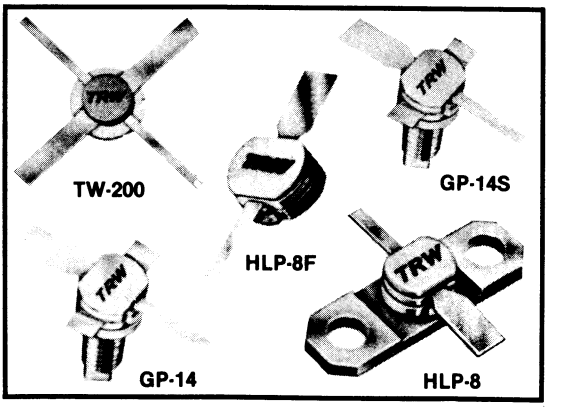
Microwave Linear Transistors

- 0.8 Watts
- 3 GHz
- Gold Metalized
- Diffused Ballast Resistors
- Linear per DIN 45004K
- Common Emitter
- Package Options
- Hermetic
- ∞VSWR

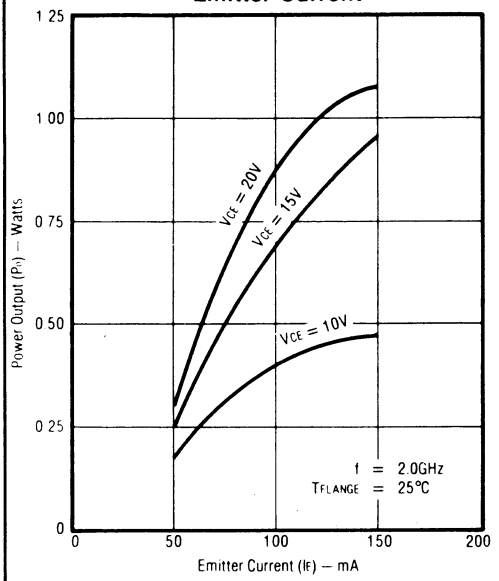


Electrical Characteristics (T_{CASE} = 25°C)

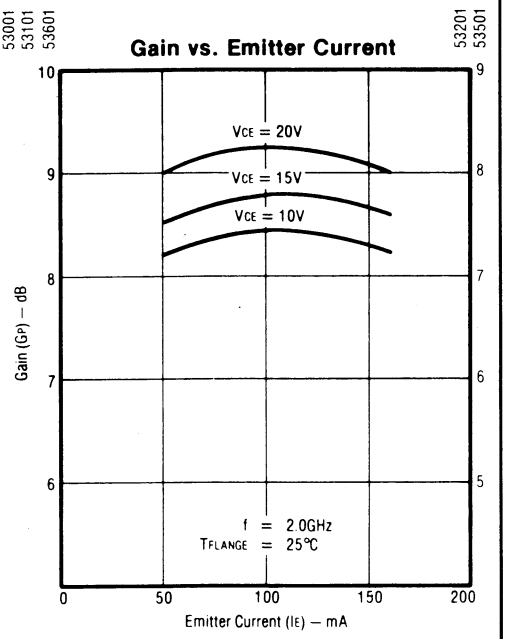
	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC TEST	BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 10mA	20			V
	BV_{CES}	Collector-Emitter Breakdown Voltage	I_C = 10mA	50			V
	BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 0.25mA	3.5			V
	BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 1.0mA	45			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 28V			0.25	mA
	h_{FE}	Forward Current Transfer Ratio	V_{CE} = 5.0V, I_C = 100mA	15		120	—
RF TEST	C_{ob}	Collector-Base Capacitance	V_{CB} = 28V, f = 1MHz			3.5	pF
	P_O	Power Output	V_{CE} = 20V, I_E = 120mA, f = 2.0GHz *P_{in} = .100W f/53101 & 53601 P_{in} = 0.142W f/53201 & 53501 P_{in} = .142WF/53001	.8			W
	f_t	Frequency Cutoff	V_{CE} = 20V, I_E = 120mA	3.0	3.3		GHz
	VSWR	Mismatch Tolerance	P_O = 0.8W, I_E = 120mA, V_{CE} = 20V	∞			
	IMD	Third Order Intermodulation Distortion	V_{CE} = 20V, I_E = 120mA f = 2.0GHz, $P_{O(PEP)}$ = 0.8W Tones at 2.000GHz and 2.005GHz		-30		dB
	$IMD_{(TV)}$	Intermodulation per DIN-45004/K	V_{CE} = 20V, I_E = 75mA, f = 1.0GHz, P_{REF} = 0.25W		-60		dB
	L_G	Gain Linearity	V_{CE} = 20V, I_E = 120mA f = 2.0GHz, P_{O1} = .8W, P_{O2} = .8mW			-0.2 +1.0	dB
OPER.	T_J & T_{stg}	Max. Junction & Storage Temperature		-65		+200	°C
	θ_{JC}	Thermal Resistance	T_C = 25°C			31	°C/W

