

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.

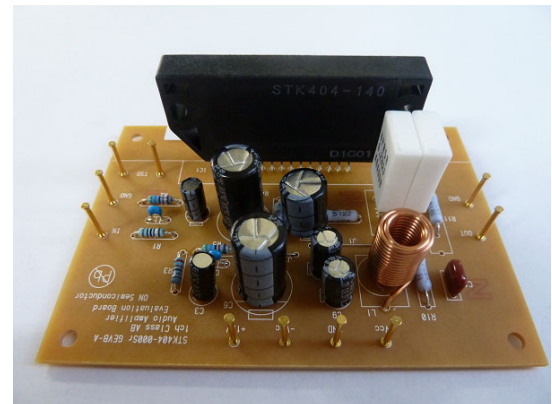
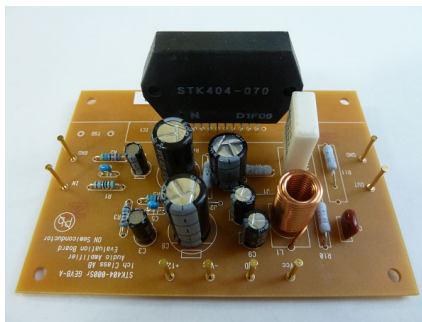


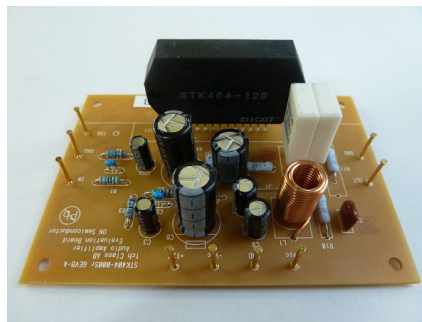
Figure 1. STK404-000N Series Evaluation Board

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)

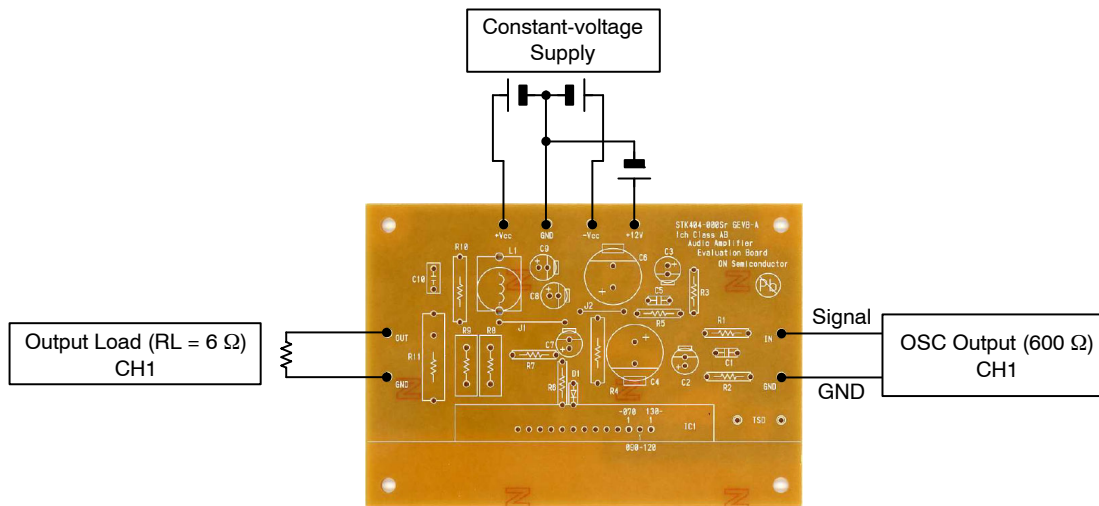


Figure 5. Characteristics Confirmation

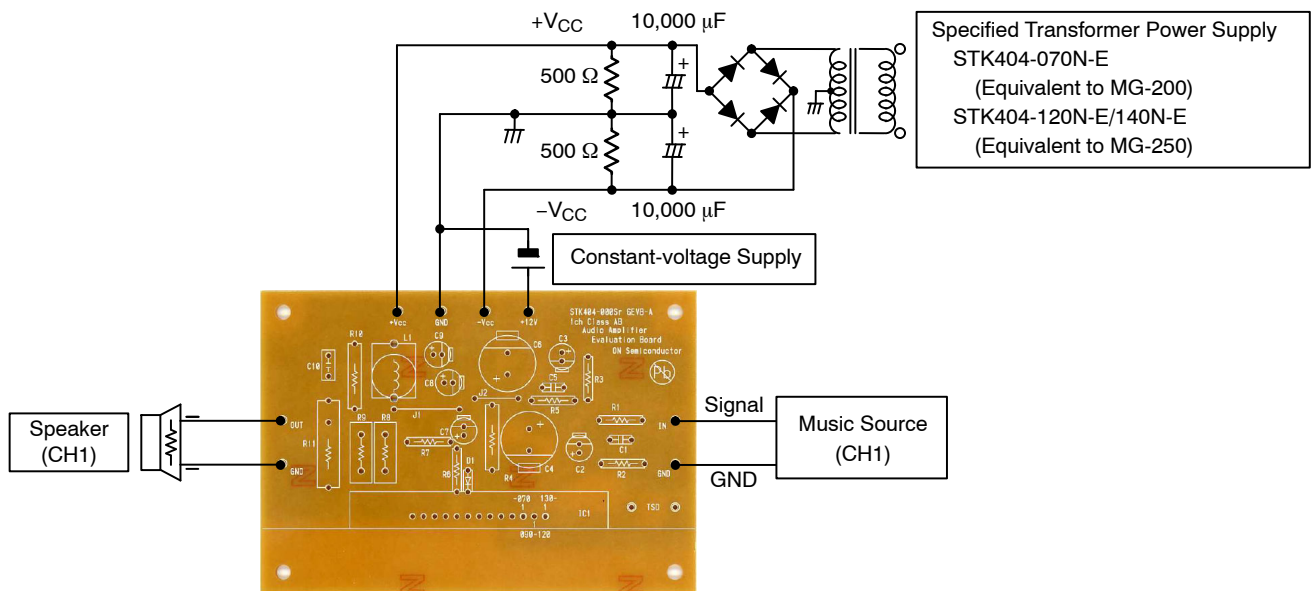


Figure 6. Sound Quality Configuration, Load Short-circuit Test, Noise Examination

