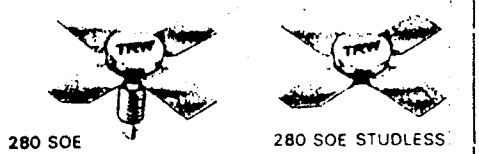
TP254/S

TRW RF DEVICES

JUNE 86

- 1.5W
- 7.5V
- 470MHz



This device has been specifically designed and characterized for 7.5V operation.

It is ideally suited for use in pocketphone where low battery voltage is used.

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 0.2mA I_C = 0	3.5			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 10mA I_B = 0	13			V
	BV_{CES}	Collector Emitter Breakdown Voltage	I_C = 8mA	25			V
	I_{CEO}	Collector Cutoff Current	V_{CE} = 9V			1	mA
	H_{HE}	DC Current Gain	V_{CE} = 5V I_C = 100mA	80		190	
RF Test	Pout	Output Power	F = 470MHz V_{CE} = 7.5V Pin=175mW	1.5	1.8		W
	η	Efficiency	F = 470MHz V_{CE} = 7.5V Pout=1.5W	50	60		%
	Load VSWR	Mismatch Tolerance	F = 470MHz V_{CE} = 10V Pout = 1.5W		∞ :1 All phases		
	C_{OB}	Collector Base Capacitance	V_{CB} = 10V F = 1MHz		7	9	pF
Thermal	I_C	Continuous Collector Current				400	mA
	$\theta_{J.C}$	Thermal Resistance	Tcase = 25°C			15	°C/W
	T_{STG}	Storage Temperature & Junction Case		-65		+200	°C
	P_D	Power Dissipation	Tcase = 25°C			12	W

TP2007A

TRW RF DEVICES

JUNE 86

- 4W
- 7.5V
- 470MHz

SOE280 STUDLESS

Using the latest TRW technology, this device has been specifically designed and characterized for 7.5V operation.

It is ideally suited for use in pocketphone where low battery voltage is used.

Electrical Characteristics (Tcase = 25°C)

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 5mA I_C = 0	4			V
	BV_{CES}	Collector Emitter Breakdown Voltage	I_C = 20mA V_{BE} = 0	36			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 50mA I_B = 0	16			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 15V I_E = 0			2	mA
	H_{FE}	DC Current Gain	V_{CE} = 5V I_C = 500mA	20			
RF Test	Pout	Output Power	V_{CE} = 7.5V Pin = 1.5W F = 470MHz	4			W
	η C	Collector Efficiency	V_{CE} = 7.5V Pout = 4W F = 470MHz	50	55		%
	C_{OB}	Collector Base Capacitance	V_{CB} = 10V F = 1MHz I_E = 0		25	34	pF
	VSWR	Mismatch Tolerance	F = 470MHz V_{CE} = 10V Pout = 4W		∞ : 1		
Thermal	I_{Cmax}	Continuous Collector Current				3.4	A
	$\theta_{J.C}$	Thermal Resistance	Tcase = 25°C			4	°C/W
	T_{STG}	Storage Temperature & Junction Case		-65		+200	°C
	P_D	Power Dissipation	Tcase = 25°C			44	W

TP2300

TRW RF DEVICES

JUNE 86

- 175MHz
- 4W
- 12.5V
- CLASS C

380SOE

The TP 2300 is designed for use in 12.5V VHF amplifiers operating under Class A, B or C conditions.
Its construction which incorporates gold metallization and diffused ballast resistors enables the part to be used at its maximum ratings and be able to withstand an infinite VSWR at all phase angles.

Electrical Characteristics (Tcase = 25°C)

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 2mA	4			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 50mA	16			V
	BV_{CBO}	Collector Base Breakdown Voltage	I_C = 10mA	36			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 15V			1	mA
	H_{FE}	DC Current Gain	V_{CE} = 5V I_C = 200mA	20			-
RF Test	P_{GAIN}	Power Gain	V_{CE} = 12.5V F = 175MHz Pin = 250mW	4			W
	η	Efficiency	V_{CE} = 12.5V F = 175MHz Pout = 4W	55			%
Thermal	I_C	Continuous Collect. Current				1.7	A
	θjc	Thermal Resistance				5	°C/W
	T_{STG}	Storage Temperature & Junction Temp.		-65		+200	°C
	P_D	Power Dissipation				35	W

TRW Composants Electroniques S.A.