ELECTRICAL CHARACTERISTICS
TRW53001, TRW53101, TRW53201, TRW53501, TRW53601

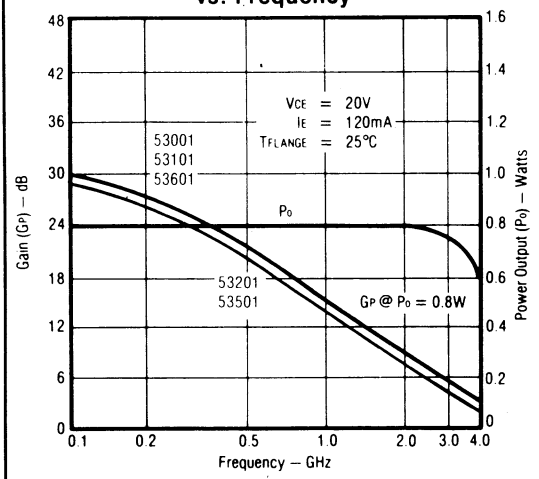
1dB Compression Point vs. Emitter Current



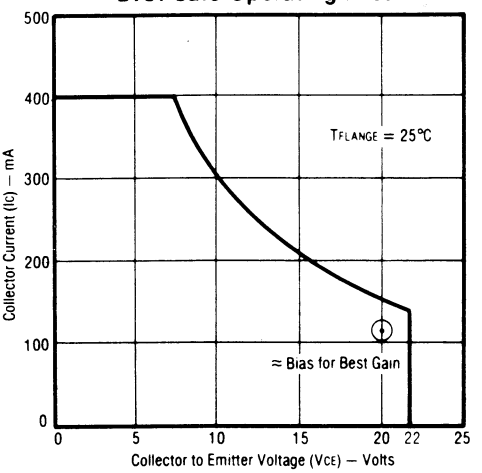
Gain vs. Emitter Current



Gain and 1dB Compressed Power vs. Frequency



D.C. Safe Operating Area



Mechanical Design Specifications

The following are design specifications for this transistor series.

Dimensions: Per outline drawing.

Solderability: Per MIL-STD-750.

Marking: Per MIL-S-19500, "TRW," 4-digit date code, type number.

Hermeticity: Per MIL-STD-750, 10^{-7} atmospheres gross and fine leak. (Available on special order screened to 10^{-8} atmospheres.)

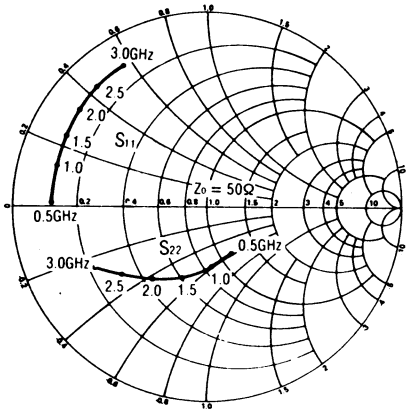
Acceleration: Per MIL-STD-750, 20,000G in any plane.

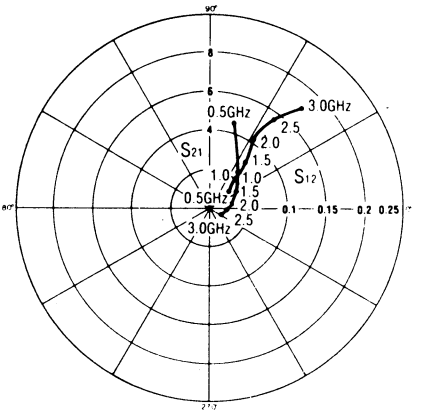
Bond Pull: Per MIL-STD-750, 3 grams min.

Package: A brazed ceramic package assuring long-term integrity of hermetic seals. Leads of KOVAR base material with minimum 60 microinches of gold plating.

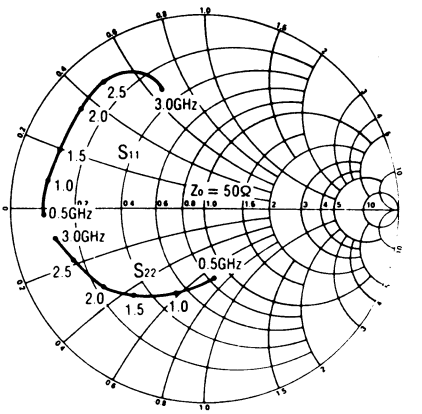
S-Parameters
V_{CE} = 20V, I_E = 120mA, T_{FLANGE} = 25°C

