

STK404-070NGEVB, STK404-120NGEVB, STK404-140NGEVB



ON Semiconductor®

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STK404-000N Series Evaluation Board User's Manual

EVAL BOARD USER'S MANUAL

Thick-Film Hybrid IC for use in from 60 W to 180 W $\times$ 1ch class AB audio power amplifiers.

This Evaluation Board User's Manual describes the set-up and use of the STK404-000N Series Evaluation Board for SANYO Semiconductor (An ON Semiconductor Company).

Thick-Film Hybrid IC for use in from 60 W to 180 W $\times$ 1ch class AB audio power amplifiers devices STK404-070N-E, STK404-120N-E and STK404-140N-E.

For data sheets and additional on these devices, please visit the ON Semiconductor website at www.onsemi.com.

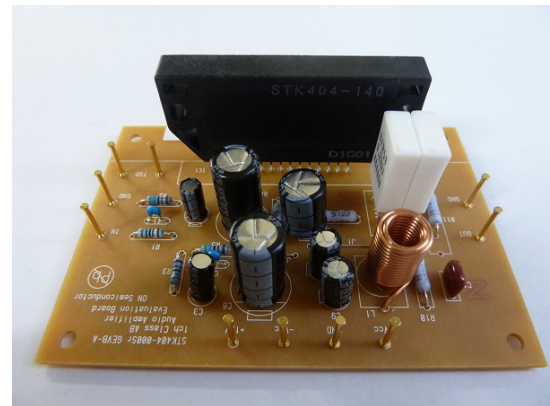
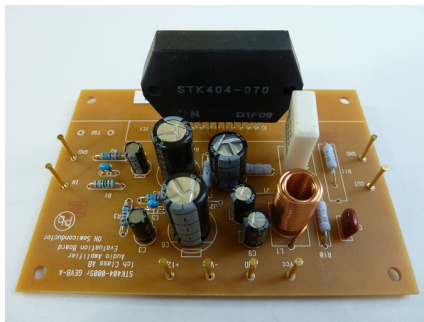


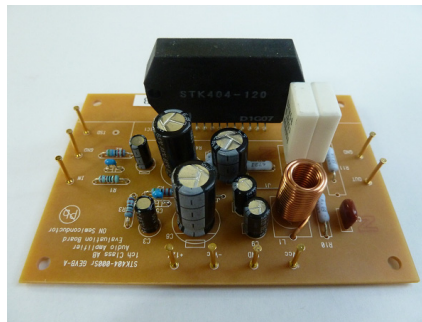
Figure 1. STK404-000N Series Evaluation Board

EVALUATION BOARD FOR STK404-070N, -120N, -140N



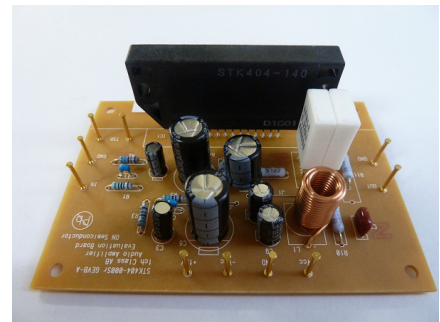
(100 mm $\times$ 70 mm $\times$ 1.6 mm,
Phenol 1-layer Board)

Figure 2. STK404-070NGEVB



(100 mm $\times$ 70 mm $\times$ 1.6 mm,
Phenol 1-layer Board)

Figure 3. STK404-120NGEVB



(100 mm $\times$ 70 mm $\times$ 1.6 mm,
Phenol 1-layer Board)

Figure 4. STK404-140NGEVB

Table 1. SELECTION GUIDE

	STK404-070N-E	STK404-120N-E	STK404-140N-E
Output1 (10%/1 kHz)	60 W $\times$ 1ch	120 W $\times$ 1ch	180 W $\times$ 1ch
Output2 (1%/20 Hz to 20 kHz)	40 W $\times$ 1ch	80 W $\times$ 1ch	120 W $\times$ 1ch
Maximum Rating V_{CC} max (no sig.)	± 46 V	± 65 V	± 78 V
Maximum Rating V_{CC} (6 Ω)	± 39 V	± 59 V	± 73 V
Recommended Operating V_{CC} (6 Ω)	± 30 V	± 41 V	± 51 V
Package Size	44.0 $\times$ 25.6 $\times$ 8.5 (mm)	46.6 $\times$ 25.5 $\times$ 8.5 (mm)	59.2 $\times$ 25.5 $\times$ 8.5 (mm)

