

6367255 MOTOROLA SC (DIODES/OPTO)

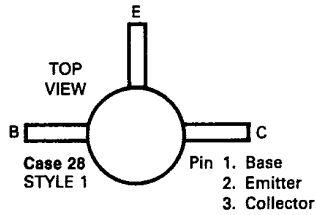
34C 38202 D

T-31-17

MICRO-T (continued)

# MMT74 — NPN

## RF AMPLIFIER TRANSISTOR



- designed for high-gain, low-noise amplifier, oscillator and mixer applications.

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	12	Vdc
Collector-Base Voltage	$V_{CB}$	20	Vdc
Emitter-Base Voltage	$V_{EB}$	3.0	Vdc
Collector Current	$I_C$	40	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	250 2.0	mW mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	0.50	$^\circ\text{C}/\text{mW}$

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Test Conditions	Min	Typ	Max	Unit
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#### OFF CHARACTERISTICS

$BV_{CEO}$	$I_C = 3.0 \text{ mAdc}, I_B = 0$	10	—	—	Vdc
$BV_{CBO}$	$I_C = 100 \mu\text{Adc}, I_E = 0$	20	—	—	Vdc
$BV_{EBO}$	$I_E = 10 \mu\text{Adc}, I_C = 0$	3.0	—	—	Vdc
$I_{CBO}$	$V_{CB} = 10 \text{ Vdc}, I_E = 0$	—	—	100	nAdc

#### ON CHARACTERISTICS

$h_{FE}$	$I_C = 3.0 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$	25	—	—	—
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#### DYNAMIC CHARACTERISTICS

$f_T$	$I_C = 4.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc},$ $f = 100 \text{ MHz}$	700	1000	—	MHz
$C_{cb}$	$V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 1.0 \text{ MHz}$	—	1.0	3.0	pF
NF	$I_C = 1.5 \text{ mAdc}, V_{CE} = 10 \text{ Vdc},$ $R_S = 50 \Omega, f = 450 \text{ MHz}$	—	4.0	—	dB

14

continued

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## FUNCTIONAL TEST

$G_{pe}$	$I_C = 1.5 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 450 \text{ MHz}$	—	14	—	dB
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FIGURE 1 — TEST CIRCUIT FOR NOISE FIGURE AND POWER GAIN

Capacitance values in pF

L1, L2 — Silver plated brass rod, 1-1/2" long and 1/4" dia. Install at least 1/2" from nearest vertical chassis surface.

L3 — 1/2" turn #16 AWG wire, located 1/4" from and parallel to L2.

① — External interlead shield to isolate collector lead from emitter and base leads.

## Neutralization Procedure:

- Connect 450-MHz signal generator (with  $R_S = 50 \text{ ohms}$ ) to input terminals of amplifier.
- Connect 50-ohm RF voltmeter across output terminals of amplifier.
- Apply  $V_{EE}$ , and with signal generator adjusted for 5 mV output from amplifier, tune C1, C3, and C4 for maximum output.
- Interchange connections to signal generator and RF voltmeter.
- With sufficient signal applied to output terminals of amplifier, adjust C2 for minimum indication at input.
- Repeat steps (A), (B), and (C) to determine if retuning is necessary.