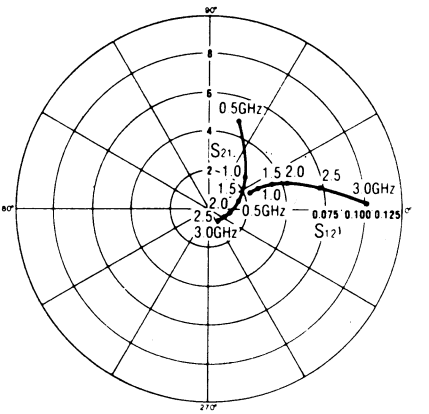
TRW53001



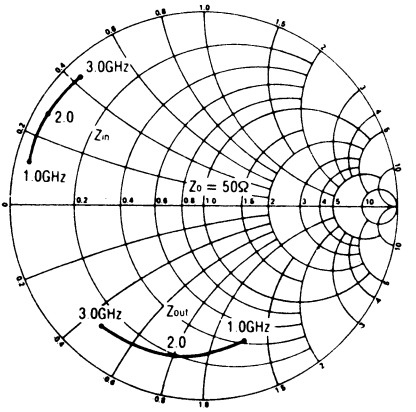


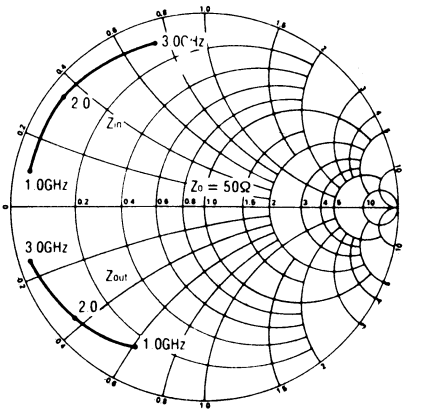
TRW53101, TRW53601





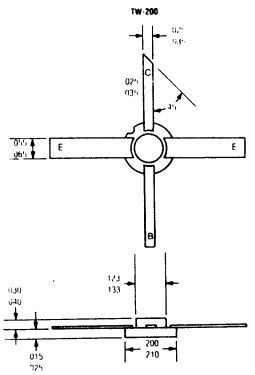
Large Signal Impedance Data
V_{CE} = 20V, I_E = 120mA, T_{FLANGE} = 25°C

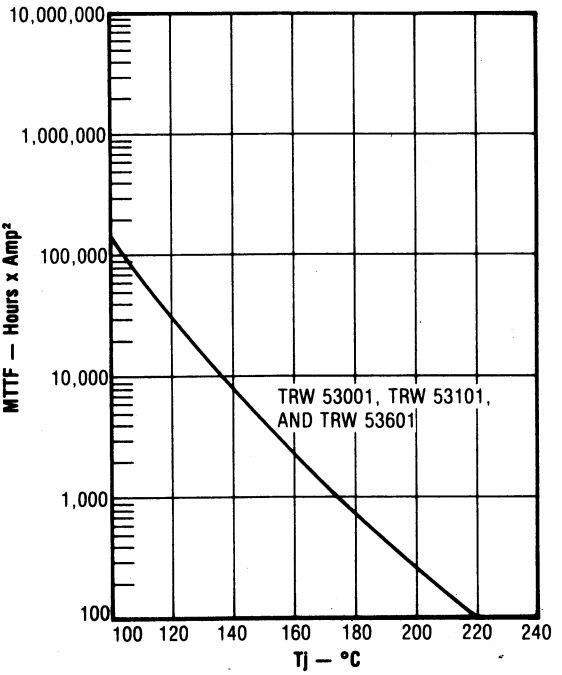




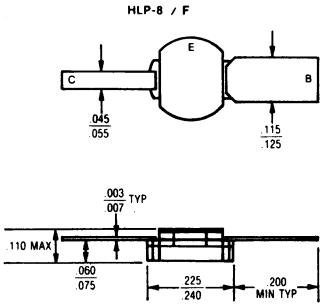
Note: Test circuit details are available from TRW Semiconductors.

TRW53001

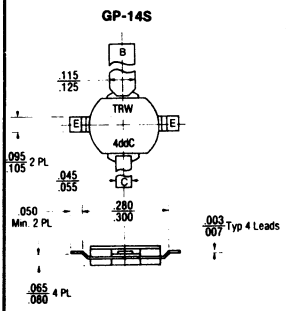




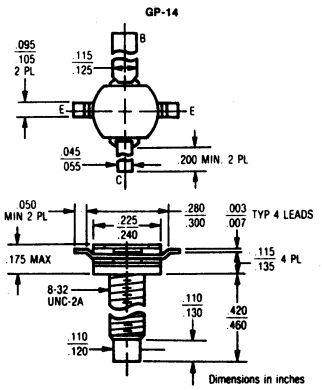
TRW53101



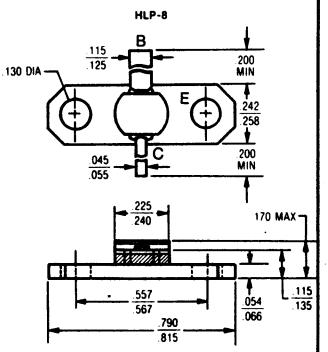
TRW53201



TRW53501



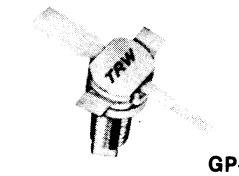
TRW53601



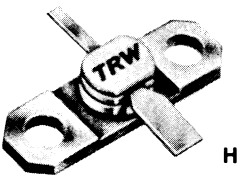
E

Microwave Linear Transistors

- 1.6 Watts
- 3 GHz
- Gold Metalized
- Diffused Ballast Resistors
- Linear per DIN 45004K
- Common Emitter
- Package Options
- Hermetic
- ∞ VSWR



