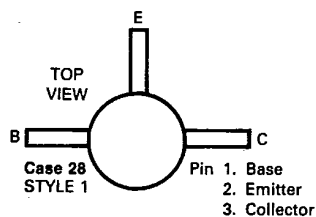


6367255 MOTOROLA SC (DIODES/OPTO)

34C 38215 D  
T-31-17

MICRO-T (continued)

**MMT2857,A** — NPN  
RF AMPLIFIER TRANSISTORS

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

**MAXIMUM RATINGS**

| Rating                                                                                | Symbol         | Value       | Unit                       |
|---------------------------------------------------------------------------------------|----------------|-------------|----------------------------|
| Collector-Emitter Voltage                                                             | $V_{CEO}$      | 15          | Vdc                        |
| Collector-Base Voltage                                                                | $V_{CB}$       | 30          | Vdc                        |
| Emitter-Base Voltage                                                                  | $V_{EB}$       | 3.0         | Vdc                        |
| Collector Current                                                                     | $I_C$          | 40          | mAdc                       |
| Total Power Dissipation @ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 250<br>2.0  | mW<br>mW/ $^\circ\text{C}$ |
| Operating and Storage Junction<br>Temperature Range                                   | $T_J, T_{stg}$ | -55 to +150 | $^\circ\text{C}$           |

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

| Parameter | Test Conditions | Min | Max | Unit |
|-----------|-----------------|-----|-----|------|
|-----------|-----------------|-----|-----|------|

**OFF CHARACTERISTICS**

|            |                                    |     |    |      |
|------------|------------------------------------|-----|----|------|
| $BV_{CEO}$ | $I_C = 3.0 \text{ mAdc}, I_B = 0$  | 15  | —  | Vdc  |
| $BV_{CBO}$ | $I_C = 10 \mu\text{Adc}, I_E = 0$  | 30  | —  | Vdc  |
| $BV_{EBO}$ | $I_E = 10 \mu\text{Adc}, I_C = 0$  | 3.0 | —  | Vdc  |
| $I_{CBO}$  | $V_{CB} = 15 \text{ Vdc}, I_E = 0$ | —   | 50 | nAdc |

**ON CHARACTERISTIC**

|          |                                                    |    |   |   |
|----------|----------------------------------------------------|----|---|---|
| $h_{FE}$ | $I_C = 3.0 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$ | 30 | — | — |
|----------|----------------------------------------------------|----|---|---|

**DYNAMIC CHARACTERISTICS**

|          |                                                                                               |          |       |     |     |
|----------|-----------------------------------------------------------------------------------------------|----------|-------|-----|-----|
| $f_T$    | $I_C = 4.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 100 \text{ MHz}$                        | MMT2857  | 1,000 | —   | MHz |
|          | $I_C = 5.0 \text{ mAdc}, V_{CE} = 6.0 \text{ Vdc}, f = 100 \text{ MHz}$                       | MMT2857A | 1,000 | —   |     |
|          | $I_C = 1.5 \text{ mAdc}, V_{CE} = 6.0 \text{ Vdc}, f = 100 \text{ MHz}$                       | MMT2857A | 750   | —   |     |
| $C_{cb}$ | $V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 0.1 \text{ to } 1.0 \text{ MHz}$                       |          | —     | 1.0 | pF  |
| NF       | $I_C = 1.5 \text{ mAdc}, V_{CE} = 6.0 \text{ Vdc}, R_S = 50 \Omega,$<br>$f = 450 \text{ MHz}$ | MMT2857A | —     | 5.0 | dB  |

**FUNCTIONAL TEST**

|          |                                                                         |          |    |   |    |
|----------|-------------------------------------------------------------------------|----------|----|---|----|
| $G_{ps}$ | $I_C = 1.5 \text{ mAdc}, V_{CE} = 6.0 \text{ Vdc}, f = 450 \text{ MHz}$ | MMT2857A | 10 | — | dB |
|----------|-------------------------------------------------------------------------|----------|----|---|----|

continued

6367255 MOTOROLA SC (DIODES/OPTO)

34C 38216 D

MICRO-T (continued) MMT2857,A (continued)

T-31-17

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:

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

