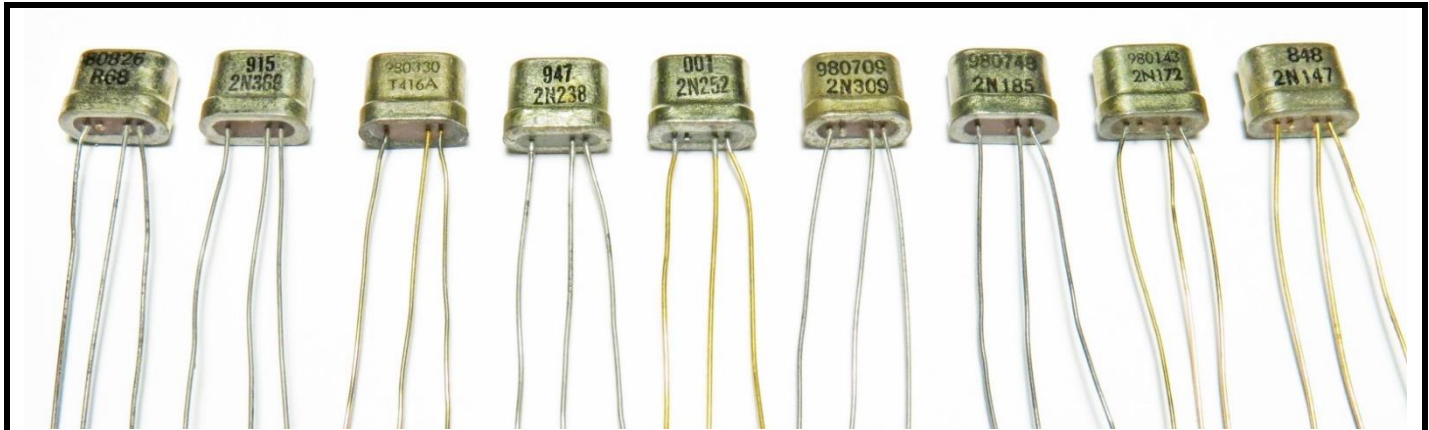


Transistor Museum™ Preservation Collection

Historic Semiconductor Fact Sheet

Historic TI 1950s/60s Germanium Radio Transistors



HISTORIC 1950s/60s TEXAS INSTRUMENTS GERMANIUM RADIO TRANSISTORS

Although best known for introducing the [first commercial silicon transistors](#) (in 1954) and one of the first commercial [integrated circuits](#) (in 1959), Texas Instruments initially entered the semiconductor market with germanium transistors, especially those designed for use in commercial AM radios - in 1954 [TI famously produced the transistors](#) used in the first commercial transistor radio, the Regency TR-1. Throughout the 1950s, [TI was a major supplier of these devices](#) to many transistor radio manufacturers, such as Admiral, Bulova, [Emerson](#), [Heathkit](#), Magnavox, [Motorola](#), Regency, Westinghouse, and [Zenith](#). Building on its early success with the Regency TR1 and subsequent high demand for these radio transistors, TI expanded its production capabilities in the 1950s to meet the growing demand for a complete range of transistors suitable for all elements of radio circuitry. The nine TI transistors included in the Preservation Collection (as shown above) are artifacts of the best 1950s germanium radio transistor technology and were produced when Texas Instruments was a leader in this technology. Date codes for the above transistors range from early 1957 (dc 980709 for the 2N309 = 1957 week 09) to mid-1963 (dc 980330 for the T416A = 1963 week 30). Note the "980" used in some date codes is the TI "EIA" identifier. This collection of nine transistors includes devices suitable for 1950s/60s radio circuit functions as follows: Audio (R68, 2N369, 2N238 and 2N185), Conv/Osc (2N252 and 2N172) and IF (2N309 and 2N147). See the "info" labels below.