GP-14



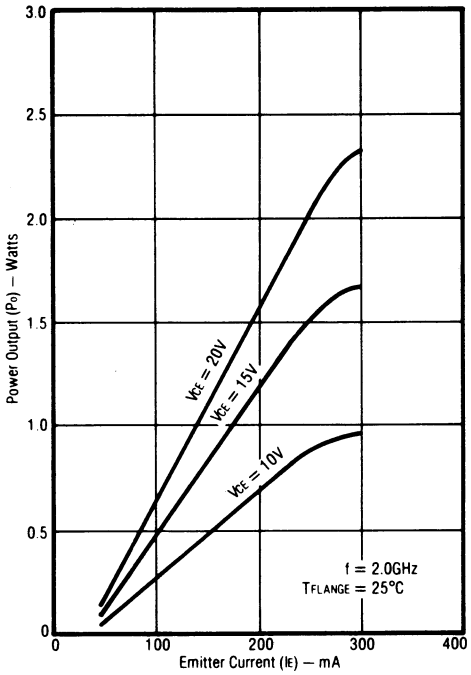
HLP-8

Electrical Characteristics (T_{CASE} = 25°C)

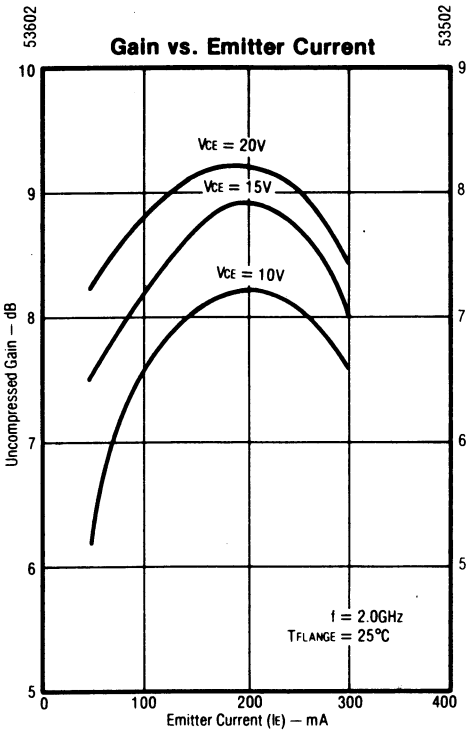
	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC TEST	BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 20mA	20			V
	BV_{CES}	Collector-Emitter Breakdown Voltage	I_C = 20mA	50			V
	BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 0.50mA	3.5			V
	BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 2.0mA	45			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 28V			0.5	mA
	h_{FE}	Forward Current Transfer Ratio	V_{CE} = 5.0V, I_C = 200mA	15		120	—
RF TEST	C_{ob}	Collector-Base Capacitance	V_{CB} = 28V, f = 1MHz			5.5	pF
	P_O	Power Output	V_{CE} = 20V, I_E = 230mA, f = 2.0GHz P_{in} = 0.253W f/53602 P_{in} = .319W f/53502	1.6			W
	f_t	Frequency Cutoff	V_{CE} = 20V, I_E = 230mA	3.0	3.3		GHz
	VSWR	Mismatch Tolerance	P_O = 1.6W, I_E = 230mA, V_{CE} = 20V	∞			
	IMD	Third Order Intermodulation Distortion	V_{CE} = 20V, I_E = 230mA $P_{O(PEP)}$ = 1.6W Tones at 2.000GHz and 2.005GHz		-30		dB
	$IMD_{(TV)}$	Intermodulation per DIN-45004/K	V_{CE} = 20V, I_E = 150mA, f = 1.0GHz, P_{REF} = 0.5W		-60		dB
	L_G	Gain Linearity	V_{CE} = 20V, I_E = 230mA f = 2.0GHz, P_{O1} = 1.6W, P_{O2} = 1.6mW			-0.2 +1.0	dB
OPER.	T_j & T_{stg}	Max. Junction & Storage Temperature		-65		+200	°C
	θ_{jC}	Thermal Resistance	T_C = 25°C			17	°C/W

ELECTRICAL CHARACTERISTICS
TRW53502, TRW53602

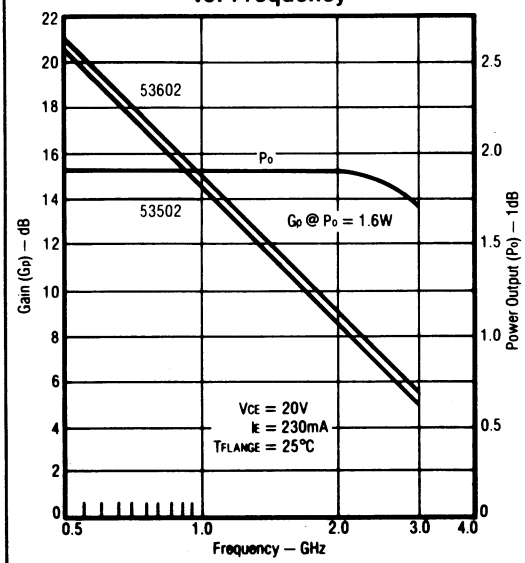
1dB Compression Point vs. Emitter Current



