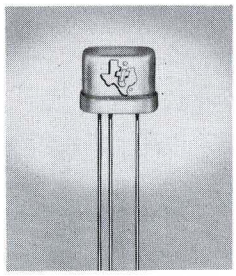
455-kc REFLEX IF AMPLIFIER FOR BROADCAST-BAND RECEIVERS



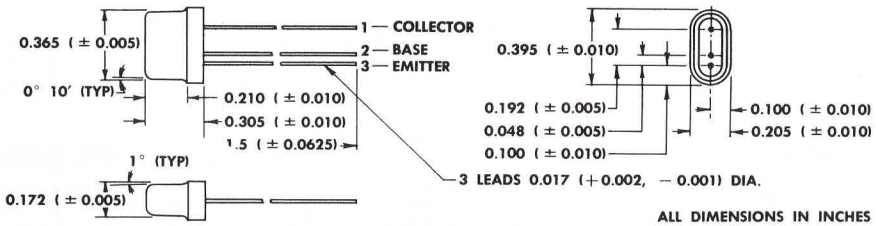
ACTUAL SIZE

qualification testing

To assure maximum reliability, stability and long life, all units are heat cycled from −55°C and room humidity to +75°C and 95% relative humidity for four complete cycles over an eight-hour period. All transistors are thoroughly tested for rigid adherence to specified design characteristics.

mechanical data

Metal case with glass-to-metal hermetic seal between case and leads. Unit weight is 1 gram.



ALL DIMENSIONS IN INCHES

ALL CONNECTIONS INSULATED FROM CASE

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

Collector-to-Base Voltage *	20 v
Collector Current	5 ma
Total Dissipation	30 mw
Collector Junction Temperature	+85°C
Storage Temperature Range	−55°C to +85°C

typical design characteristics at 25°C

				typical	max.	unit
I_{CBO}	Collector Reverse Current	$I_E = 0$	$V_{CB} = -12$ v	−5	−10	μa
h_{fe}	Forward Current Transfer Ratio (455 kc)	$I_C = -0.5$ ma	$V_{CB} = -6$ v	25	—	db
h_{fe}	Forward Current Transfer Ratio (1000 cps)	$I_C = -0.5$ ma	$V_{CB} = -6$ v	29	—	db
$f_{\alpha b}$	Current Transfer Ratio Cutoff Frequency	$I_C = -1$ ma	$V_{CB} = -5$ v	35	—	mc
C_{ob}	Output Capacitance	$I_C = -1$ ma	$V_{CB} = -6$ v	1.5	—	μμf

*V_{CB} (Max.) = −27 v for 2N1111B

LICENSED UNDER BELL SYSTEM PATENTS

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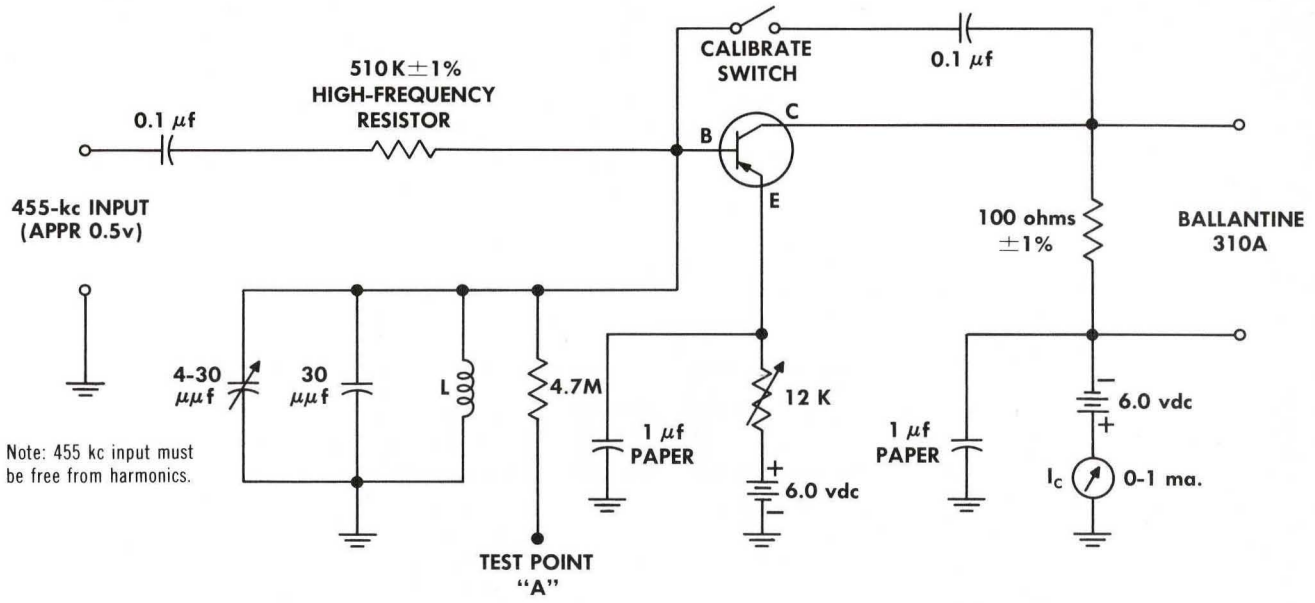
TEST CIRCUIT