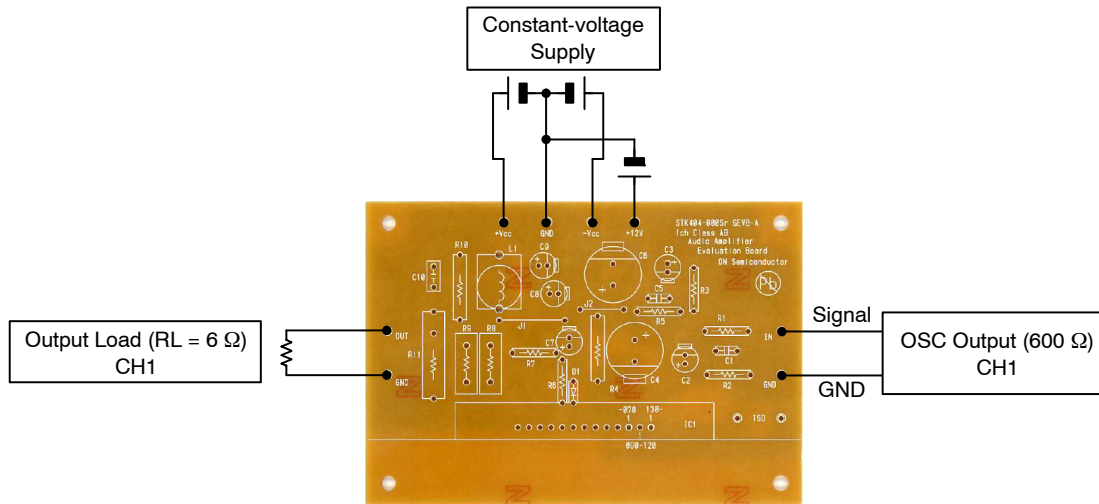


Figure 5. Characteristics Confirmation

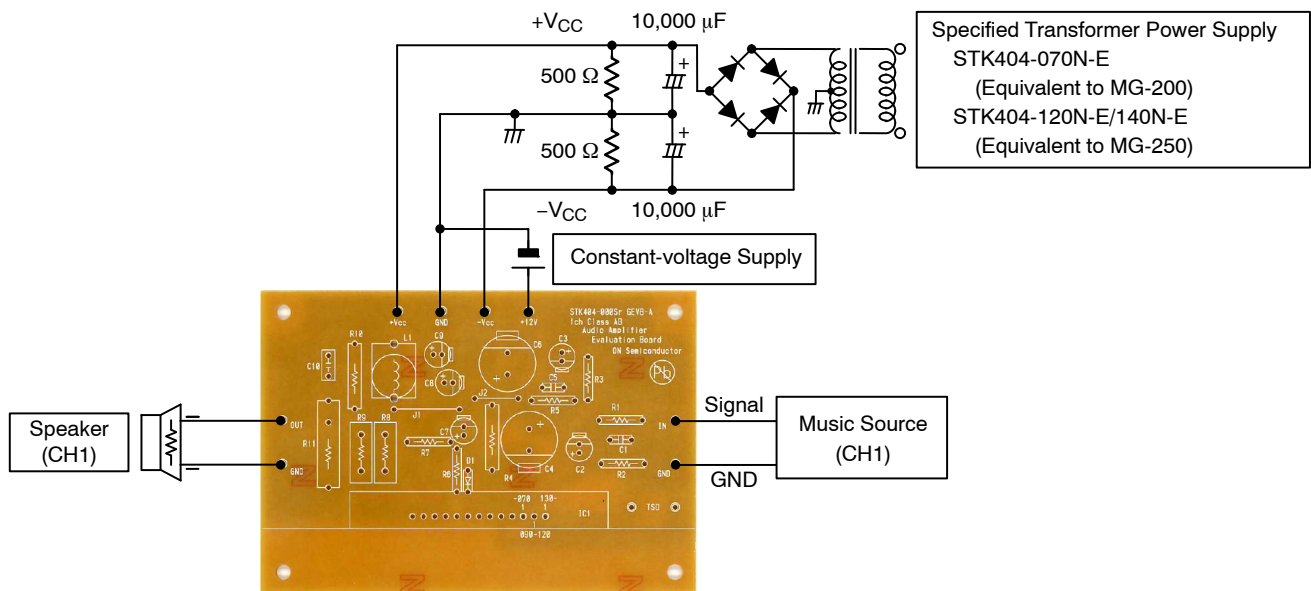


Figure 6. Sound Quality Configuration, Load Short-circuit Test, Noise Examination

STK404-070NGEB, STK404-120NGEB, STK404-140NGEB

STK404-000NSR PCB PARTS LIST

Table 2. PCB NAME: STK404-000SR GEB – A

Type (IC1)	STK404-070N-E	STK404-120N-E	STK404-140N-E
Position of (1)pin	Third from the Right End	Second from the Right End	The Right End
Location			
R1	1 k Ω	←	←
R2	56 k Ω	←	←
R3	1.8 k Ω	←	←
R4	100 Ω /1 W	←	←
R5	56 k Ω	←	←
R6	10 k Ω /1 W	4.7 k Ω /1 W	5.1 k Ω /1 W
R7	10 k Ω /1 W	4.7 k Ω /1 W	5.1 k Ω /1 W
R8	0.22 Ω /5 W	←	←
R9	–	0.22 Ω /5 W	←
R10	4.7 Ω /1 W	←	←
R11	4.7 Ω /1 W	←	←
C1	470 pF	←	←
C2	2.2 μ F/50 V	←	←
C3	10 μ F/50 V	←	←
C4	100 μ F/100 V	←	←
C5	5 pF	←	←
C6	100 μ F/50 V	←	←
C7	47 μ F/100 V	←	←
C8	10 μ F/100 V	←	←
C9	10 μ F/100 V	←	←
C10	0.1 μ F	←	←
D1	200 V/0.5 A	Short	Short
L1	2.2 μ H	←	←
J1	15 mm	←	←
J2	10 mm	←	←