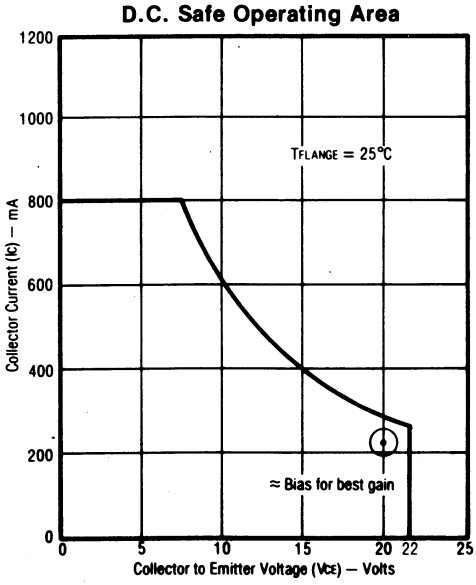
Gain vs. Emitter Current



Gain and 1dB Compressed Power vs. Frequency



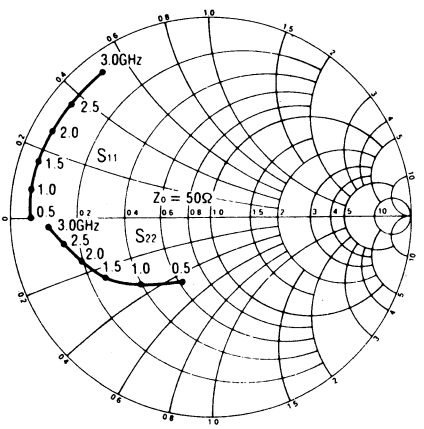
D.C. Safe Operating Area

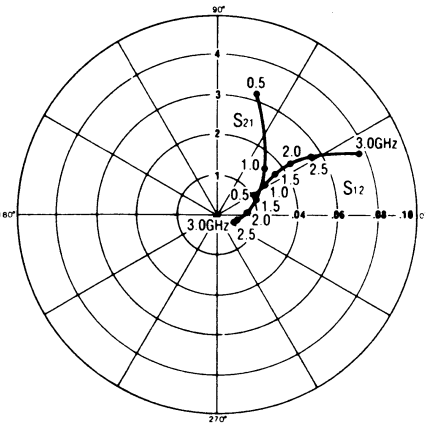


E

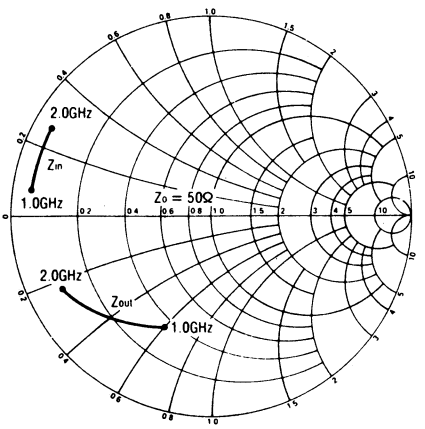
S-PARAMETERS

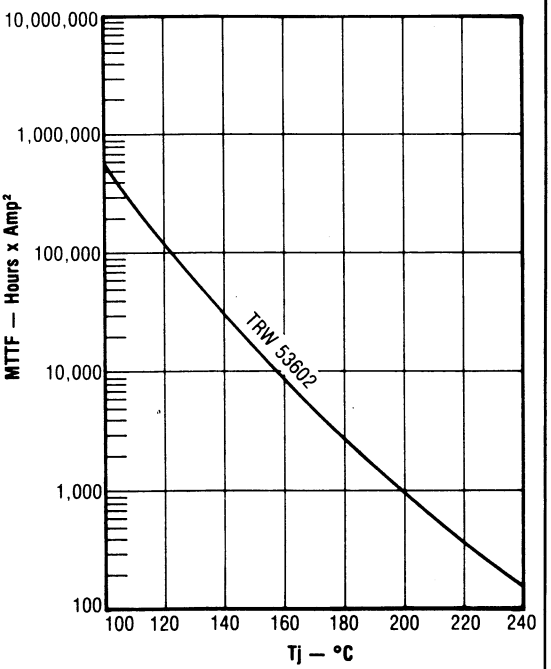
V_{CE} = 20V, I_E = 230mA, T_{FLANGE} = 25°C





Large Signal Impedance Data





Mechanical Design Specifications

The following are design specifications for this transistor series.

Dimensions: Per outline drawing.

Solderability: Per MIL-STD-750.

Marking: Per MIL-S-19500, "TRW," 4-digit date code, type number.