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Grown junction NPN - general audio

Transistor Museum
Preservation Collection
Type: Germanium NPN
Vintage: 1950s
Texas Instruments
R68



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Alloy junction PNP - general audio

Transistor Museum
Preservation Collection
Type: Germanium PNP
Vintage: 1950s
Texas Instruments
2N369



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Alloy junction PNP - general audio

Transistor Museum
Preservation Collection
Type: Germanium PNP
Vintage: 1950s
Texas Instruments
T-416A



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Alloy junction PNP for radio "AF"

Transistor Museum
Preservation Collection
Type: Germanium PNP
Vintage: 1950s
Texas Instruments
2N238



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Grown-diffused PNP for radio "CONV"

Transistor Museum
Preservation Collection
Type: Germanium PNP
Vintage: 1950s
Texas Instruments
2N252



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Grown-diffused PNP for radio "IF"

Transistor Museum
Preservation Collection
Type: Germanium PNP
Vintage: 1950s
Texas Instruments
2N309



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Alloy junction PNP for radio "AF OUT"

Transistor Museum
Preservation Collection
Type: Germanium PNP
Vintage: 1950s
Texas Instruments
2N185



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Grown junction NPN for radio "CONV"

Transistor Museum
Preservation Collection
Type: Germanium NPN
Vintage: 1950s
Texas Instruments
2N172



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Grown junction NPN for radio "IF"

Transistor Museum
Preservation Collection
Type: Germanium NPN
Vintage: 1950s
Texas Instruments
2N147

Transistor Museum™ Preservation Collection

Historic Semiconductor Fact Sheet

Historic TI 1950s/60s Germanium Radio Transistors

TI PROGRESS REPORT ON RADIO TRANSISTORIZATION

the **majority** use T/I transistors!

THE INDUSTRY'S

WIDEST

SEMICONDUCTOR LINE

HAS BEEN EXPANDED

EVEN FURTHER

New germanium and silicon devices – never before available – all provide you with better mechanical and electrical performance. You are assured the same TI level of reliability – with closely controlled parameters, unit interchangeability, plus improved economy – in the broadest selection ever!

At left is a section of a full page ad in the Oct 1956 issue of Electronics magazine. In just two years after TI transistors powered the first all-transistor radio ([Regency TR-1](#)), TI had established a strong germanium radio transistor business, supplying devices to many radio manufacturers as shown in the ad. Shown above and at lower left are sections of a TI ad featured at the 1957 IRE convention, listing the many TI transistor types in production. Prices for TI germanium radio/audio transistors are shown in the 1960 price list below.

very high frequency transistor
P-N-P Germanium Grown-Diffused Tetrode
□ 3N25/501, DL-S 659, November, 1956

high frequency transistors
P-N-P Germanium Grown-Diffused
□ 2N248
N-P-N Silicon Grown-Diffused Tetrodes
□ 925/3N26, DL-S 620, April, 1956
□ 926/3N27, DL-S 621, April, 1956
□ 3N32, DL-S 730, March, 1957
□ 3N33, DL-S 730, March, 1957
□ 3N34, DL-S 730, March, 1957

power transistors
P-N-P Germanium Alloy Junction
□ 2N250, DL-S 726, March, 1957
□ 2N251, DL-S 727, March, 1957
N-P-N Silicon Grown Junction
□ 970, DL-S 673, January, 1957

medium and low power transistors
N-P-N Silicon Grown Junction
□ 951, DL-S 563, August, 1956
□ 952, DL-S 564, August, 1956
□ 953, DL-S 565, August, 1956
□ 2N243, DL-S 639, August, 1956
□ 2N244, DL-S 640, August, 1956
P-N-P Germanium Alloy Junction
□ 2N291, DL-S, 672, January, 1957

audio transistors
P-N-P Germanium Alloy Junction
□ 2N185, DL-S 610, April, 1956
□ 2N238/310, DL-S 638, August, 1956

radio-converter and IF transistors
N-P-N Germanium Grown Junction
□ 2N253, DL-S 648, August, 1956
□ 2N254, DL-S 648, August, 1956
□ 2N172, DL-S 609, March, 1956
□ 2N145, DL-S 568, November, 1955
□ 2N146, DL-S 568, November, 1955
□ 2N147, DL-S 568, November, 1955
□ 2N148, DL-S 569, February, 1956
□ 2N149, DL-S 569, February, 1956
□ 2N150, DL-S 569, February, 1956
□ 2N148A, DL-S 569, February, 1956
□ 2N149A, DL-S 569, February, 1956
□ 2N150A, DL-S 569, February, 1956
P-N-P Germanium Grown-Diffused
□ 2N252, DL-S 660, September, 1956
□ 2N308, DL-S 709, March, 1957
□ 2N309, DL-S 709, March, 1957
□ 2N310, DL-S 710, March, 1957