TEST CIRCUITS

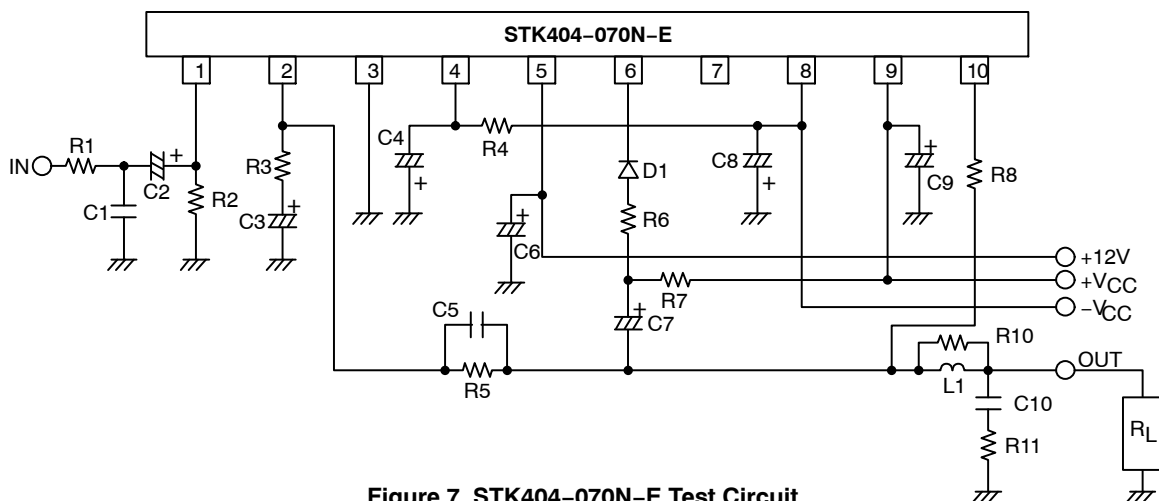


Figure 7. STK404-070N-E Test Circuit

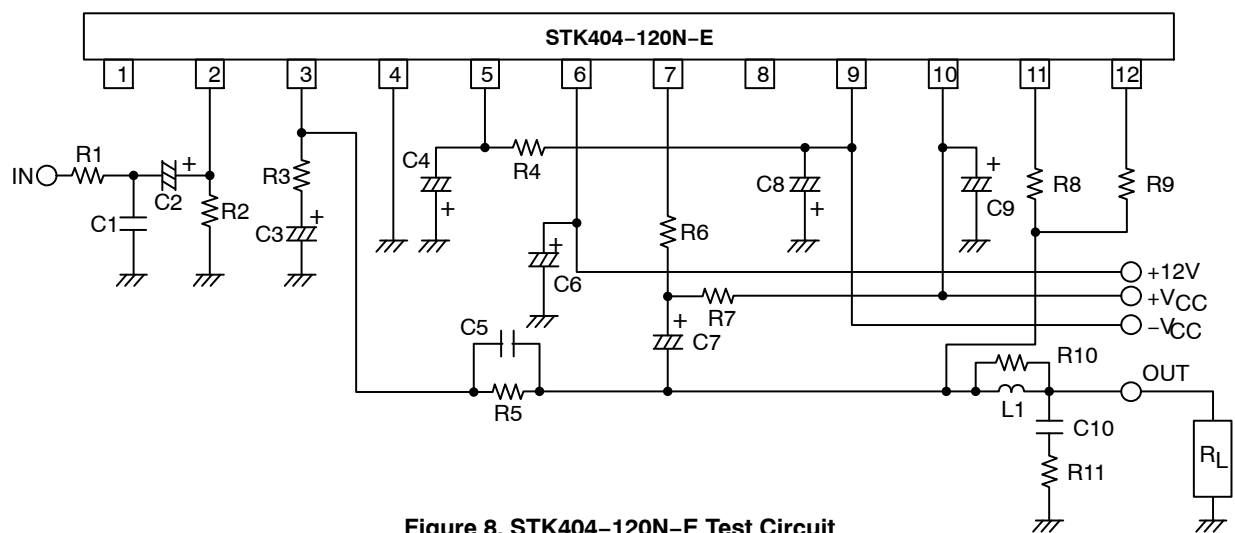


Figure 8. STK404-120N-E Test Circuit

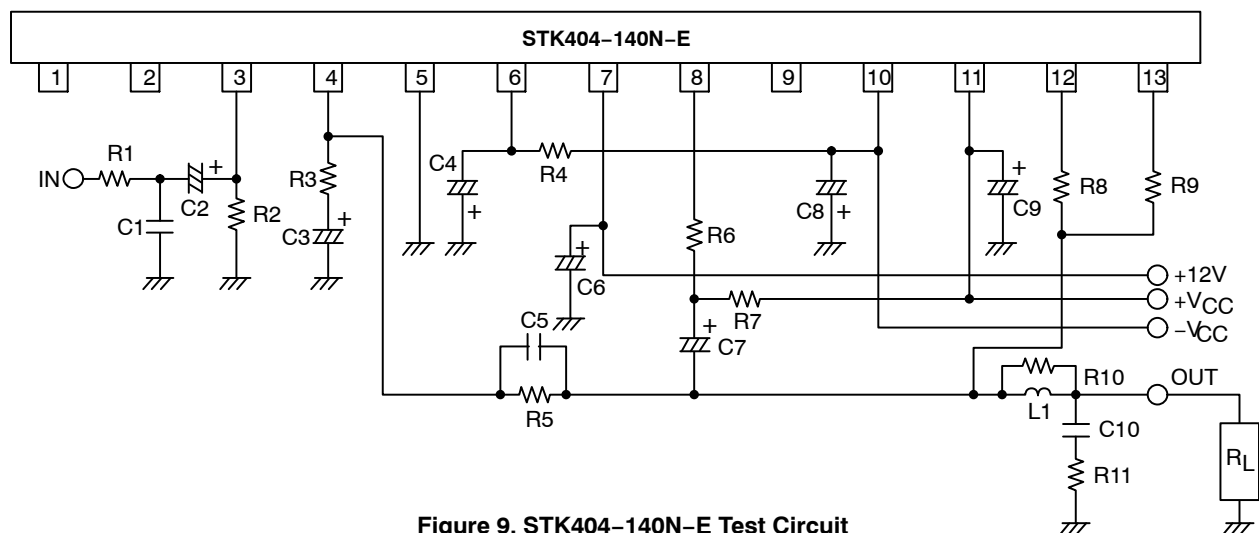


Figure 9. STK404-140N-E Test Circuit

STK404-070NGEVB, STK404-120NGEVB, STK404-140NGEVB

SUBSTRATE SPECIFICATIONS

(Substrate Recommended for Operation of STK404-070N/120N/140N)

Size: 100 mm × 70 mm × 1.6 mm, Phenol 1-layer Board
Material: Phenol
Copper Side (35 μ)