Hermeticity: Per MIL-STD-750, 10^{-7} atmospheres gross and fine leak. (Available on special order screened to 10^{-8} atmospheres.)

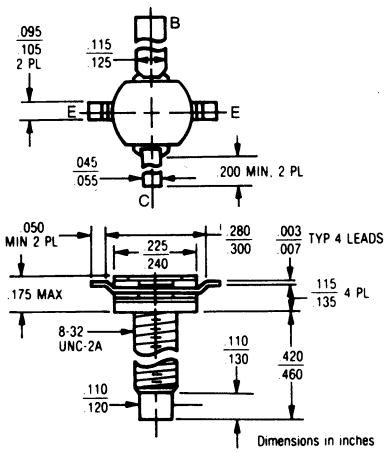
Acceleration: Per MIL-STD-750, 20,000G in any plane.

Bond Pull: Per MIL-STD-750, 3 grams min.

Package: A brazed ceramic package assuring long-term integrity of hermetic seals. Leads of NICKEL base material with minimum 60 microinches of gold plating.

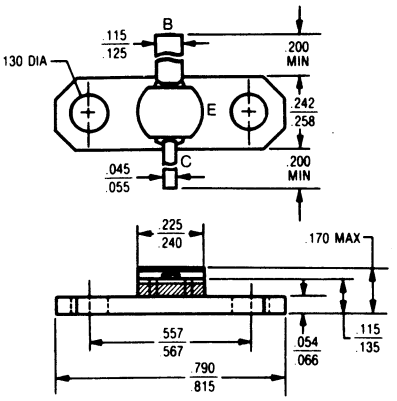
TRW53502

GP-14



TRW53602

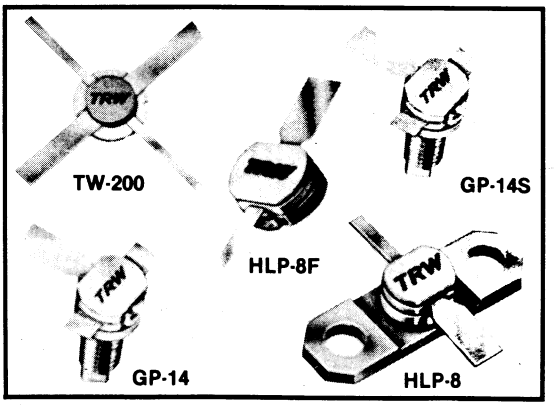
HLP-8



E

Microwave Linear Transistors

- 0.5 Watts
- 4 GHz
- Gold Metalized
- Diffused Ballast Resistors
- Linear per DIN 45004K
- Common Emitter
- Package Options
- Hermetic
- ∞ VSWR

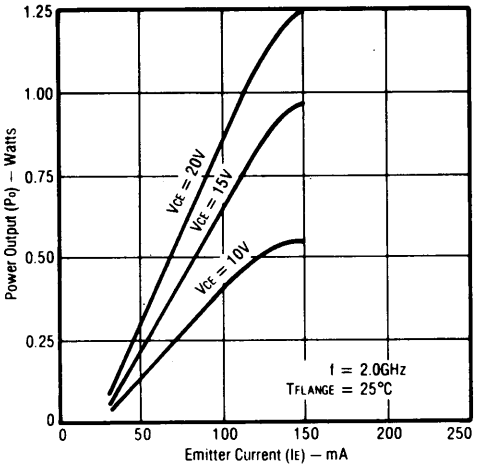


Electrical Characteristics (T_{CASE} = 25°C)

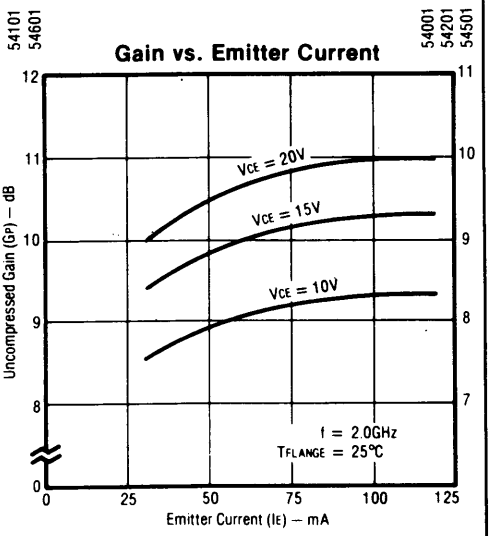
	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC TEST	BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 10mA	22			V
	BV_{CES}	Collector-Emitter Breakdown Voltage	I_C = 10mA	50			V
	BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 0.25mA	3.5			V
	BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 1.0mA	45			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 28V			0.25	mA
	h_{FE}	Forward Current Transfer Ratio	V_{CE} = 5.0V, I_C = 100mA	20		120	—
RF TEST	C_{ob}	Collector-Base Capacitance	V_{CB} = 28V, f = 1MHz			3.5	pF
	P_O	Power Output	V_{CE} = 20V, I_E = 120mA, f = 2.0GHz P_{in} = .05W f/54001 & 54201 & 54501 *P_{in} = .04W all others	.5			W
	f_t	Frequency Cutoff	V_{CE} = 20V, I_E = 120mA	4.0	4.5		GHz
	VSWR	Mismatch Tolerance	P_O = 0.5W, I_E = 120mA, V_{CE} = 20V	∞			
	IMD	Third Order Intermodulation Distortion	V_{CE} = 20V, I_E = 120mA $P_{O(PEP)}$ = 0.5W Tones at 2.000GHz and 2.005GHz		-30		dB
	$IMD_{(TV)}$	Intermodulation per DIN-45004/K	V_{CE} = 20V, I_E = 75mA, f = 1.0GHz, P_{REF} = 0.15W		-60		dB
	L_G	Gain Linearity	V_{CE} = 20V, I_E = 120mA f = 2.0GHz, P_{O1} = 0.5W, P_{O2} = 0.5mW			-0.2 +1.0	dB
OPER.	T_j & T_{stg}	Max. Junction & Storage Temperature		-65		+200	°C
	θ_{jC}	Thermal Resistance	T_C = 25°C			40	°C/W