455 — kc h_{fe} TEST SET



Coil Data

L = 2.5 mh
Q = 150 minimum at 455 kc
260 turns of #32 wire random wound on general ceramics #F624-2 steatite Q_1 toroid core with one layer of insulated tape on bare core.

455-kc h_{fe} Test Set Operating Instructions

1. Connect a VTVM to test point "A" and adjust the 455-kc tuned circuit for resonance.
2. Close calibrate switch and adjust 455-kc input to give 0.1 mv reading on Ballantine 310A or equivalent.
3. Open calibrate switch, insert transistor, and set $I_C = 0.5$ ma.
4. Read h_{fe} value directly in db (0 db = 0.1 mv reference level).

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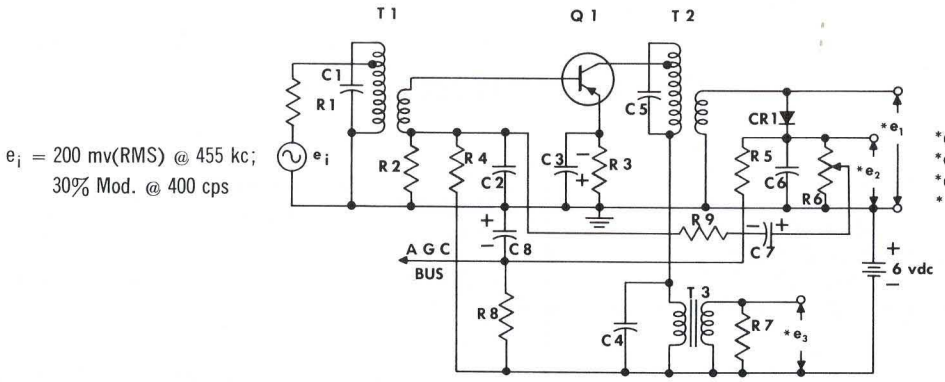
TYPICAL CIRCUIT

TYPICAL REFLEX (OUTPUT) IF AMPLIFIER (455 kc & AUDIO)



e_i = 200 mv(RMS) @ 455 kc; 30% Mod. @ 400 cps

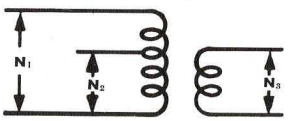
$*e_1$ = 60 mv(RMS) @ 455 kc
$*e_2$ = 6 mv(RMS) @ 400 cps
$*e_3$ = 300 mv(RMS) @ 400 cps
* Measured with Pot. arm at Max. position

PARTS LIST:

R 1 = 125 K ohms
R 2 = 2.2 K ohms
R 3 = 220 ohms
R 4 = 12 K ohms
R 5 = 2.7 K ohms
R 6 = 2.5 K ohms (Pot.)
R 7 = 2.0 K ohms
R 8 = 33 K ohms
R 9 = 150 ohms