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

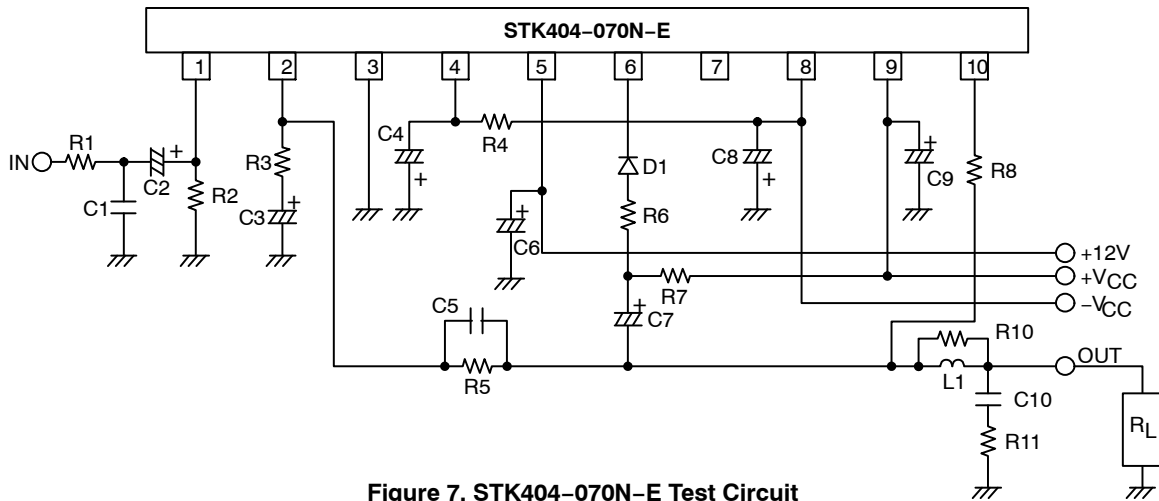


Figure 7. STK404-070N-E Test Circuit

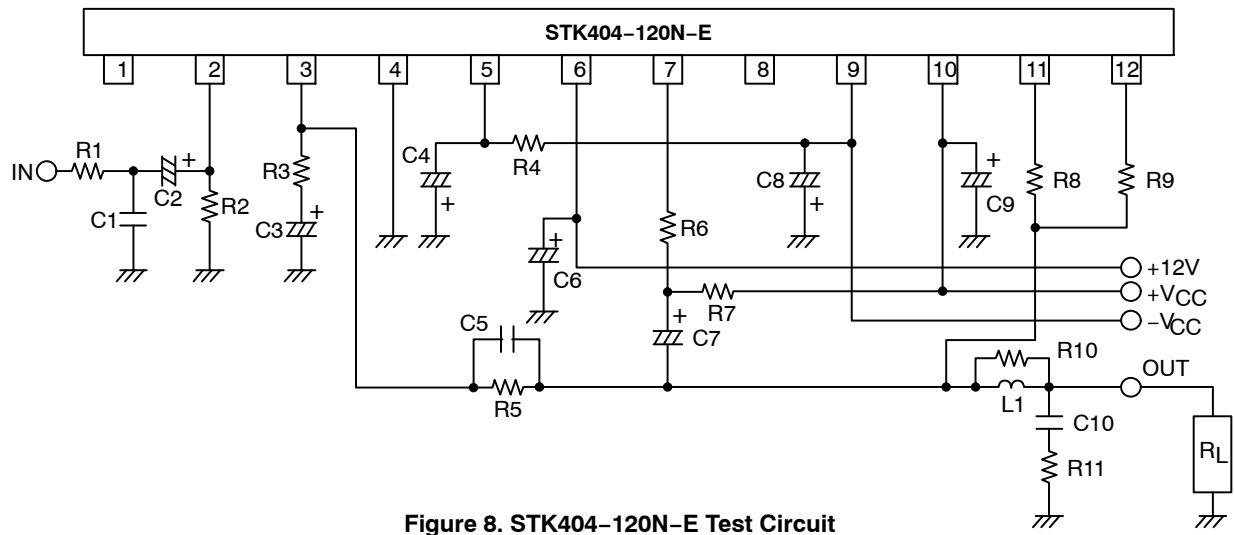


Figure 8. STK404-120N-E Test Circuit

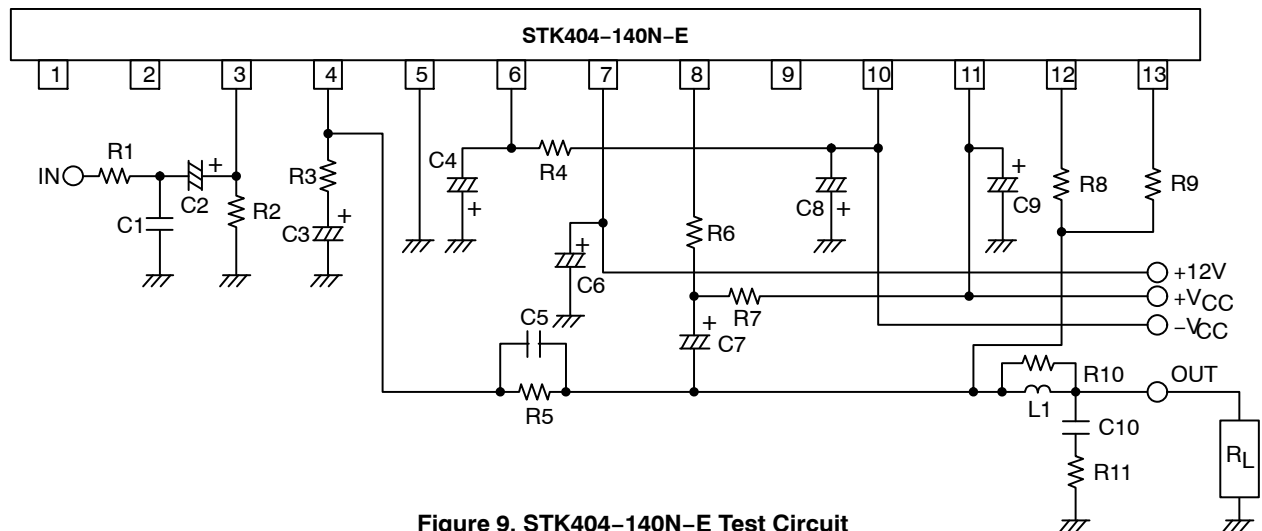


Figure 9. STK404-140N-E Test Circuit