ELECTRICAL CHARACTERISTICS
TRW54001, TRW54101, TRW54201, TRW54501, TRW54601

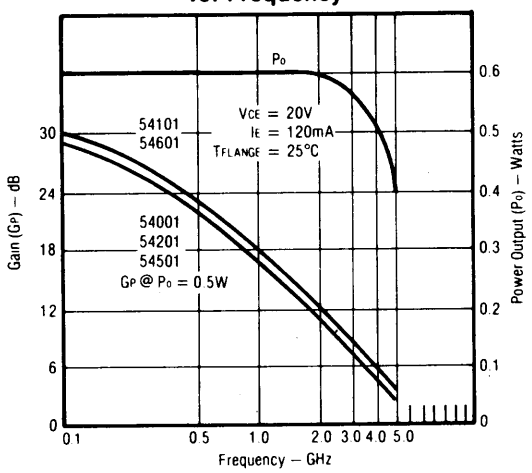
1dB Compression Point vs. Emitter Current



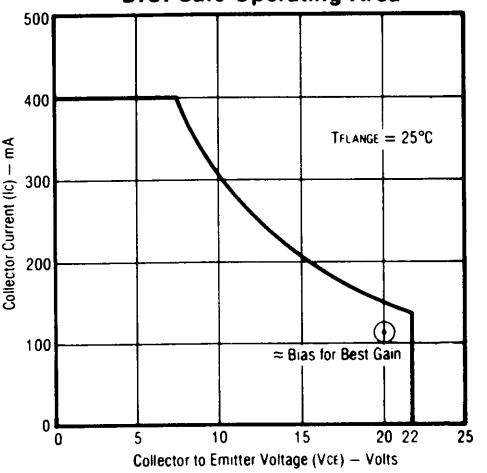
Gain vs. Emitter Current



Gain and 1dB Compressed Power vs. Frequency



D.C. Safe Operating Area



Mechanical Design Specifications

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Solderability: Per MIL-STD-750

Marking: Per MIL-S-19500, "TRW," 4-digit date code, type number

Hermeticity: Per MIL-STD-750, 10^{-7} atmospheres gross and fine leak. (Available on special order screened to 10^{-8} atmospheres.)

Acceleration: Per MIL-STD-750, 20,000G in any plane.

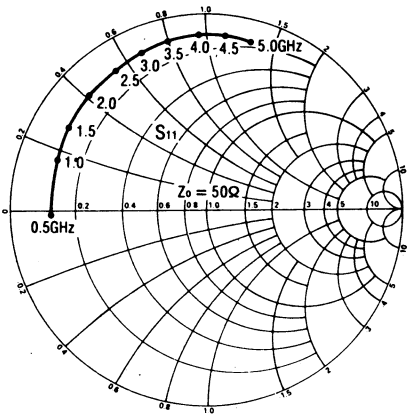
Bond Pull: Per MIL-STD-750, 3 grams min.

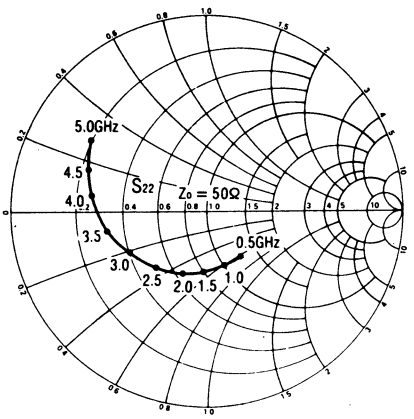
Package: A brazed ceramic package assuring long-term integrity of hermetic seals. Leads of KOVAR base material with minimum 60 microinches of gold plating.