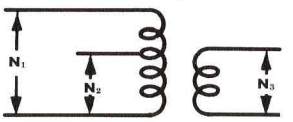
C 1, 5 = 190 $\mu\mu$f
C 2, 6 = 0.02 μf
C 3 = 50 μf
C 4 = 0.005 μf
C 7 = 2 μf
C 8 = 15 μf
Q 1 = 2N1111A

T1



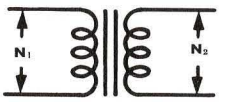
Q_U = 65
Q_L = 50
N_1/N_2 = 3.38
N_1/N_3 = 17.8
Insertion Loss = 13 db

T2



Q_U = 90
Q_L = 15
N_1/N_2 = 2.6
N_1/N_3 = 4.75
Insertion Loss = 1.6 db

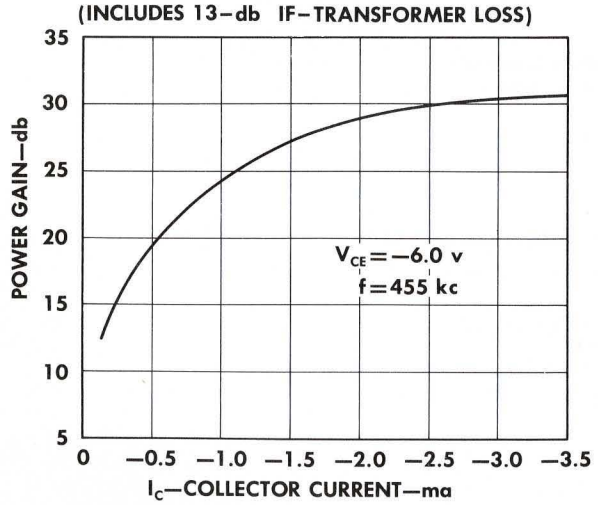
T3



L_1 = 4 hy
N_1/N_2 = 1.0
Ins. Loss = 1.0 db

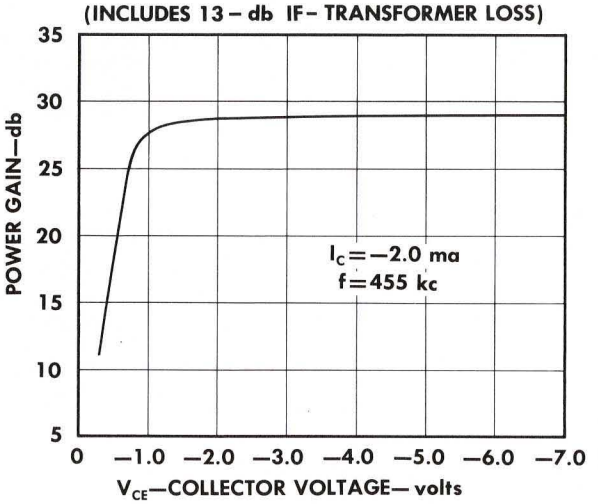
TYPICAL POWER GAIN VS COLLECTOR CURRENT

(INCLUDES 13–db IF–TRANSFORMER LOSS)



TYPICAL POWER GAIN VS COLLECTOR VOLTAGE

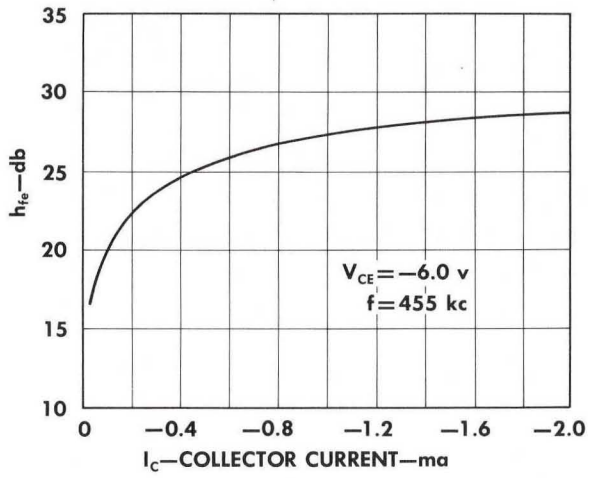
(INCLUDES 13 – db IF– TRANSFORMER LOSS)