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

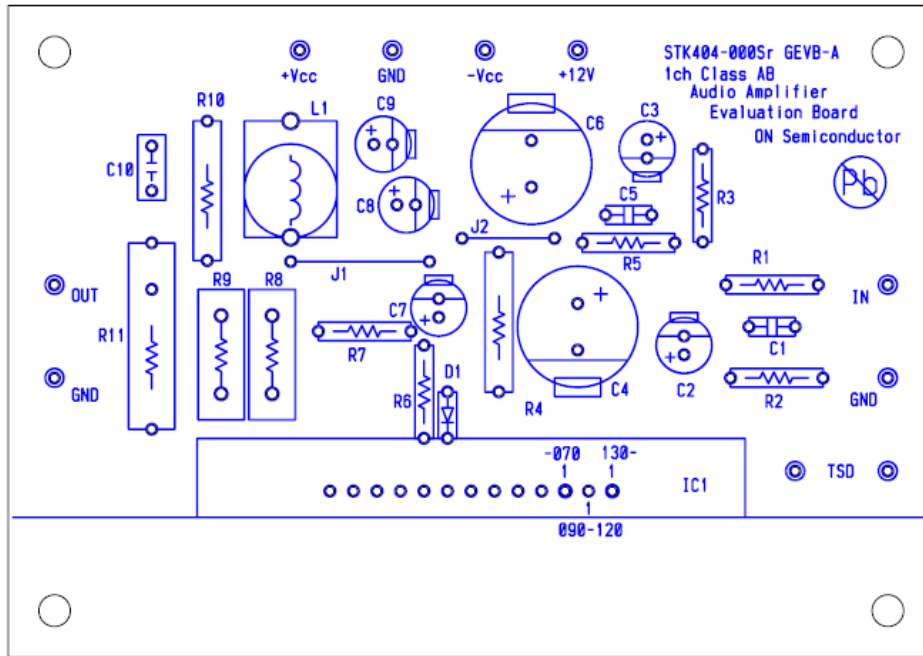


Figure 10. Top View

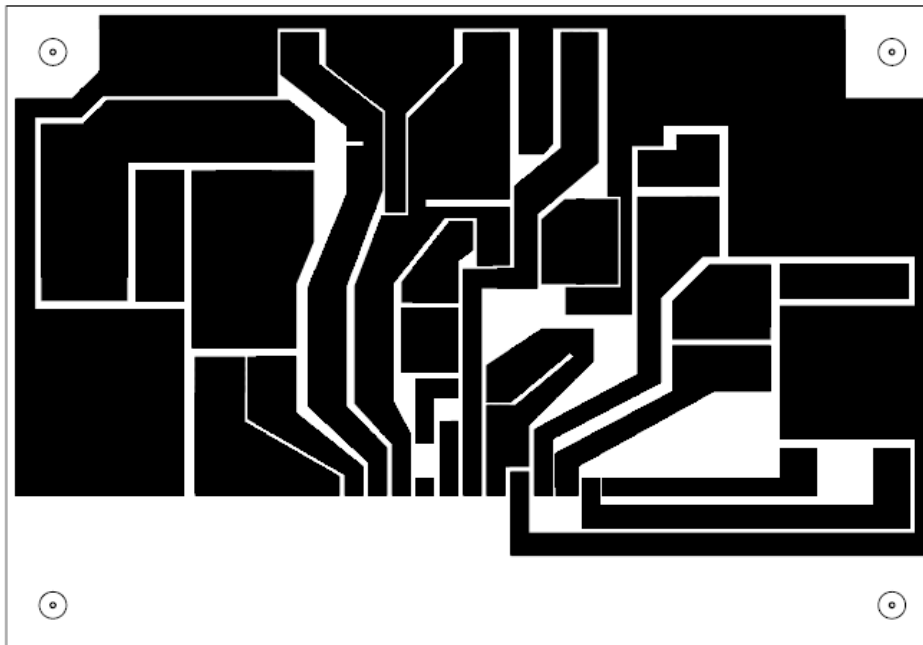


Figure 11. Top View

CHARACTERISTIC OF EVALUATION BOARD – STK404-070N-E

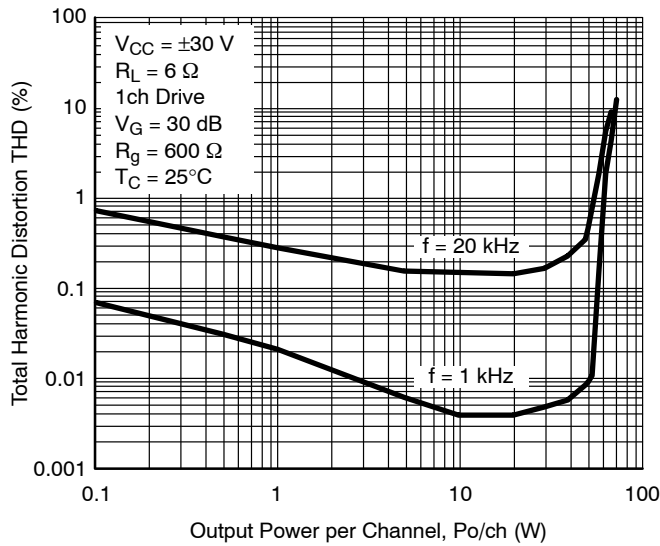


Figure 12. THD vs. P_o

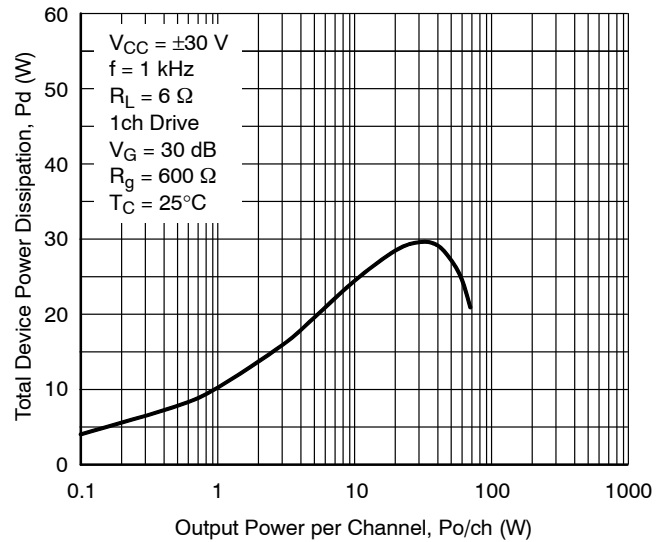


