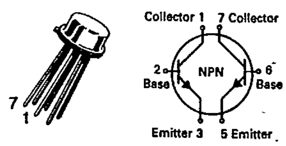
T-31-27

MD1132

CASE 654-07, STYLE 1



DUAL
RF AMPLIFIER TRANSISTOR
NPN SILICON

Refer to MD918 for graphs.

3

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V_{CEO}	15		Vdc
Collector-Base Voltage	V_{CBO}	30		Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	50		mAdc
		One Die	Both Die	
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	550 3.14	600 3.42	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.4 8.0	2.0 11.4	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	One Die	Both Die Equal Power	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	125	87.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$(1)	319	292	°C/W
		Junction to Ambient	Junction to Case	Unit
Coupling Factors		83	40	%

(1) $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(2) (I_C = 3.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	15	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 1.0 μAdc, I_E = 0)	$V_{(BR)CBO}$	30	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 15 Vdc, I_E = 0) (V_{CB} = 15 Vdc, I_E = 0, T_A = 150°C)	I_{CBO}	— —	— —	10 1.0	nAdc μAdc
ON CHARACTERISTICS					
DC Current Gain(2) (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	50	—	—	—
Collector-Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)	$V_{CE(sat)}$	—	0.2	0.4	Vdc
Base-Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)	$V_{BE(sat)}$	—	0.7	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 4.0 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)	f_T	600	800	—	—
Output Capacitance (V_{CB} = 0, I_E = 0, f = 140 kHz) (V_{CB} = 10 Vdc, I_E = 0, f = 140 kHz)	C_{obo}	— —	1.5 1.3	3.0 1.7	pF
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 140 kHz)	C_{ibo}	—	1.8	2.0	pF
MATCHING CHARACTERISTICS					
DC Current Gain Ratio(3) (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	h_{FE1}/h_{FE2}	0.9	—	1.0	—
Base-Emitter Voltage Differential (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	$\|V_{BE1}-V_{BE2}\|$	—	—	5.0	mVdc
Base-Emitter Voltage Differential Change Due to Temperature (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, T_A = −55 to +25°C) (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, T_A = +25 to +125°C)	$\Delta(V_{BE1}-V_{BE2})$	 — —	 — —	 0.8 1.0	mVdc

(2) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
(3) The lowest h_{FE} reading is taken as h_{FE1} for this ratio.