Avenue de la Jallère
F-33700 BORDEAUX-LAC

TRW RF DEVICES

JUNE 1986.

TP2306

2 W.
12.5V
175 MHz

TO 39

The TP 2306 is designed for use in 12.5V VHF applications and is ideally suited for use in the predriver or driver stage of a power amplifier where high gain is required.

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test	BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 1mA I_C = 0	4			V
	BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 25mA I_B = 0	16			V
	BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 5mA I_E = 0	35			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 15V, I_E = 0			1	mA
	Hfe	DC Current gain	V_{CE} = 5V, I_C = 100mA	20			
RF Test	P_{OUT}	Output Power	V_{CE} = 12,5V F = 175MHz Pin = 150mW	2	2.5		W
	η	Efficiency	V_{CE} = 12,5V F 175MHz Pout = 2W	60 %			
	LOAD VSWR	Mismatch tolerance	All phase angles		∞ :1		
	COB	Collector Base Capacitance	V_{CB} = 15V ; F = 1MHz		5	8	pF
Thermal	Ic	Continuous collector current				0.4	A
	θjc	Thermal resistance	Tc = 25°C			23.5	°C/W
	T_{STG}	Storage Temp. and Junction Temp.		-65		+200	°C
	P_D	Power Dissipation	Tc = 25°C			7.5	V

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TP 2307

ISSUE I

TRW RF DEVICES

JUNE 86

- 2.75 WATTS
- 12.5 VOLTS
- 175MHz

TO39GE

The TP 2307 is designed for 6V to 12V VHF applications and is intended for Class A, B or C medium power amplifiers, frequency multipliers or oscillator circuits.

Its grounded emitter construction gives excellent thermal dissipation and the ability of providing further heatsinking where necessary the case also acts as a good RF screen.
This device features high gain and an infinite VSWR rating at all phase angles at rated power output.

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit
DC Test	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 2mA I_C = 0	4			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 50mA I_B = 0	16			V
	BV_{CBO}	Collector Base Breakdown Voltage	I_C = 10mA I_E = 0	36			V
	I_{CBO}	Collector Cut-off Current	V_{CB} = 15V I_E = 0			1	mA
	H_{FE}	D.C. Current Gain	V_{CE} = 5V I_C = 200mA	20	40		
RF Test	P_{out}	Output Power	V_{CE} = 12.5V Pin = 80mW F=175MHz	2.75	3		W
	η	Efficiency	V_{CE} = 12.5V Pout = 2.75W F=175MHz	50	55		%
	Load VSWR	Mismatch Tolerance	All Phase Angles V_{CE} = 12.5V F=175MHz Pout = 2.75W		∞:1		
	C_{OB}	Collector Base Capacitance	V_{CB} = 20V F=1MHz		12	15	pF
Thermal	I_C	Continuous Collector current				0.8	A
	θJC	Thermal resistance	Tc = 25°C			20	°C/W
	T_{STG}	Stor.Temperature & Junction Temper.		-65		+200	°C
	P_D	Power Dissipation	Tc = 25°C			8	W

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F-33300 BORDEAUX-LAC

TP 2317

TRW RF DEVICES

175 MHz
20 W
12.5 V
CLASS C

SOE 380

The TP 2317 is designed for use in 12.5V VHF amplifiers operating under Class A, B or C conditions.

Its construction which incorporates gold metallization and diffused ballast resistors enables the part to be used at its maximum ratings and be able to withstand an infinite VSWR at all phase angles.