PCB LAYOUT EXAMPLE

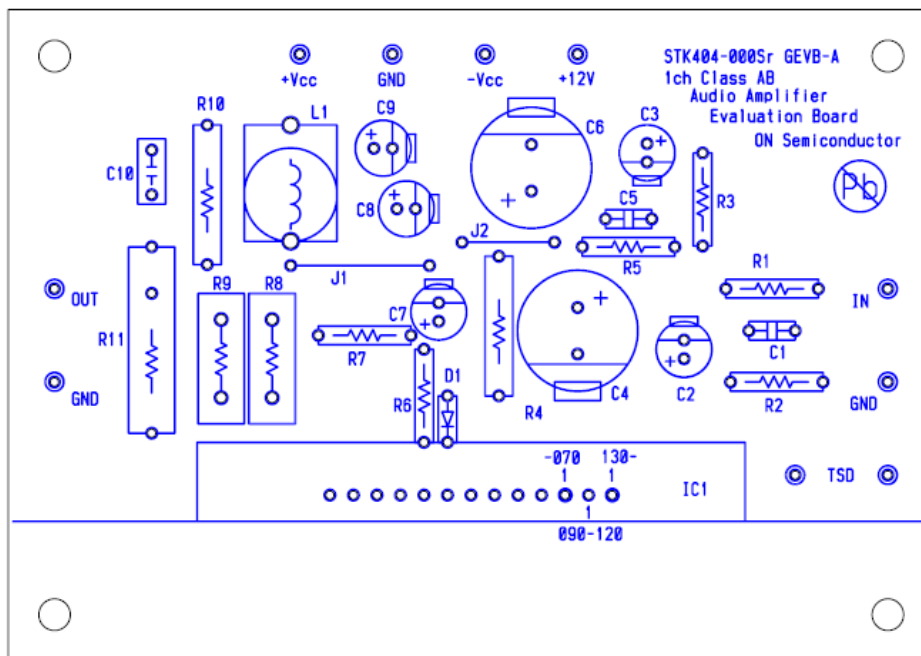


Figure 10. Top View

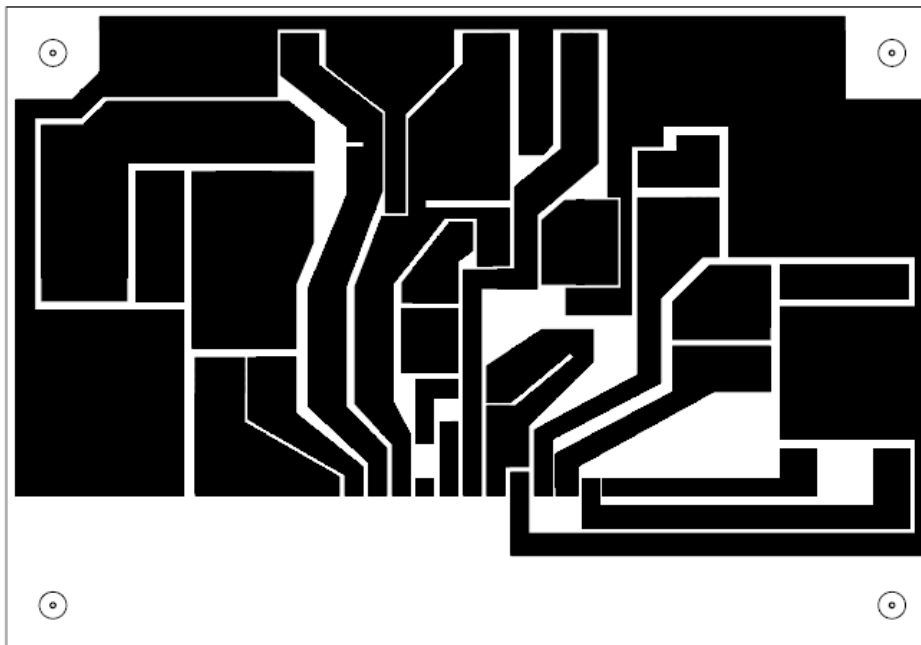


Figure 11. Top View

CHARACTERISTIC OF EVALUATION BOARD – STK404-070N-E

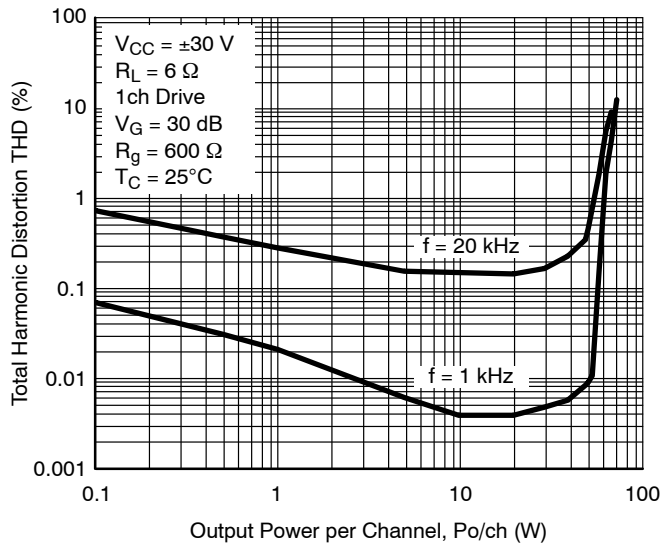


Figure 12. THD vs. P_o

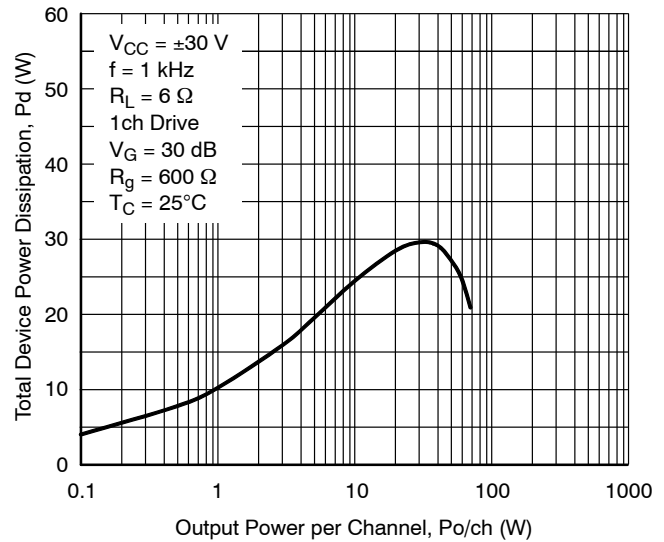


Figure 13. P_d vs. P_o

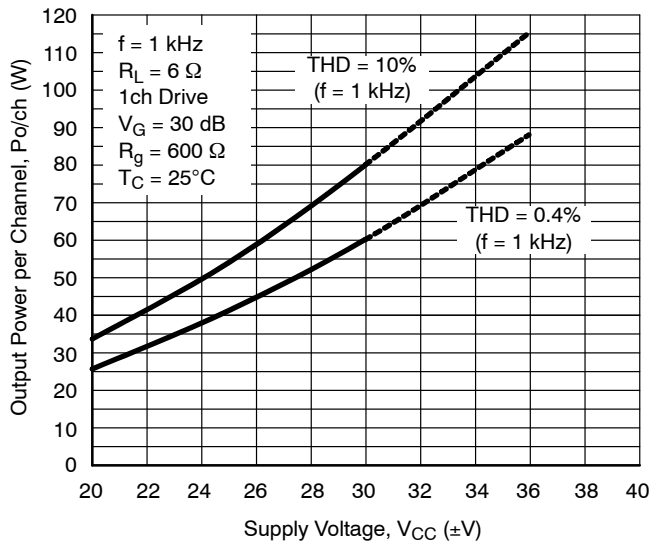


Figure 14. P_o vs. V_{CC}

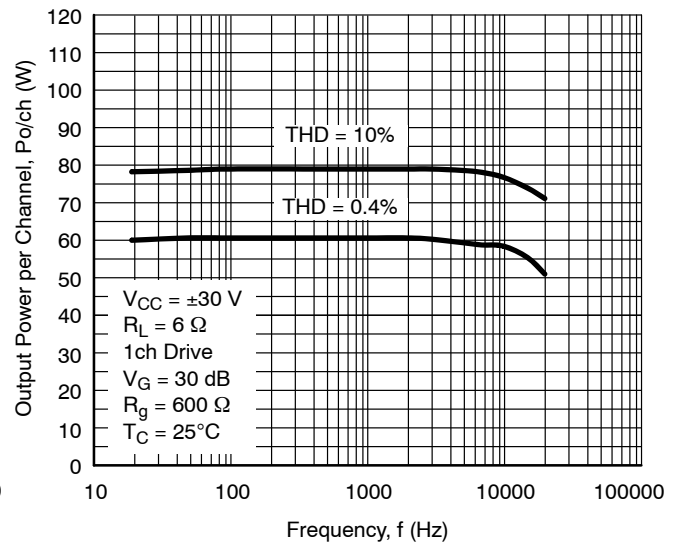