Figure 13. P_d vs. P_o

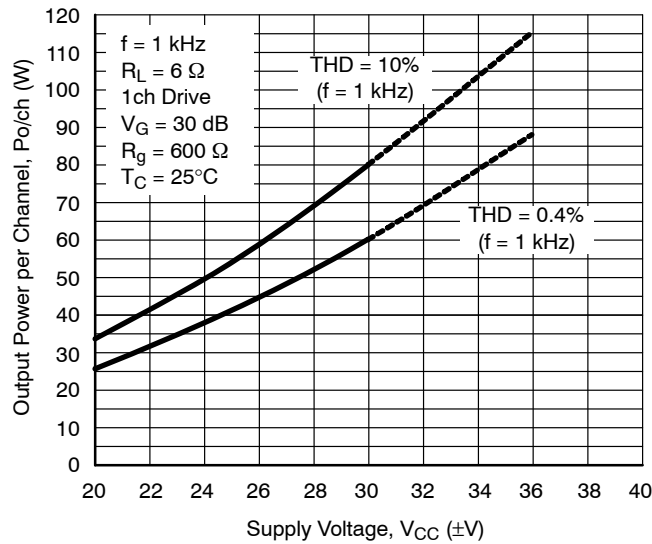


Figure 14. P_o vs. V_{CC}

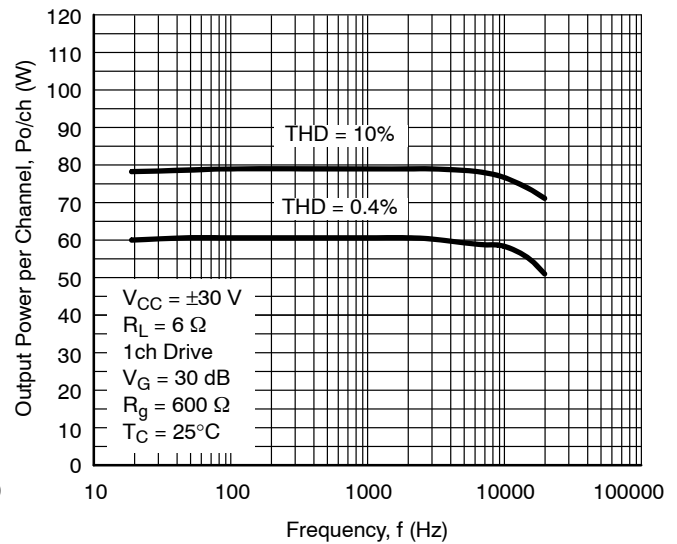


Figure 15. P_o vs. f

CHARACTERISTIC OF EVALUATION BOARD – STK404-120N-E

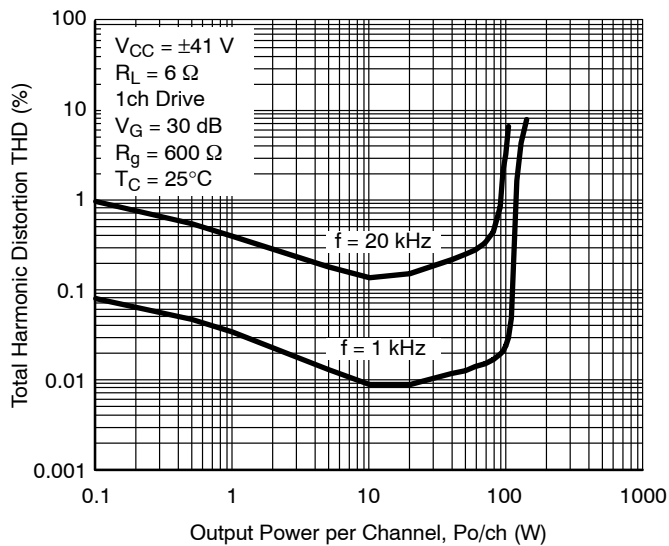


Figure 16. THD vs. P_o

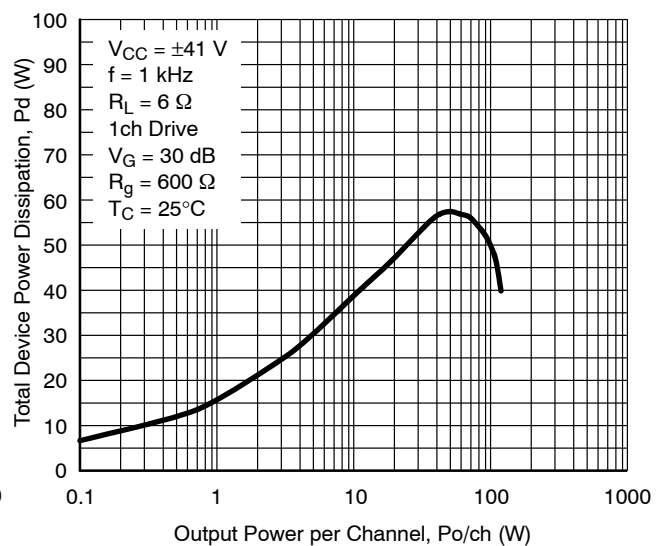