small signal transistors
N-P-N Germanium Grown Junction
□ 200A, DL-S 632, August, 1956
□ 201A, DL-S 633, August, 1956
□ 202A, DL-S 634, August, 1956
P-N-P Germanium Alloy Junction
□ 300, DL-S 550, August, 1955
□ 301, DL-S 551, August, 1955
□ 302, DL-S 552, August, 1955
N-P-N Silicon Grown Junction
□ 2N332, DL-S 702, March, 1957
□ 2N333, DL-S 703, March, 1957
□ 2N334, DL-S 704, March, 1957
□ 2N335, DL-S 705, March, 1957
□ 2N336, DL-S 706, March, 1957
□ 2N117, DL-S 635, August, 1956
□ 2N118, DL-S 635, August, 1956
□ 2N119, DL-S 680, January, 1957
□ 903, DL-S 559, September, 1955
□ 904, DL-S 560, September, 1955
□ 904A, DL-S 561, September, 1955
□ 905, DL-S 562, September, 1955
□ 910 (J127), DL-S 731, March, 1957

winding transistors
N-P-N Silicon Grown-Diffused
□ 2N337, DL-S 700, March, 1957
□ 2N338, DL-S 701, March, 1957

phototransistor
N-P-N Germanium Grown Junction
□ 800

1957 IRE Convention - TI Transistor Ad Foldout

GERMANIUM TRANSISTORS									
RADIO FREQUENCIES									
2N252	I	.030	-16	-5	Conv.	-	2.60		
2N308	I	.030	-20	-5	IF	-	2.60		
2N309	I	.030	-20	-5	IF	-	2.60		
2N310	I	.030	-30	-5	IF	-	2.60		
2N1107	A	.030	-16	-5	IF	-	3.20		
2N1108	A	.030	-16	-5	Conv.	-	2.60		
2N1109	A	.030	-16	-5	DSC	-	2.10		
2N1110	A	.030	-16	-5	IF	-	2.60		
2N1111	A	.030	-20	-5	IF	-	2.60		
2N1111A	A	.030	-20	-5	Reflex	-	2.60		
2N1111B	A	.030	-27	-5	Reflex	-	2.60		
AUDIO OUTPUT									
2N185	A	.150	-20	-150	35+	-	1.09		
2N238	A	.050	-20	-150	50+	-	1.05		
2N291	E	.300	-25	-200	35+	-	1.57		
2N280	A	.150	-20	-150	35+	-	.96		
2N250	K	.25w	-30	-3a	30	-	2.95		
2N251	K	.25w	-60	-3a	30	-	4.00		
GENERAL PURPOSE									
2N364**	A	.150	30	50	9	2.5	3.20		
2N365**	A	.150	30	50	19	3	4.80		
2N366**	A	.150	30	50	49	3.5	8.60		
204A**	A	.150	60	50	9	2.5	6.40		
2N368	A	.150	30	50	19	1	1.70		
2N369	A	.150	-30	-50	49	1.3	1.90		
R65	A	.030	-6	-25			.90		
R66	A	.030	-6	-25			.60		
R67**	A	.030	5	25			.65		
R68**	A	.030	5	25			.75		
R72	A	.030	-5	-25			.80		

1960 Lafayette Radio Catalogue

Texas Instruments Germanium Transistors and the First Transistor Radio

1954 was an eventful year in the timeline of semiconductor history and especially for Texas Instruments when this small company made two very important technological contributions to early transistor technology - [in 1954 TI announced](#) the first commercial [silicon transistor](#) and also partnered with the [Regency company](#) to develop the first commercial transistor radio. This early and pioneering involvement by TI in developing germanium transistors that could power a commercial radio lead to a decade's long market leadership by TI in germanium radio transistor production. The TR-1 radio, shown at right, [used a total of four TI transistors](#) - these were all NPN germanium grown junction type transistors, with the following circuit functions: Oscillator/Mixer, 1st IF, 2nd IF, and audio amplifier. These early germanium transistors showed widely variable performance and were hand-selected and [color coded for each of the circuit functions](#). The Regency TR1 radio was launched in [late 1954 and sold over 100,000 units](#) with four TI transistors in each radio. TI continued to build on this commercial success in transistor technology and by 1956 was producing a broad range of transistor types.



Regency TR-1 - Smithsonian