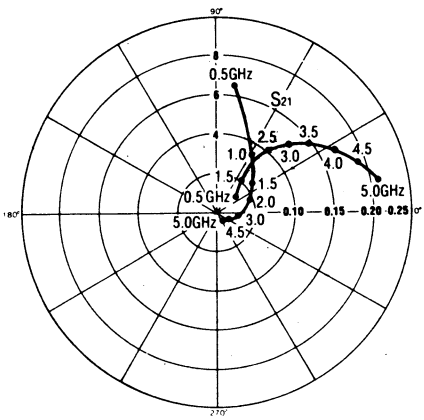
S-Parameters

V_{CE} = 20V, I_E = 120mA, T_{FLANGE} = 25°C

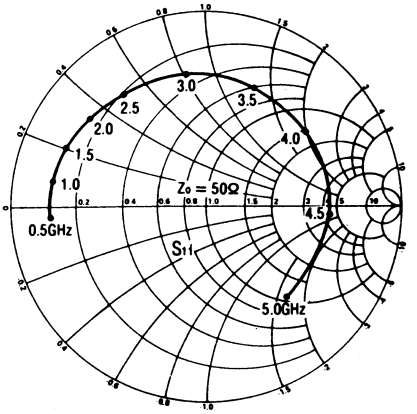
TRW54001

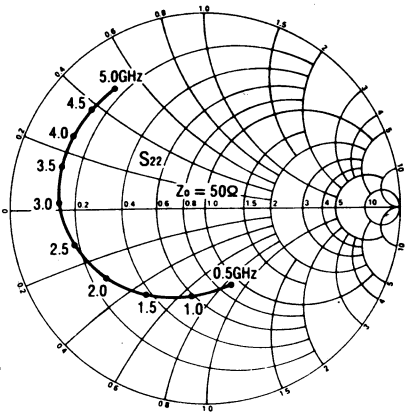


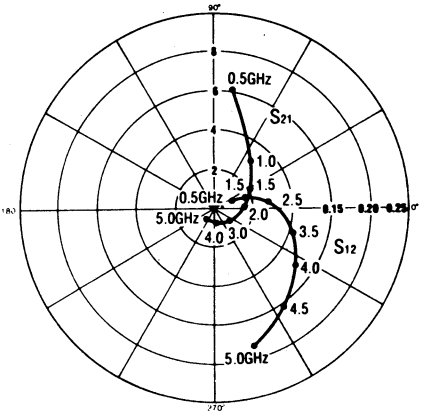




TRW54101, TRW54601

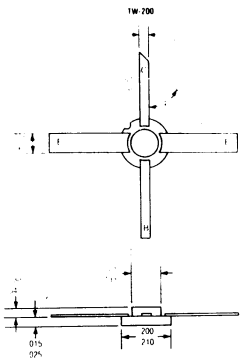


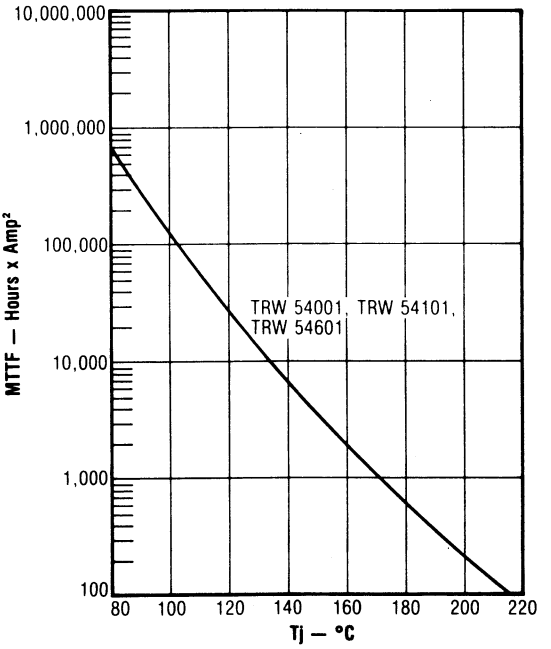




Note: Test circuit details are available from TRW Semiconductors.

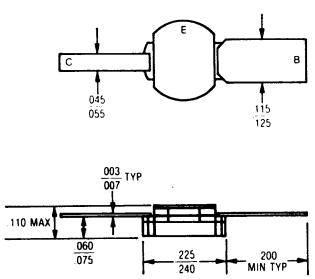
TRW54001





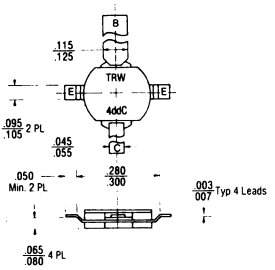
TRW54101

HLP-8 / F



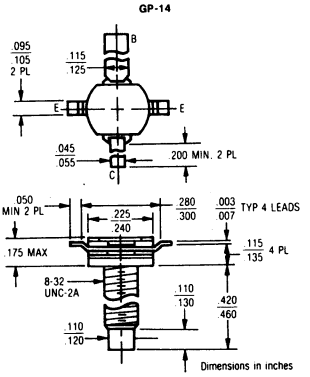
TRW54201

GP-14S



TRW54501

GP-14



TRW54601

HLP-8