

TYPES 2N1042, 2N1043, 2N1044, AND 2N1045 P-N-P ALLOY-JUNCTION GERMANIUM MEDIUM-POWER TRANSISTORS



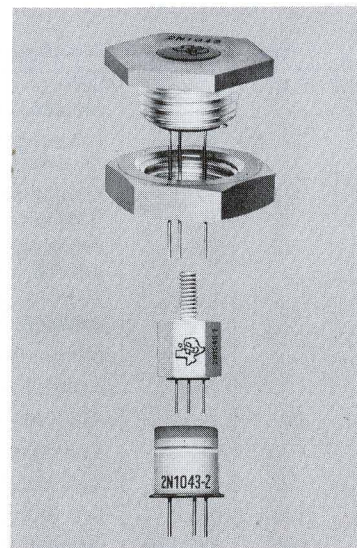
40, 60, 80, 100 VOLT UNITS
20 W at 25°C CASE TEMPERATURE
 Choice of Hex, Stud, or Round Weld Package
 Guaranteed Beta at 50 ma and 3 a I_c
 Low R_{CS} Low I_{CO} Low V_{BE}
 for
AUDIO AMPLIFIERS • PULSE AMPLIFIERS
RELAY DRIVERS • STANDARD UNIT

qualification testing

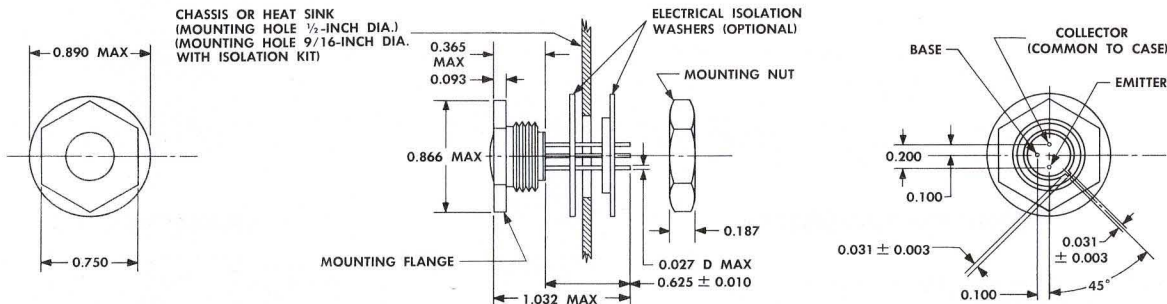
To assure maximum reliability, stability, and long life, all units are leak tested and heat cycled from -55°C to 95°C for four complete cycles over an eight-hour period. All transistors are tested for rigid adherence to specified design characteristics.

mechanical data

The transistor is hermetically sealed with glass-to-metal seal and a projection welded case. A low thermal resistance from the collector to the heat sink area enables the clamping of any effective heat radiator to the unit. The approximate weight of the unit is 1.7 grams. The standard unit is in the hexagonal heat sink as shown at top right. The unit is also available in the -1 stud heat sink or the -2 round weld package. To obtain these options please specify number, e. g. 2N1043-1.



STANDARD CASE — TOP
 STUD PACKAGE — CENTER
 ROUND WELD — BOTTOM



maximum ratings at 25°C*

		2N1042	2N1043	2N1044	2N1045	Units
V _{CB0}	Collector-to-Base Voltage (I _C = -750 μa)	-40	-60	-80	-100	v
V _{CEX}	Collector-to-Emitter Voltage (V _{BE} = +0.2 v, I _C = -750 μa)	-40	-60	-80	-100	v
V _{EBO}	Emitter-to-Base Voltage (I _E = -750 μa)	-20	-20	-20	-20	v
	Total Dissipation at 25°C†	20	20	20	20	w
	Total Dissipation at 75°C‡	5.7	5.7	5.7	5.7	w
I _C	Collector Current	-3	-3	-3	-3	a
I _B	Base Current	-1	-1	-1	-1	a
T _J	Junction Temperature	95	95	95	95	°C

typical characteristics at 25°C*

		2N1042	2N1043	2N1044	2N1045	Units
BV _{CB0}	Collector-to-Base Breakdown Voltage (I _C = -750 μa, I _E = 0)	-55	-75	-95	-115	v
h _{FE}	Forward Current Transfer Ratio‡ (I _C = -3 amps, V _{CE} = -1 volt)	25	25	25	25	
R _{CS}	Common-Emitter Saturation Resistance (I _C = -3 amps, I _B = -300 ma)	0.16	0.16	0.16	0.16	ohms

* See page four for optional heat sink and round weld case drawings, and see page three for dissipation derating.

† Temperature is measured on mounting flange or case heat sink area (see case drawings).

