

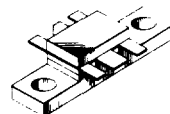
The RF Line
UHF Power Transistor

Designed for 24 Volts UHF large-signal common emitter amplifier applications in industrial and commercial FM equipment operating in the 380 to 512 MHz frequency range, i.e., cellular radio base stations.

- 380–512 MHz
- 25 W — P_{out}
- 24 V — V_{CC}
- 9.0 dB Min, Class AB

TP5025

25 W — 380–512 MHz
UHF POWER
TRANSISTOR
NPN SILICON



CASE 319-06, STYLE 2

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CER}	40	Vdc
Collector-Base Voltage	V _{CBO}	50	Vdc
Emitter-Base Voltage	V _{EBO}	3.5	Vdc
Collector-Current — Continuous	I _C	8.0	Adc
Total Device Dissipation (at T _C = 25°C Derate above 25°C)	P _D	45 0.3	Watts W/°C
Storage Temperature Range	T _{stg}	65 to -150	°C
Operating Junction Temperature	T _J	200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (1) at 70°C Case	R _{θJC}	4.0	°C/W

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (I _C = 30 mA, I _B = 0)	V _{(BR)CER}	40	—	—	Vdc
Emitter-Base Breakdown Voltage (I _C = 5.0 mA)	V _{(BR)EBO}	3.5	—	—	Vdc
Collector-Base Breakdown Voltage (I _E = 50 mA)	V _{(BR)CBO}	48	—	—	Vdc
Collector-Emitter Leakage (V _{CE} = 30 V, R _{BE} = 75 Ω)	I _{CER}	—	—	5.0	mA

NOTE: 1. Thermal resistance is determined under specified RF operating condition.

(continued)

TP5025

ELECTRICAL CHARACTERISTICS — continued ($T_C = 25\text{ C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC CHARACTERISTICS					
DC Current Gain ($I_C = 1.0\text{ A dc}, V_{CE} = 10\text{ V dc}$)	h_{FE}	15	—	100	—
DYNAMIC CHARACTERISTICS					
Output Capacitance ($V_{CB} = 24\text{ V}, I_E = 0, f = 1.0\text{ MHz}$)	C_{ob}	—	22	30	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain ($V_{CC} = 24\text{ V}, P_{out} = 25\text{ W}, I_{CQ} = 60\text{ mA}$) ($f = 470\text{ MHz}$)	G_p	9.0	10	—	dB
Collector Efficiency ($V_{CC} = 24\text{ V}, P_{out} = 25\text{ W}, f = 470\text{ MHz}$)	η_c	50	55	—	%
Load Mismatch at all Phase Angles ($V_{CC} = 24\text{ V}, P_{out} = 25\text{ W}, I_{CQ} = 60\text{ mA}$)	ψ	5:1	—	—	VSWR

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