Figure 15. P_o vs. f

CHARACTERISTIC OF EVALUATION BOARD – STK404-120N-E

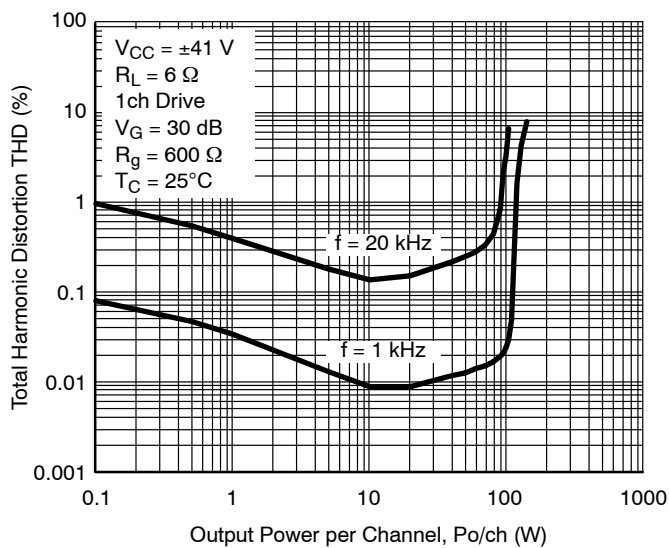


Figure 16. THD vs. P_o

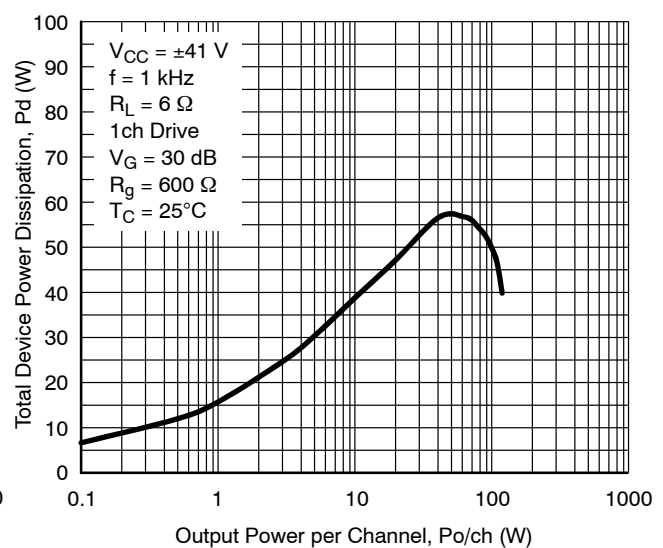


Figure 17. P_d vs. P_o

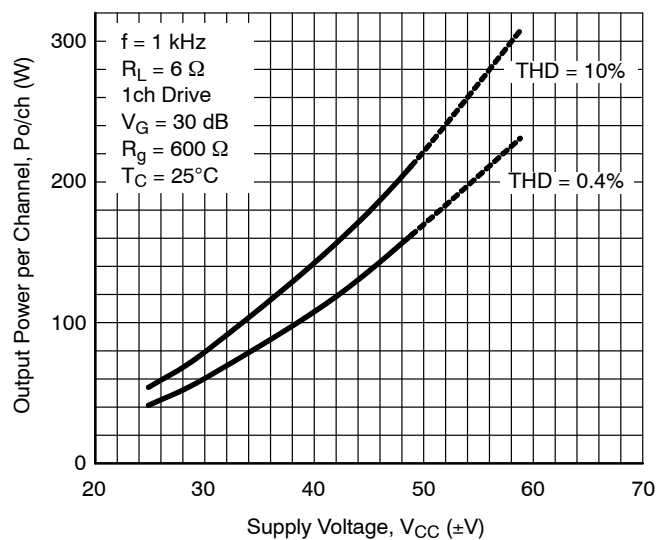


Figure 18. P_o vs. V_{CC}

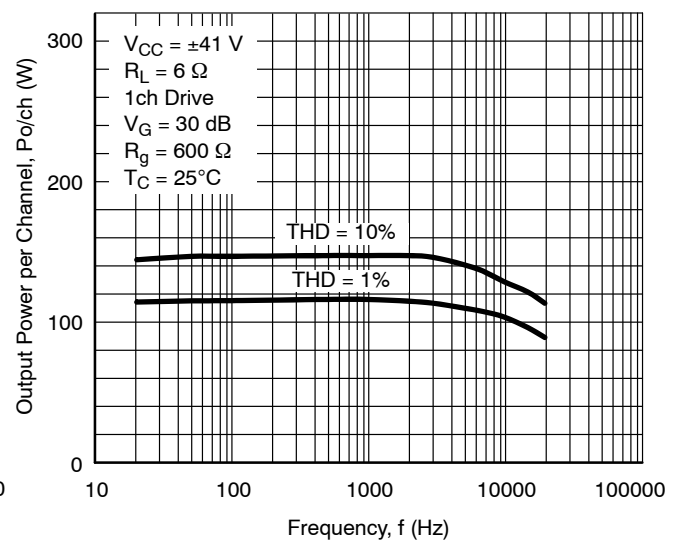


Figure 19. P_o vs. f

CHARACTERISTIC OF EVALUATION BOARD – STK404-140N-E

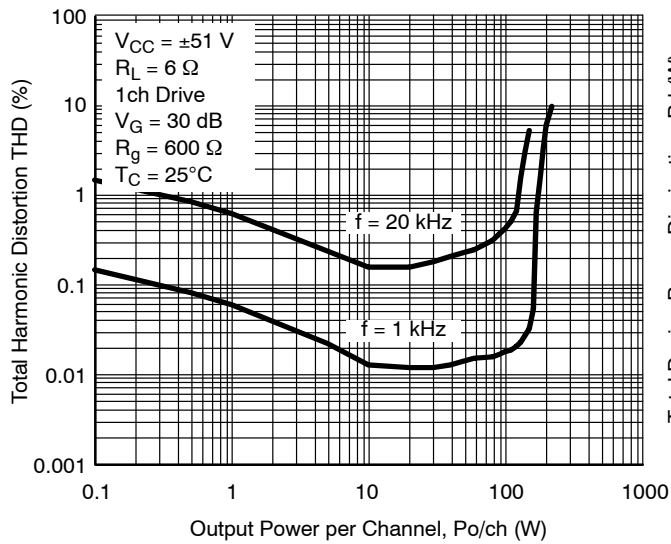


Figure 20. THD vs. P_o