Figure 17. P_d vs. P_o

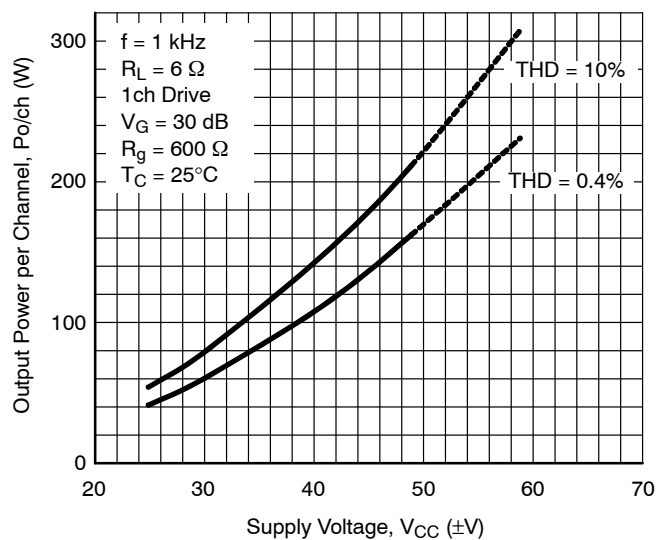


Figure 18. P_o vs. V_{CC}

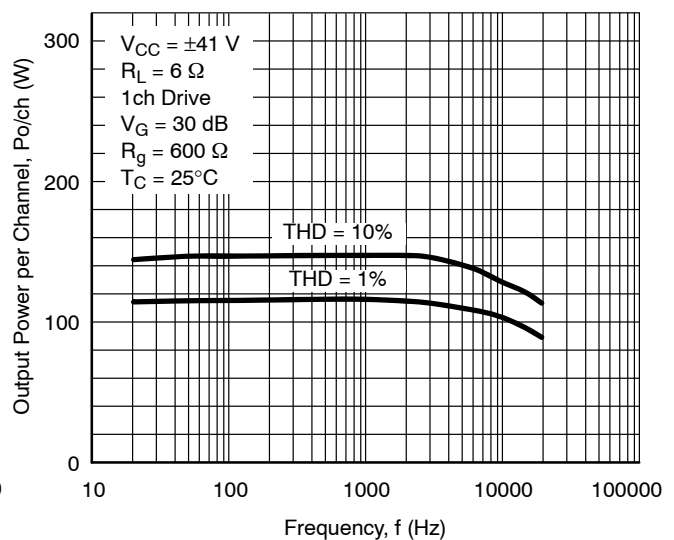


Figure 19. P_o vs. f

CHARACTERISTIC OF EVALUATION BOARD – STK404-140N-E

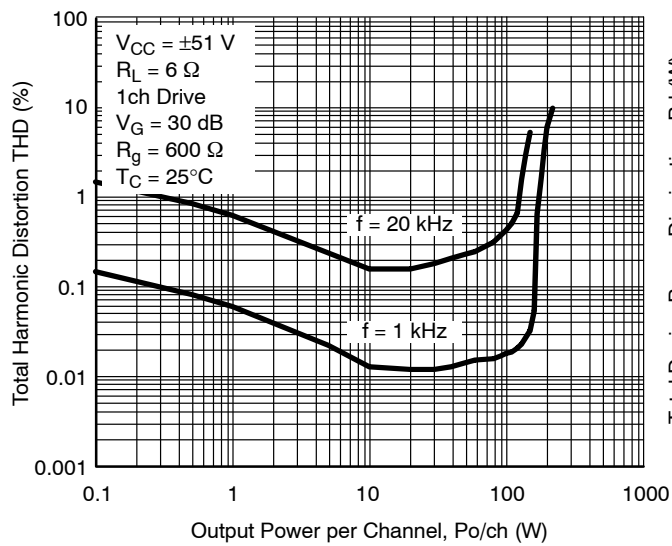


Figure 20. THD vs. P_o

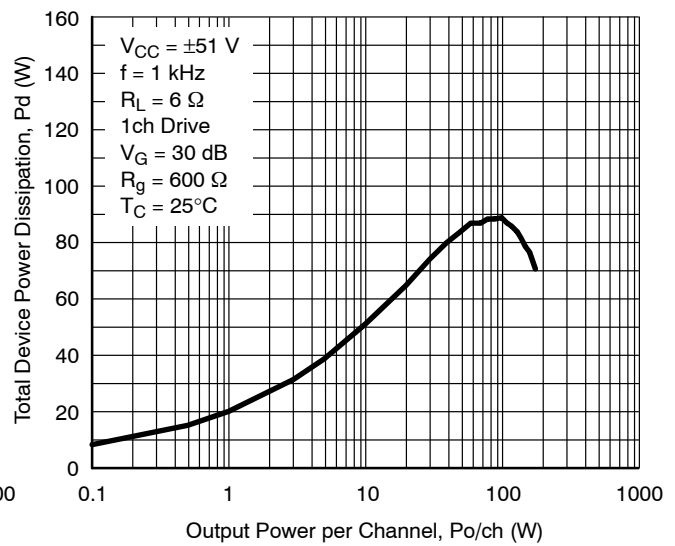