‡ h_{FE} guaranteed within 3:1 spread.

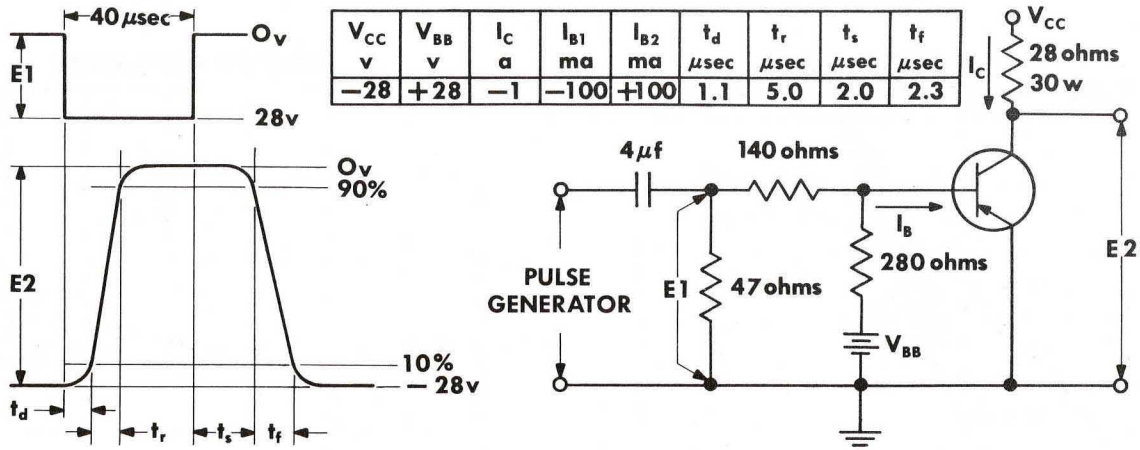
(h_{FE} = 20 to 60 at I_C = -3 amps, V_{CE} = -1.0 volts).

TYPES 2N1042 THROUGH 2N1045
 BULLETIN NO. DL-S 1066, APRIL, 1959
 REPLACES BULLETIN NO. DL-S 1004, AUGUST, 1958

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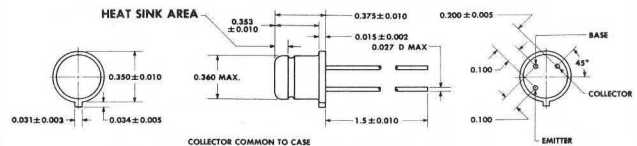
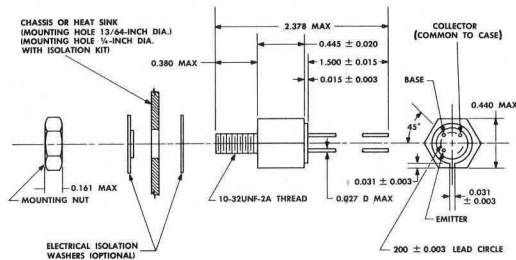
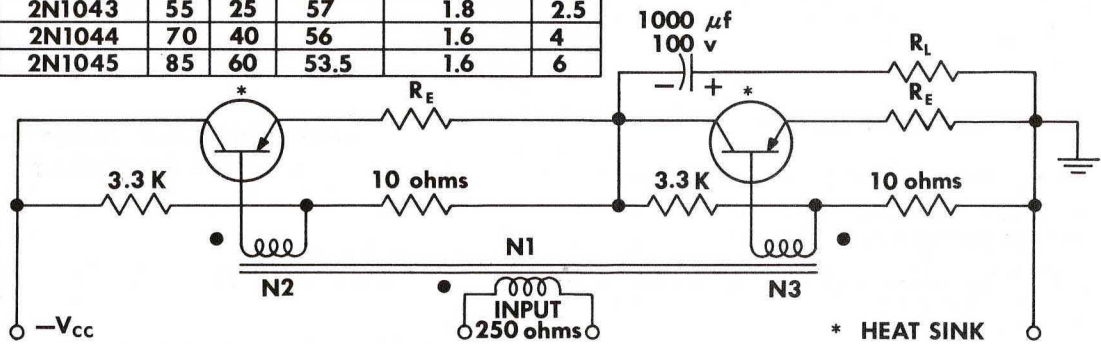
TYPES 2N1042, 2N1043, 2N1044, 2N1045

TYPICAL CHARACTERISTICS



TYPICAL AUDIO AMPLIFIER 10 watts Output

TRANSISTOR	V_{CC} volts	R_L ohms	Efficiency %	Distortion % at $P_o=10$ w	R_E ohms
2N1042	35	10	58	2.7	1
2N1043	55	25	57	1.8	2.5
2N1044	70	40	56	1.6	4
2N1045	85	60	53.5	1.6	6