Electrical Characteristics (Tcase = 25°C)

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test	BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 5mA	4			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 50mA	18			V
	BV_{CBO}	Collector Base Breakdown Voltage	I_C = 50mA	36			V
	IC_{BO}	Collector Cutoff Current	V_{CB} = 15V			25	mA
	H_{FE}	DC Current Gain	V_{CE} = 5V I_C = 1000mA	10			
RF Test	P_G	Power Gain	V_{CE} = 12.5V F = 175MHz Pin = 4W	20			W
	η	Collector Efficiency	V_{CE} = 12.5V F = 175MHz Pout = 20W	55			%
	Load VSWR	Mismatch Tolerance	All phase angles V_{CE} = 12.5V F = 175MHz Pout = 20W		∞		
Thermal	Ic	Cont. Coll. Current				8	A
	$\theta J.C$	Thermal Resistance				2.2	°C/W
	T_{STG}	Storage Temperature & Junction Temper.		-65		+200	°C

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F-33300 BORDEAUX-LAC

TP 2325

TRW RF DEVICES
JUNE 86

25W
175MHz
12.5V
CLASS C

380 SOE

The TP 2325 is designed for use in 12.5V VHF amplifiers operating under Class A, B or C conditions.
Its construction which incorporates gold metallization and diffused ballast resistors enables the part to be used at its maximum ratings and be able to withstand an infini VSWR at all phase angles.

Electrical Characteristics (Tcase = 25°C)

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test	BV_{EBO}	Emitter Base Breakdown Voltage	I_C = 5mA	4			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 50mA	16			V
	BV_{CER}	Collector Emitter Breakdown Voltage	I_E = 50mA R_{BE} = 10 Ω	35			V
	BV_{CBO}	Collector Base Breakdown Voltage	I_C = 50mA	36			V
	I_{CBO}	Collector cut-off Current	V_{CB} = 15V			5	mA
	H_{FE}	DC Current Gain	V_{CE} = 5V ; I_C = 1A	10			
RF Test	P_G	Power Gain	V_{CE} = 12.5V F = 175MHz Pin = 6W	25			W
	η	Collector Efficiency	V_{CE} = 12.5V F = 175MHz Pout = 25W	60			%
Thermal	I_C	Continuous Collector Current				8	A
	θ_{JC}	Thermal Resistance				2.2	°C/W
	TS_{TG}	Storage Temperature & Junction Case		-65		+200	°C

TP 2335

TRW RF DEVICES

JUNE 86

RF POWER TRANSISTOR

- 35W
- 11DB
- 175MHZ
- 12.5V

380SOE

The TP 2335 is a device intended for use in VHF transmitter output stages where a high gain is necessary.
Using the latest in technology and manufacturing processes from TRW, excellent gain and high saturated output power has been achieved enabling a 35W transmitter to be designed using a TO39 as driver.

Electrical Characteristics (Tcase = 25°C)

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC TEST	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 5mA I_C = 0	4			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 50mA I_B = 0	16			V
	BV_{CBO}	Collector Base Breakdown Voltage	I_C = 50mA I_E = 0	36			V
	I_{CES}	Collector Emitter Cutoff Current	V_{CE} = 15V			10	mA
	h_{FE}	DC Current Gain	V_{CE} = 5V I_C = 1A	20		150	
RF Test	P_{Gain}	Power Gain	V_{CE} = 12.5V Pin = 3W F = 175MHz	35			W
	η	Efficiency	V_{CE} = 12.5V Pout=35W F = 175MHz	60			%
	Load VSWR	Mismatch Tolerance	All phase angles V_{CE} = 12.5V Pout=35W F = 175MHz		∞:1		
	Zin	Common Emitter Amp. Input Impedance	V_{CE} = 12.5V Pout=35W F = 175MHz		1.05 +J0.5		
	Z_{Load}	Common Emitter Amp. Load Impedance	V_{CE} = 12.5V Pout=35W F = 175MHz		2.7 +J0.2		
	C_{OB}	Collector Base Capacitance	V_{CB} = 15V F = 1MHz		70	100	pF
	I_C	Contin.Collect.Cur.				8	A
Thermal	θJC	Thermal Resistance	TC = 25°C			2.2	°C/W
	T_{STG}	Storage Temperature & Junction Temper.		-65		+200	°C
	P_D	Power dissipation	TC = 25°C			80	W

TP 2370

TRW RF DEVICES

JUNE 86

- HIGH GAIN, HIGH EFFICIENCY, FULL BAND COVERAGE
- DIFFUSED SILICON BALLAST RESISTORS
- PASSIVATED GOLD METALLIZATION

70 W
175 MHz
12.5 V
CLASS C

JØ

The TP 2370 transistor is intended for land mobile applications operating over the 145-175MHz frequency range with typical vehicular power supplies.