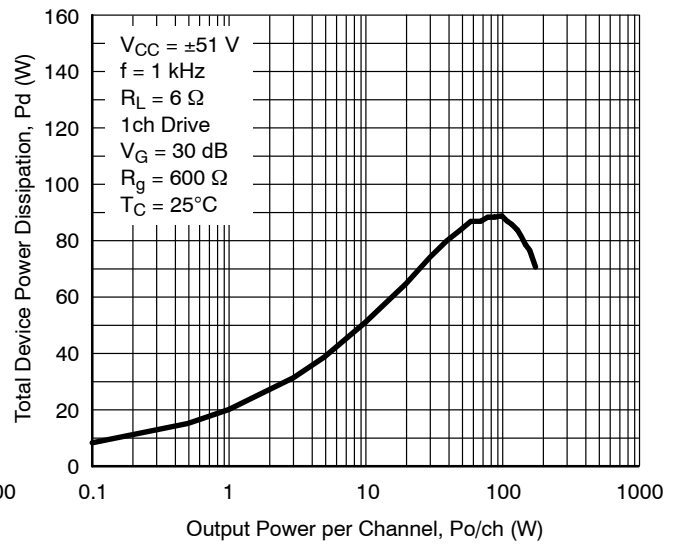


Figure 21. P_d vs. P_o

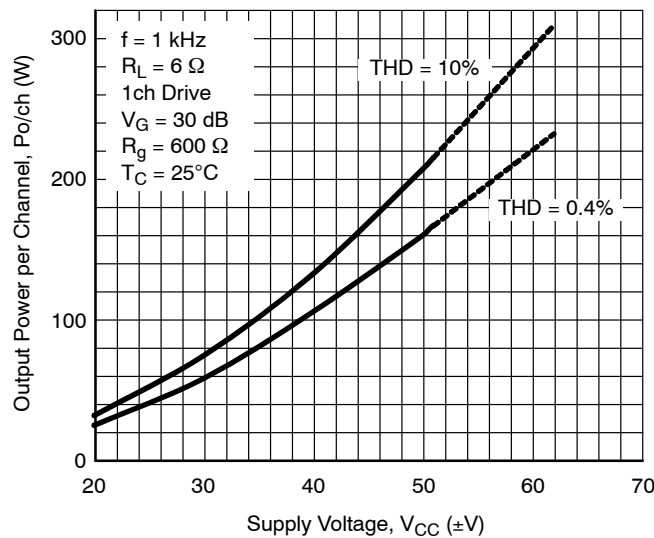


Figure 22. P_o vs. V_{CC}

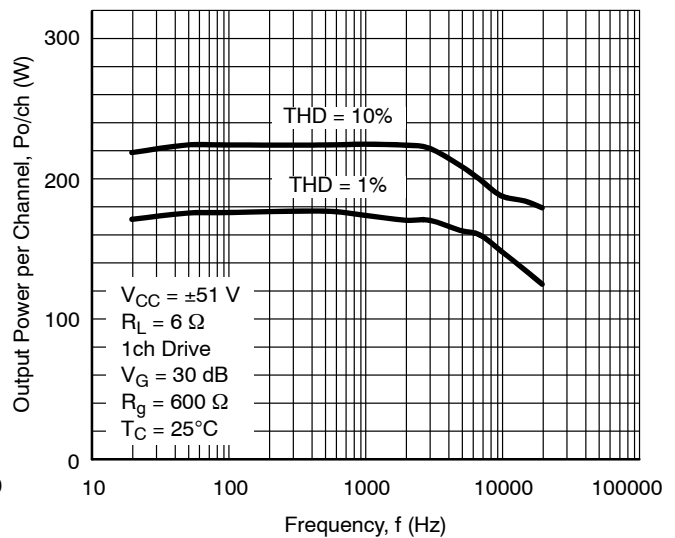


Figure 23. P_o vs. f

STK404-070NGEVB, STK404-120NGEVB, STK404-140NGEVB

STAND-BY CONTROL & MUTE CONTROL APPLICATION

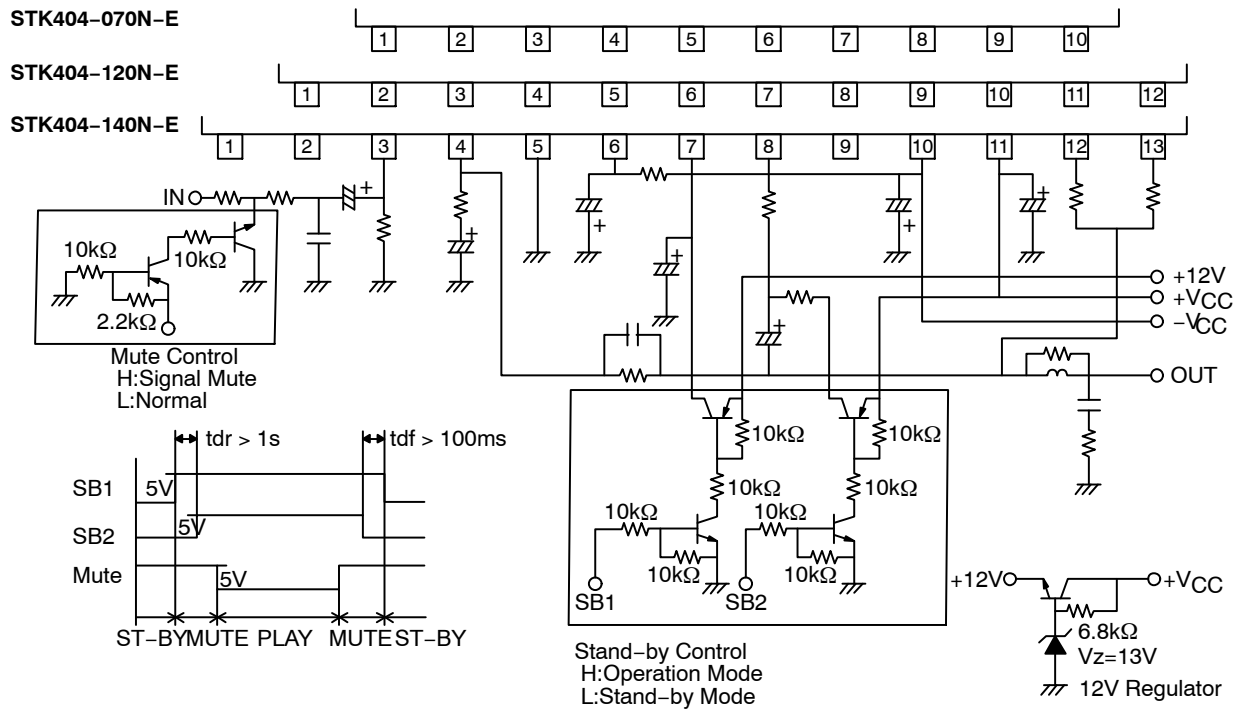


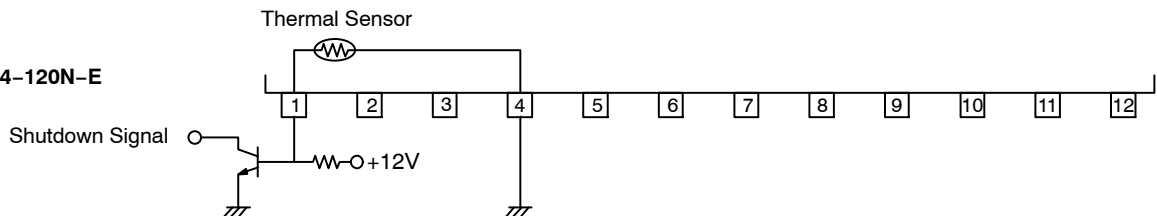
Figure 24. STK404-000-Ese Stand-by Control & Mute Control Application