Figure 21. P_d vs. P_o

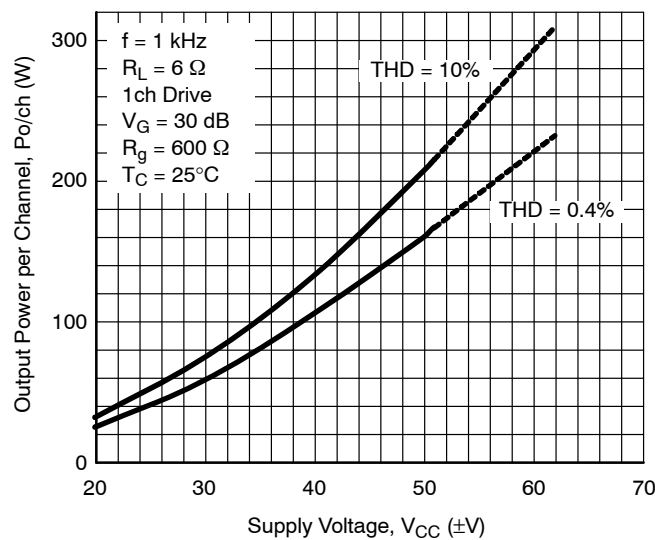


Figure 22. P_o vs. V_{CC}

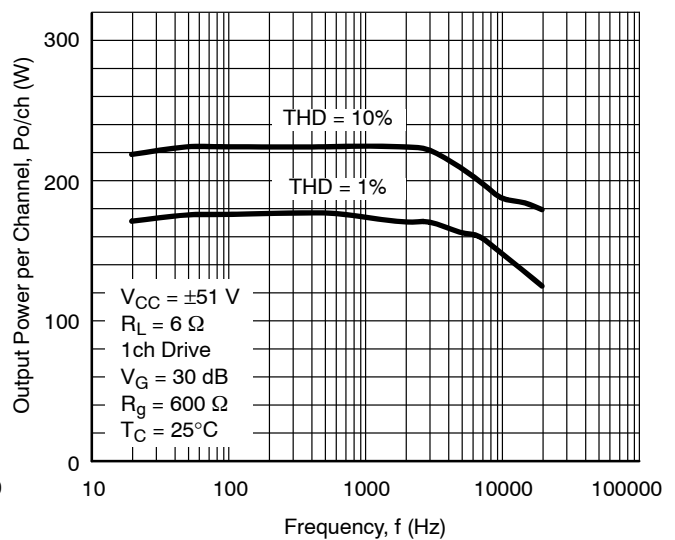


Figure 23. P_o vs. f

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

STAND-BY CONTROL & MUTE CONTROL APPLICATION

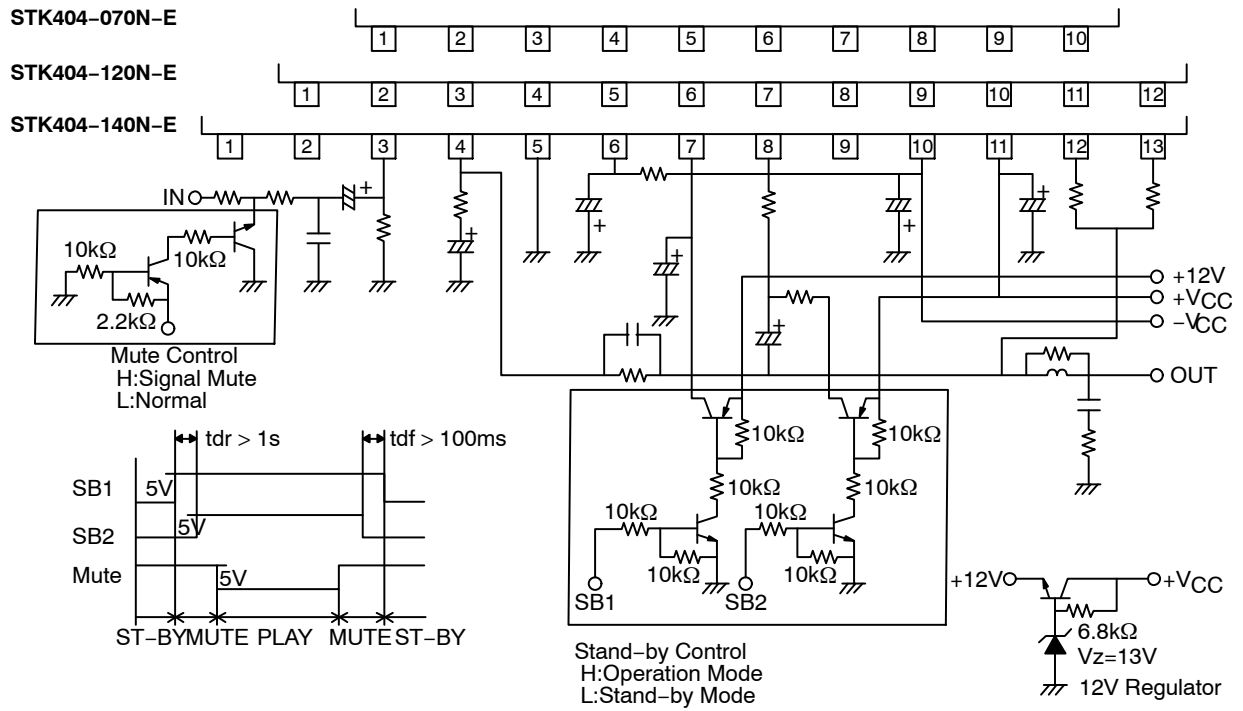


