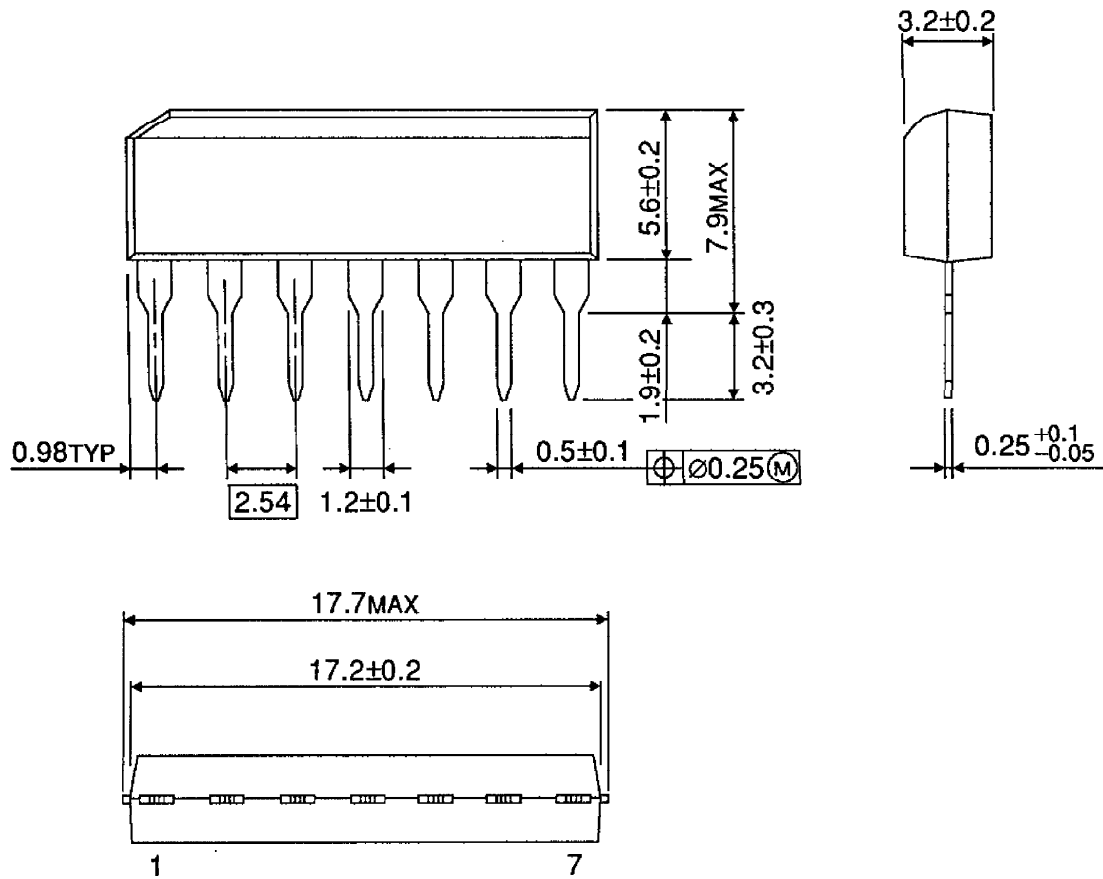


APPLICATION CIRCUIT (High speed earth leak breaker at 100V or 200V)



OUTLINE DRAWING
SIP7-P-2.54A

Unit : mm



Weight : 0.7g (Typ.)