THERMAL SHUT DOWN APPLICATION

STK404-070N-E

No Thermal Sensor

STK404-120N-E



STK404-140N-E

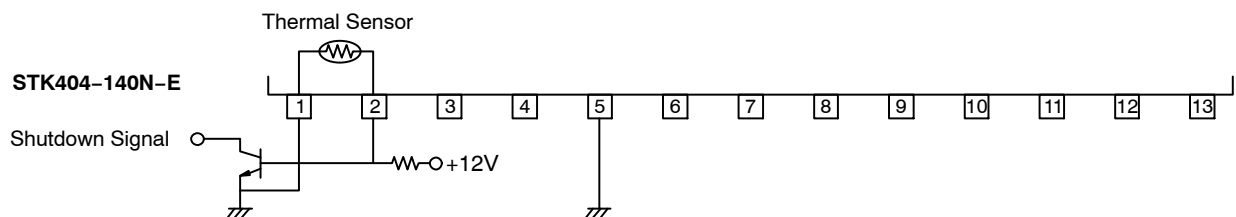


Figure 25. STK404-000-Esr Thermal Shut Down Application

THERMAL SENSOR CHARACTERISTIC

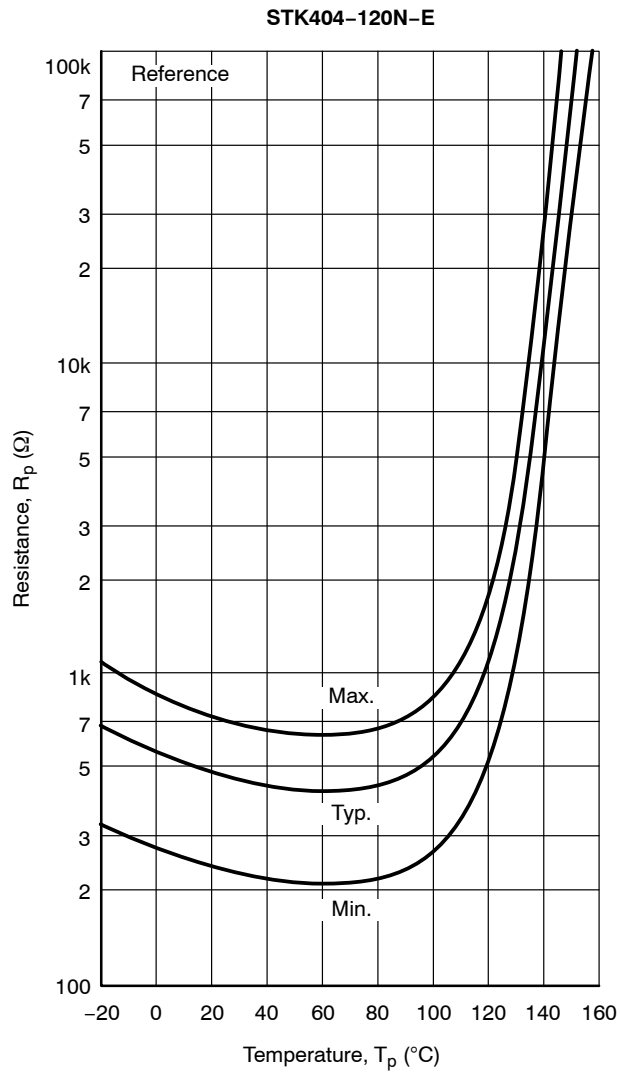


Figure 26. R_p vs. T_p

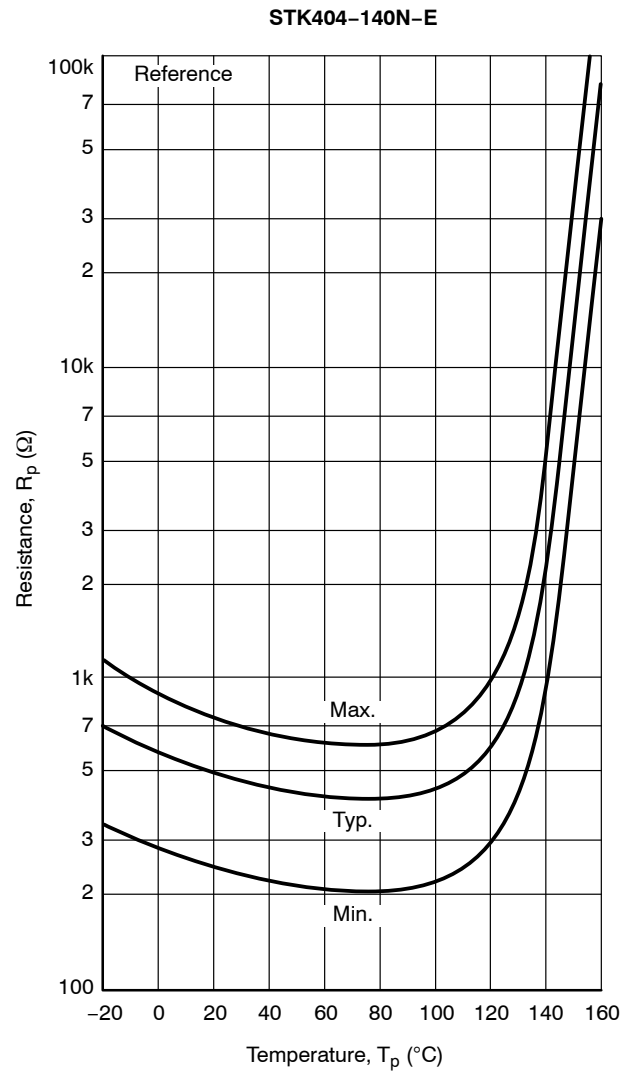


Figure 27. R_p vs. T_p

STK404-070NGEVB, STK404-120NGEVB, STK404-140NGEVB

ROAD-SHORT & DC VOLTAGE PROTECTION APPLICATION

