MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

TP3402

Advance Information

The RF Line

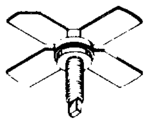
UHF Linear Power Transistor

1.6 VOLT/75 OHMS
UHF LINEAR
TRANSISTOR
NPN SILICON

The TP3402 is an NPN transistor gold metallized for reliability. It uses diffused emitter ballast resistors for linearity and ruggedness.

The transition frequency of 5 GHz makes this transistor ideal for UHF broadband linear amplification such as in high level 1.2 Volts MATV amplifiers up to 860 MHz, low power TV transposer stages or instrumentation.

- High Output — 1.6 V (DIN45004B)
- 5 GHz f_T
- High Gain — 16 dB Typ @ 500 MHz
- Gold Metallization for Reliability



CASE 244C-01, STYLE 1
(.280 SOE)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	13	Vdc
Collector-Base Voltage	V_{CBO}	24	Vdc
Emitter-Base Voltage	V_{EBO}	3.5	Vdc
Total Device Dissipation @ $T_C = 25°C$ Derate above 25°C	P_D	9.5 0.048	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	−65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	21	°C/W

ELECTRICAL CHARACTERISTICS ($T_C = 25°C$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 10$ mA, $I_B = 0$)	$V_{(BR)CEO}$	13	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 2$ mA, $I_E = 0$)	$V_{(BR)CBO}$	24	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 0.2$ mA, $I_C = 0$)	$V_{(BR)EBO}$	3.5	—	—	Vdc
Collector Cutoff Current ($V_{CE} = 9$ V, $I_B = 0$)	I_{CEO}	—	—	1.2	mAdc
ON CHARACTERISTICS					
DC Current Gain ($I_C = 100$ mA, $V_{CE} = 5$ V)	h_{FE}	70	—	190	—
DYNAMIC CHARACTERISTICS					
Output Capacitance ($V_{CB} = 10$ V, $I_E = 0$, f = 1 MHz)	C_{ob}	—	7	9	pF

(continued)

ELECTRICAL CHARACTERISTICS — continued (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
FUNCTIONAL TESTS					
Cutoff Frequency (V_{CE} = 12.5 V, I_C = 300 mA, f = 500 MHz)	f_T	4.5	5	—	GHz
Maximum Unilateral Gain (V_{CE} = 12.5 V, I_C = 300 mA, f = 500 MHz)	G_{UMAX}	15	16	—	dB
Insertion Gain (V_{CE} = 12.5 V, I_C = 300 mA, f = 500 MHz)	$\|S_{21}\|^2$	9	10.5	—	dB
Intermodulation Distortion 3 Tone — DIN45004/B (f_{vision} = 800 MHz, R_{load} = 75 Ohms, V_{CE} = 12.5 V, I_C = 300 mA, V_{out} = 1.6 V)	IMD	—	−60	−58	dB