Figure 24. STK404-000-Ese Stand-by Control & Mute Control Application

THERMAL SHUT DOWN APPLICATION

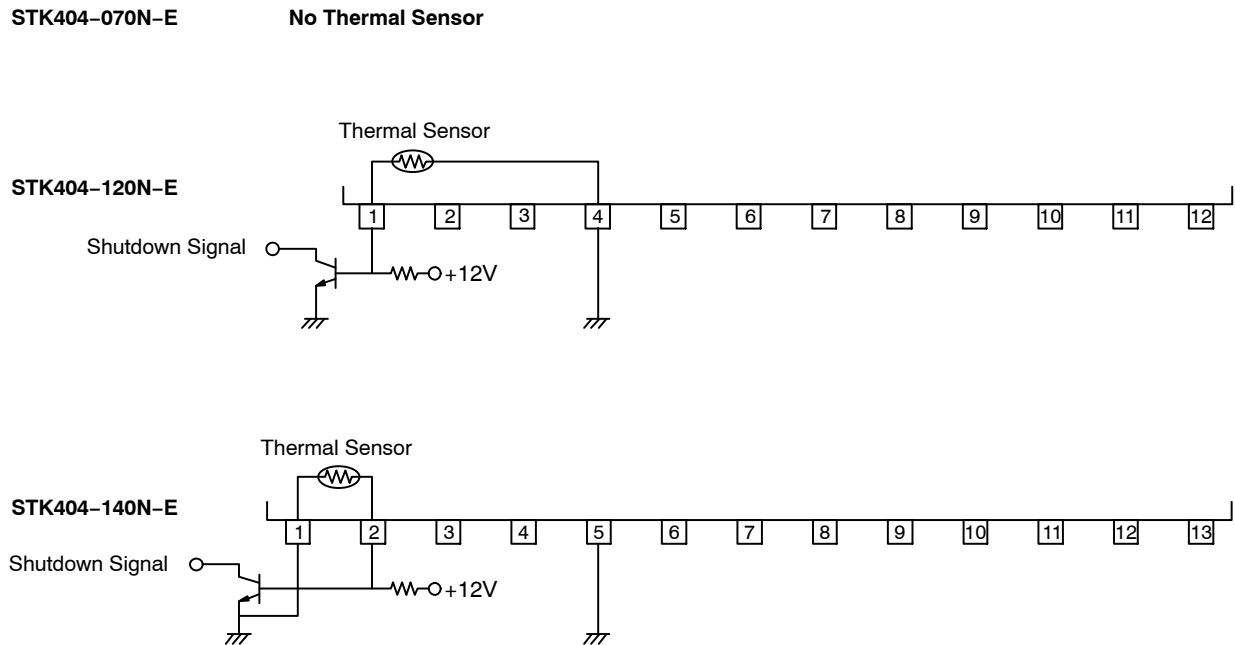


Figure 25. STK404-000-Esr Thermal Shut Down Application

THERMAL SENSOR CHARACTERISTIC

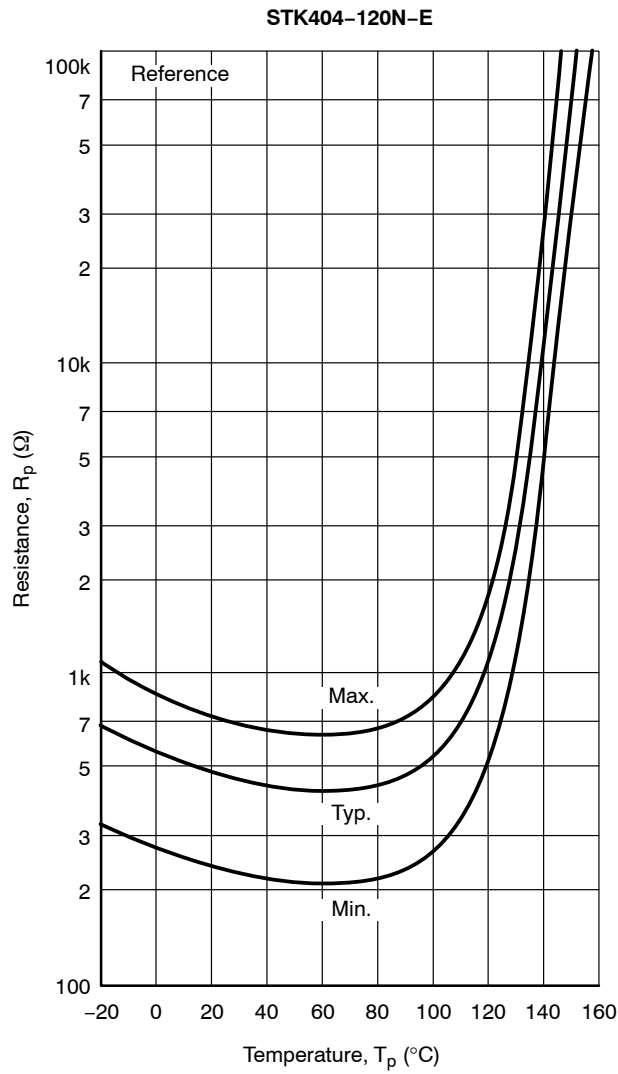


Figure 26. R_p vs. T_p

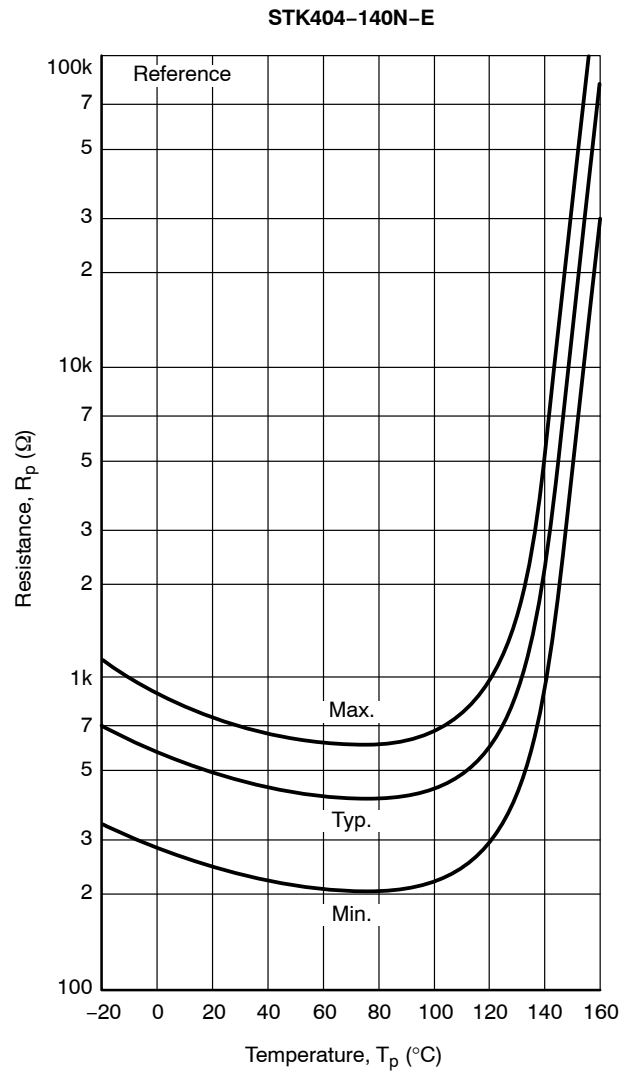