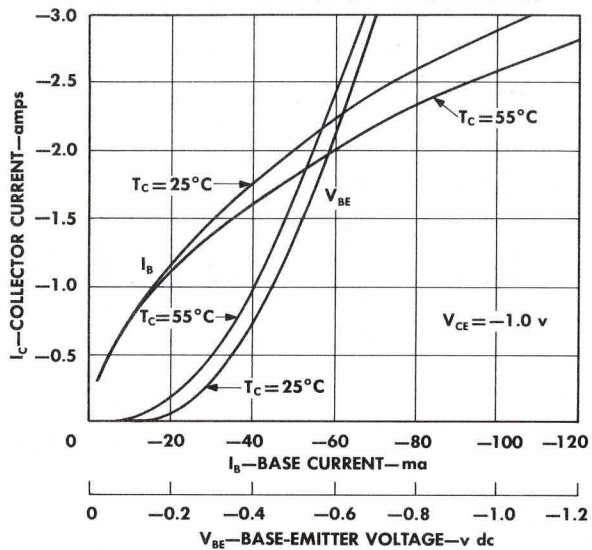
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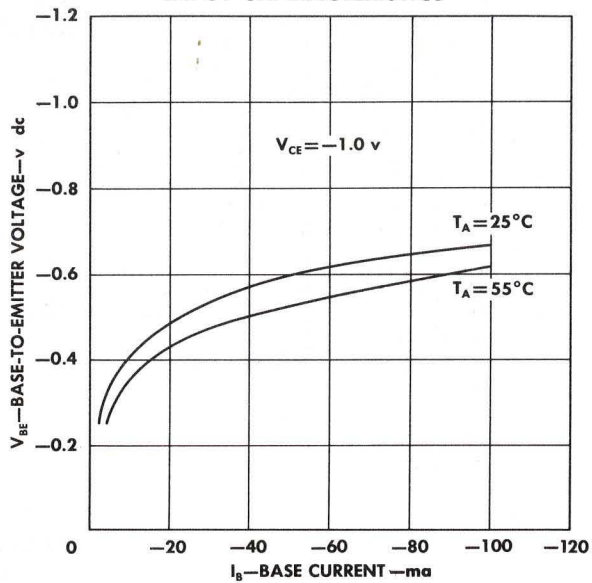
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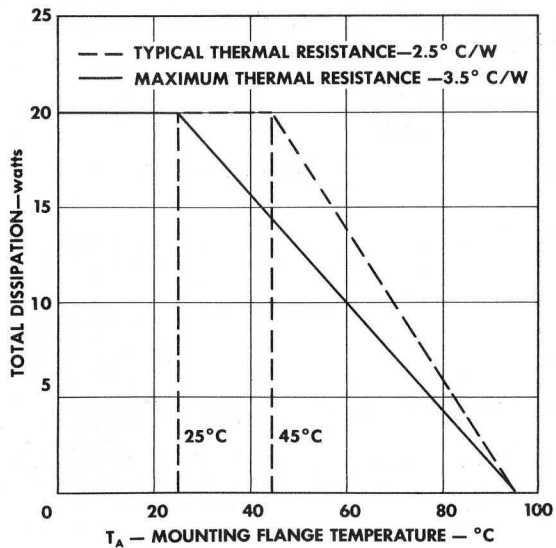
CURRENT TRANSFER AND TRANSCONDUCTANCE CHARACTERISTICS



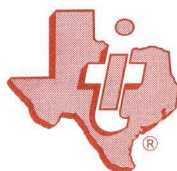
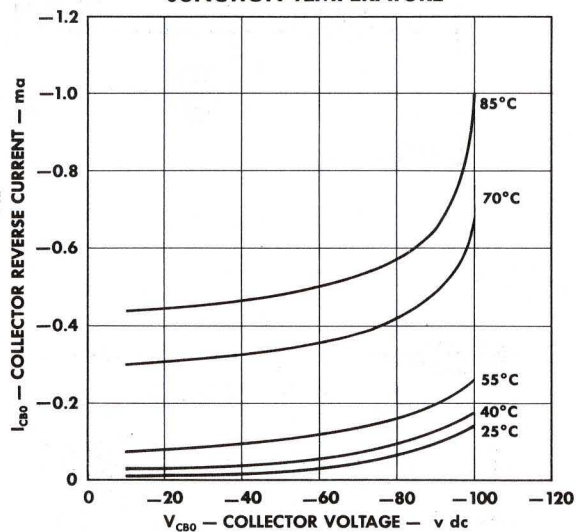
INPUT CHARACTERISTICS



