MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

TP5025

2

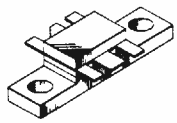
The RF Line

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

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 @ 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	$R_{\theta JC}$	4.0	°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 = 30 mA, I_B = 0)	$V_{(BR)CER}$	40	—	—	Vdc
Emitter-Base Breakdown Voltage (I_C = 5 0 mAdc)	$V_{(BR)EBO}$	3.5	—	—	Vdc
Collector-Base Breakdown Voltage (I_E = 50 mAdc)	$V_{(BR)CBO}$	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)

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

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