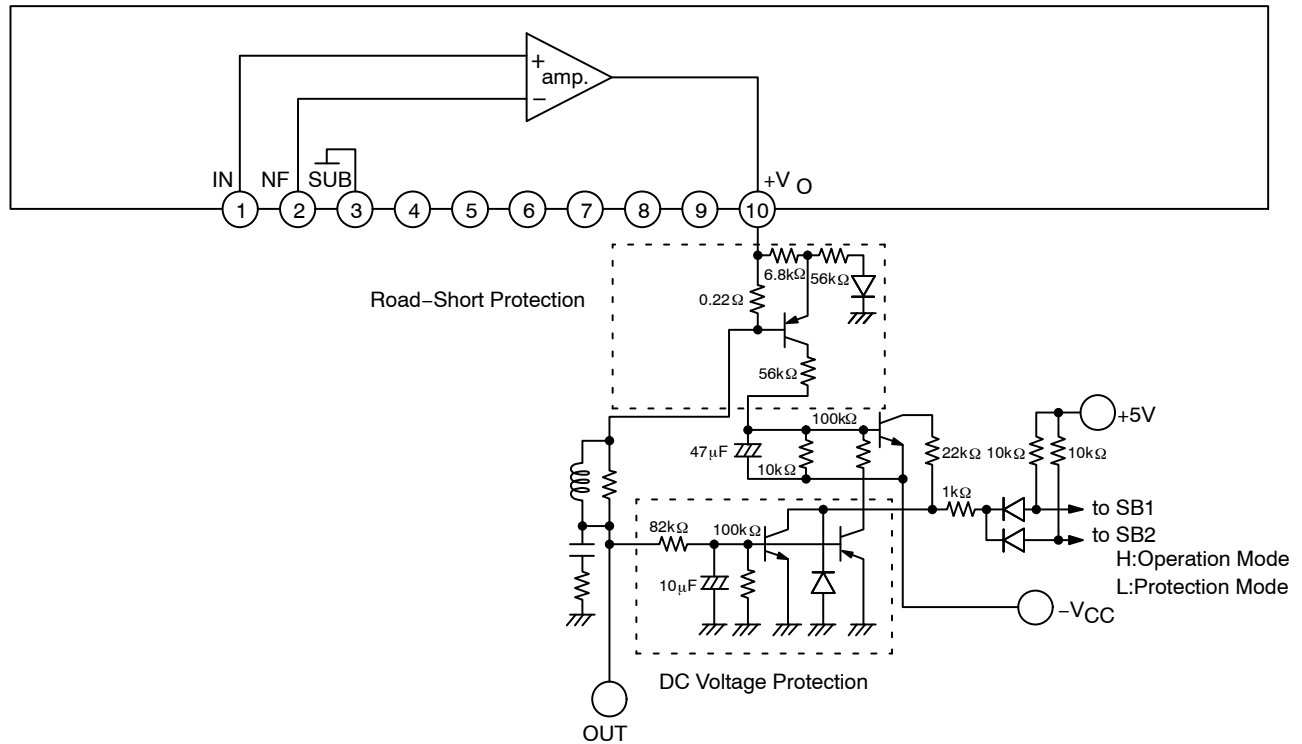


Figure 28. STK404-070N-E Road-short & DC Voltage Protection Application

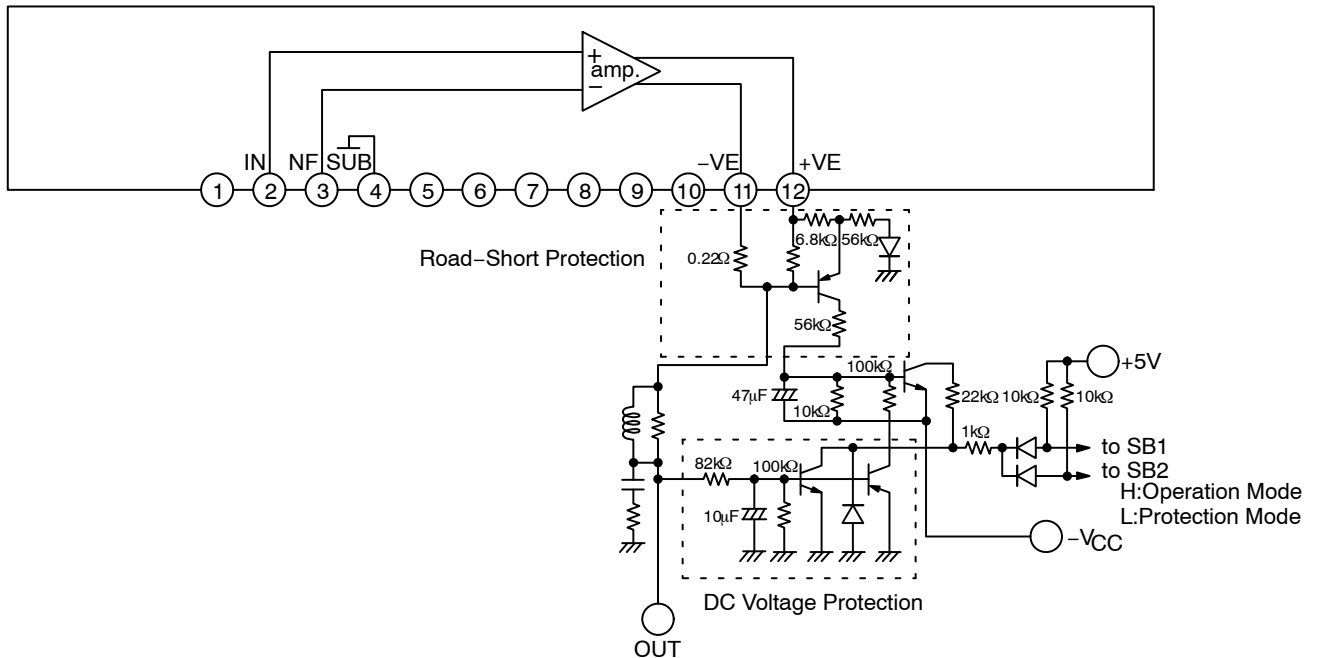


Figure 29. STK404-120N-E Road-short & DC Voltage Protection Application

STK404-070NGEVB, STK404-120NGEVB, STK404-140NGEVB

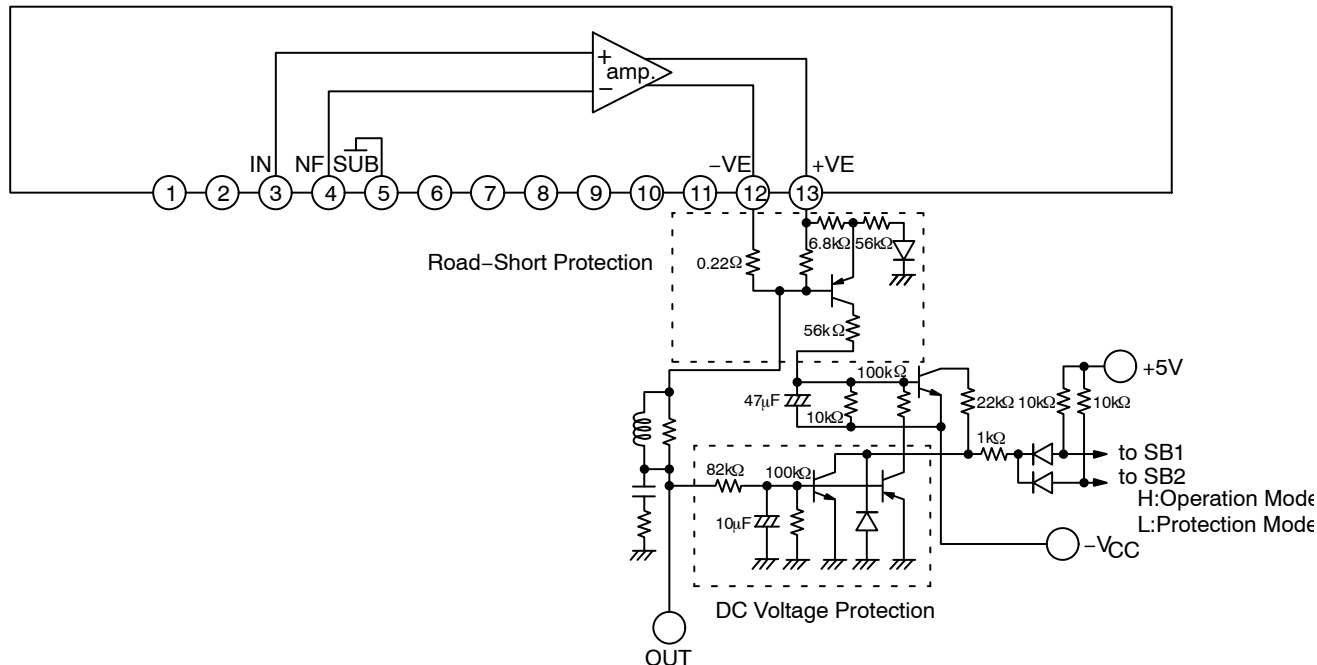


Figure 30. STK404-140N-E Road-short & DC Voltage Protection Application

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