DISSIPATION DERATING



COLLECTOR REVERSE CURRENT vs JUNCTION TEMPERATURE



TYPES 2N1042, 2N1043, 2N1044, 2N1045

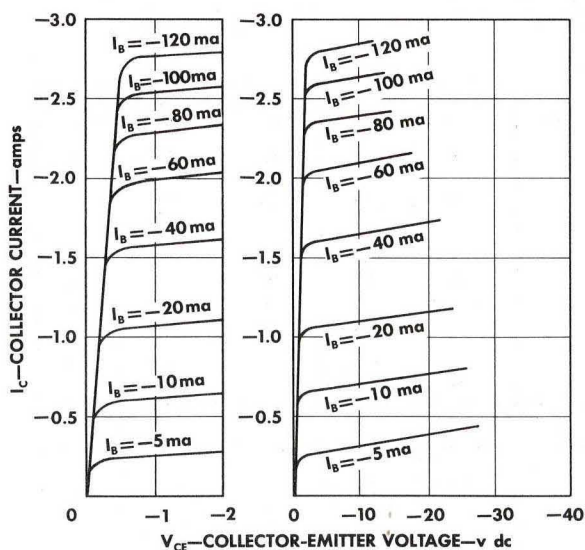
TYPICAL CHARACTERISTICS

design characteristics at 25°C

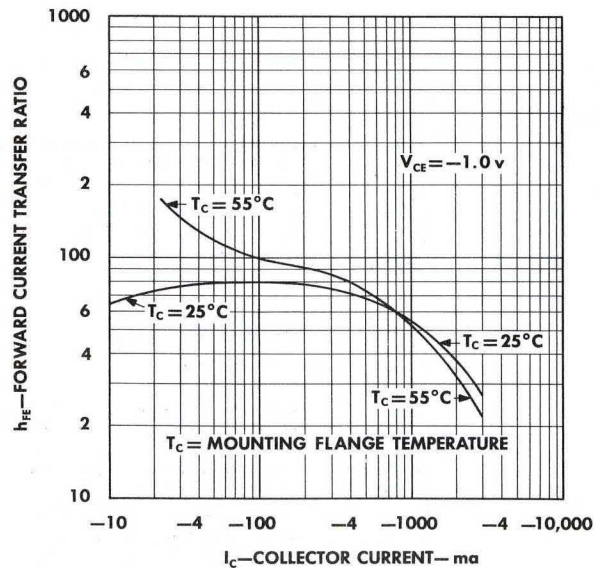
type	symbol	parameter	test conditions	min	design center	max	unit
2N1042	BV_{CBO}	Collector-to-Base Breakdown Voltage	$I_C = -750 \mu a, I_E = 0$	-40	—	—	v
2N1043	BV_{CBO}	Collector-to-Base Breakdown Voltage	$I_C = -750 \mu a, I_E = 0$	-60	—	—	v
2N1044	BV_{CBO}	Collector-to-Base Breakdown Voltage	$I_C = -750, I_E = 0$	-80	—	—	v
2N1045	BV_{CBO}	Collector-to-Base Breakdown Voltage	$I_C = -750 \mu a, I_E = 0$	-100	—	—	v
ALL	BV_{EBO}	Emitter-to-Base Breakdown Voltage	$I_E = -750 \mu a, I_C = 0$	-20	—	—	V
ALL	I_{CB0}	Collector Reverse Current	$V_{CB} = \frac{1}{2} BV_{CBO} \text{ MIN}$	—	50	-125	μa
ALL	I_{EB0}	Emitter Reverse Current	$V_{EB} = -10 \text{ v}$	—	50	—	μa
ALL	I_B	Base Current	$I_C = -3a, V_{CE} = -1.0V$	-50	-120	-150	ma
ALL	I_B	Base Current	$I_C = -50ma, V_{CE} = -1.0v$	-0.25	-0.60	-1.0	ma
ALL	V_{BE}	Base Voltage	$I_C = -3a, V_{CE} = -1.0V$	—	-0.7	-1.5	v
ALL	V_{BE}	Base Voltage	$I_C = -50ma, V_{CE} = -1.0V$	—	-0.2	-0.5	v
ALL	$V_{CE} \text{ (Sat)}$	Saturation Voltage	$I_C = -3a, I_B = -300ma$	—	-0.50	-0.75	v
ALL	$f_{\alpha b}$	Common-Base Current Transfer Cutoff Frequency	$V_{CE} = -20v, I_C = -100ma$	—	650	—	kc
ALL	C_{ob}	Collector-to-Base Capacity	$V_{CB} = -6v, I_E = 0$	—	100	—	μf

TYPICAL CHARACTERISTICS — COMMON EMITTER

OUTPUT CHARACTERISTICS



h_{FE} CHARACTERISTICS



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