The combination of diffused silicon ballasting, gold metallization and low thermal resistance provice high reliability at low cost

Electrical characteristics (Tcase = 25°C)

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit
DC Test	BV_{CBO}	Collector Base Breakdown Voltage	I_C = 100mA	36			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 100mA	16			V
	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 10mA	4			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 15V			10	mA
	H_{FE}	DC Current Gain	V_{CE} = 5V ; I_C = 1A	10			
RF Test	P_{GAIN}	Power Gain	V_{CE} = 12.5V F = 175MHz Pin = 20W	70			W
	η	Collector Efficiency	V_{CE} = 12.5V F = 175MHz Pout = 70W	60			%
	Load VSWR	Mismatch Tolerance	All phase angles V_{CE} = 12.5V Pout=70W	10:1	15:1		
Thermal	θJC	Thermal Resistance				1.25	°C/W
	TS_{TG}	Storage Temperature & Junction Temperature		-65		200	°C

TP 2502

TRW RF DEVICES

JUNE 86

- 470MHz
- 2 WATTS
- 12.5V
- CLASS C

SOE280 STUDLESS

The TP 2502 is designed for 12.5V UHF amplifiers. Its high gain and stripline package makes it suitable for use in pocketphone applications.

This device is able to withstand an infinite VSWR at all phase angles at rated output power

Electrical Characteristics (Tcase = 25°C)

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 0.5mA	3.5			V
	BV_{CES}	Collector Emitter Breakdown Voltage	I_E = 40mA	35			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_E = 40mA	15			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 15V			1	mA
	H_{FE}	DC Current Gain	V_{CE} = 5V I_C = 200mA	15		120	-
RF Test	P_G	Power Gain	V_{CE} = 12.5V F = 470MHz Pin = 0.2W	10			dB
	VSWR	Mismatch Tolerance	V_{CE} = 12.5V F = 470MHz Pout = 2W		∞:1		
	C_{OB}	Collector Base Capacitance	V_{CB} = 15V I_E = 0 F = 1MHz		7		pF
	η %	Efficiency	V_{CE} = 12.5 Pout = 2W		50		%
Thermal	I_C	Continuous Collect Current				0.8	A
	θJC	Thermal Resistance	T_C = 25°C			12	°C/W
	T_{STG}	Storage Temperat. & Junction Temp.		-65		+200	°C
	P_D	Power Dissipation	T_C = 25°C			14.5	W

TRW Composants Electroniques S.A.

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TP 9390

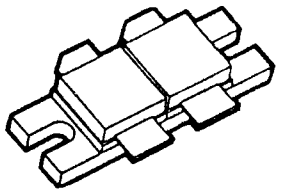
TRW RF DEVICES

PRELIMINARY

JUNE 86

FM HIGH POWER TRANSISTOR

- 250 W CLASS C - 28 Volts
- 88 - 108MHz - 11dB
- HIGH GAIN ; HIGH EFFICIENCY
- GOLD RELIABILITY



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The TP 9390 is designed for use in the new generation of VHF - FM Transmitters operating from a 24 or 28 Volts supply.
Gold metalization process and diffused ballast resistors ensure a long operation of life even when the transistor runs at its maximum ratings.

Electrical Characteristics Tcase = 25°C

	Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit.
DC Test each side	BV_{EBO}	Emitter Base Breakdown Voltage	I_E = 40mA	4			V
	BV_{CEO}	Collector Emitter Breakdown Voltage	I_C = 200mA	35			V
	BV_{CBO}	Collector Base Breakdown Voltage	I_C = 200mA	60			V
	H_{FE}	DC Current Gain	V_{CE} = 5V I_C = 2A	20		100	-
RF Test	Pout	Output Power	V_{CE} = 28V Pin = 20W Fo = 108MHz	250			W
	η_c	Collector Efficiency	V_{CE} = 28V Pout=250W Fo = 108MHz	70			%
	Cob/side	Collector Base Capacitance	V_{CB} = 28V F = 1MHz		140	150	pF
Thermal	P_D	Total Power Dissipation	Tcase = 25°C			420	W
	θ_{j-c}	Thermal Resistance Junction Case	Tcase = 70°C			.45	°C/W
	T_J	Max.Junction Temp.				+200	°C
	TS_{TG}	Storage Temperat.		-65		+200	°C