Figure 27. R_p vs. T_p

ROAD-SHORT & DC VOLTAGE PROTECTION APPLICATION



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

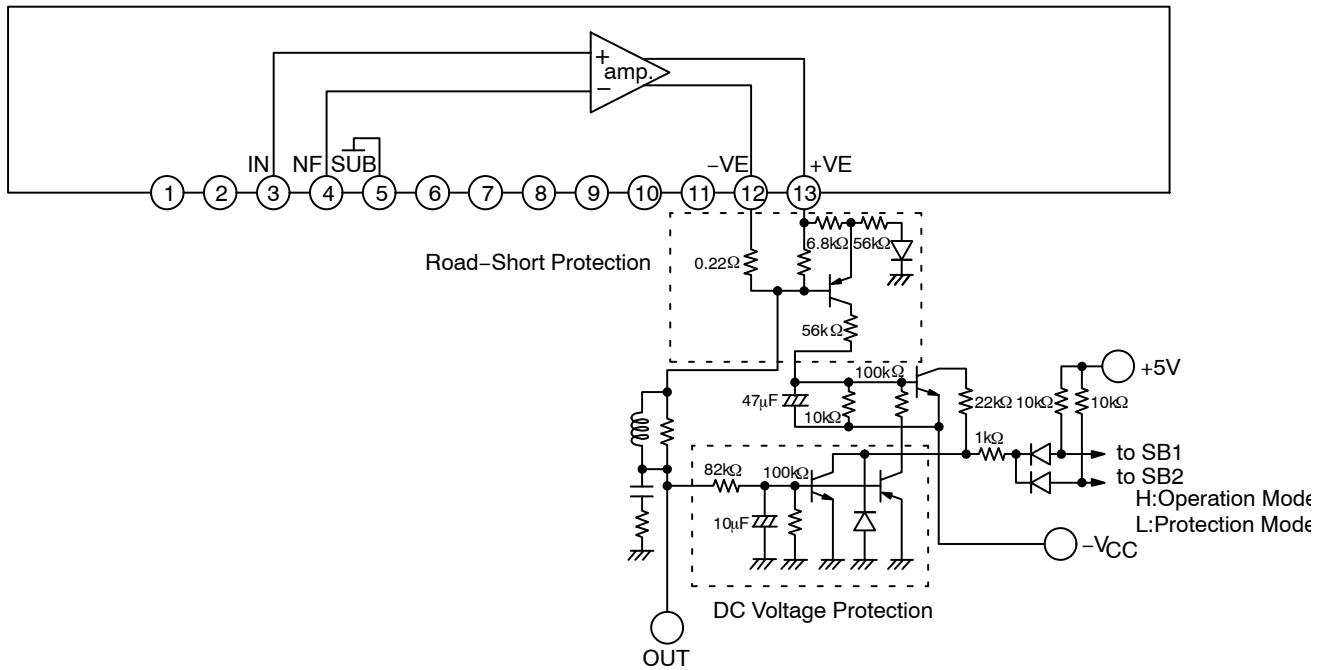


Figure 30. STK404-140N-E Road-short & DC Voltage Protection Application

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