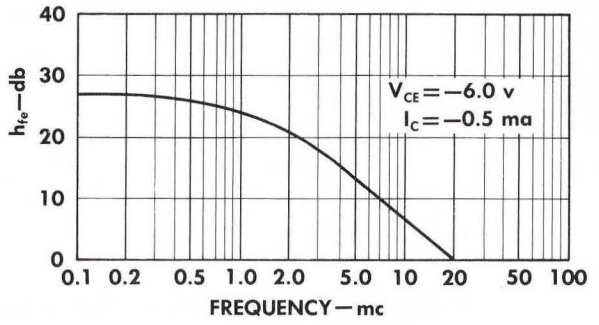
TYPES 2N1111A AND 2N1111B

TYPICAL CHARACTERISTICS

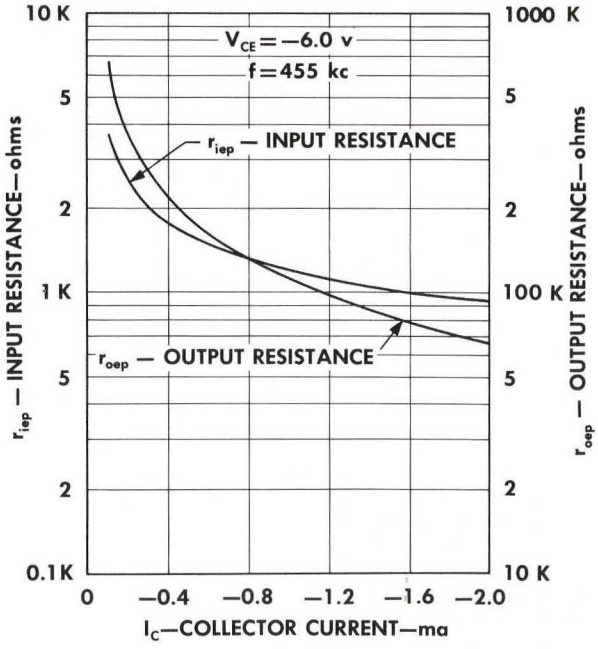
TYPICAL CURRENT AMPLIFICATION (h_{fe}) VS COLLECTOR CURRENT



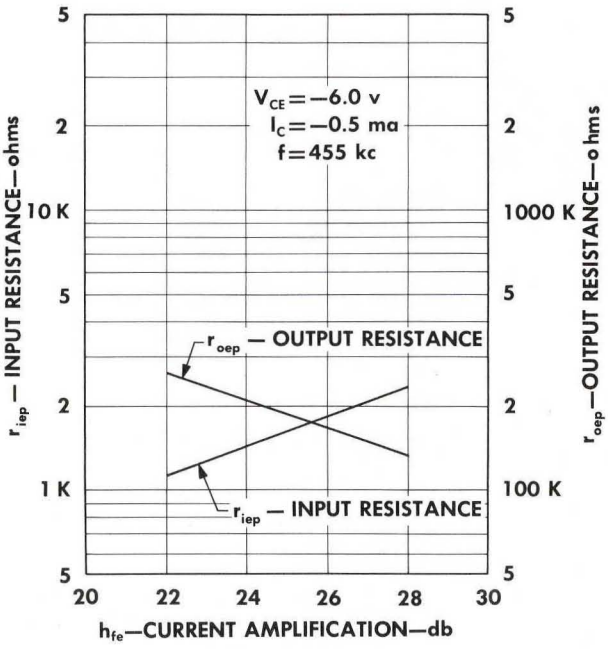
TYPICAL CURRENT AMPLIFICATION (h_{fe}) VS FREQUENCY



TYPICAL INPUT AND OUTPUT RESISTANCE VS I_C



TYPICAL INPUT AND OUTPUT RESISTANCE VS h_{fe}



r_{iep} = Common-emitter parallel input resistance with output shorted
r_{oep} = Common-emitter parallel output resistance with input shorted

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