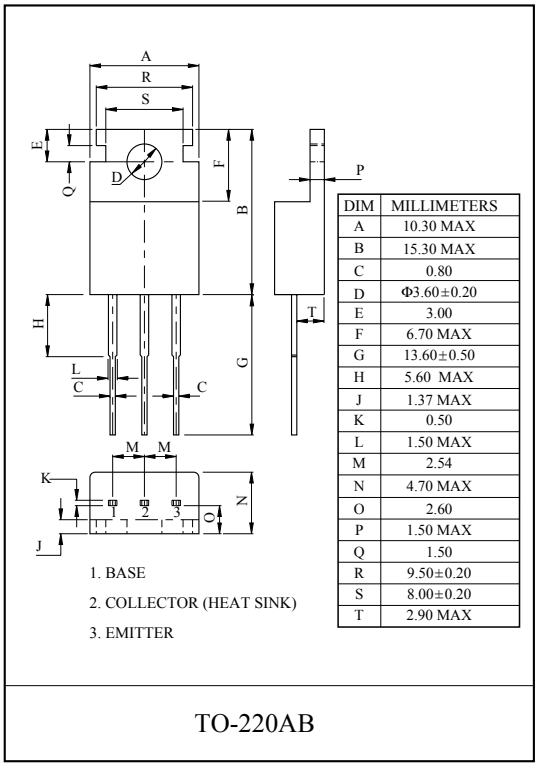
# KTC2078

**TRIPLE DIFFUSED NPN TRANSISTOR**

CB TRANSCEIVER TX FINAL AMPLIFIER APPLICATION.
HF TRANSCEIVER APPLICATION.

FEATURES

- Recommended for Output Stage Application of AM 4W Transmitter.
- High Power Gain.
- Wide Area of Safe Operation.




| DIM | MILLIMETERS |
|---|---|
| A | 10.30 MAX |
| B | 15.30 MAX |
| C | 0.80 |
| D | Φ3.60±0.20 |
| E | 3.00 |
| F | 6.70 MAX |
| G | 13.60±0.50 |
| H | 5.60 MAX |
| J | 1.37 MAX |
| K | 0.50 |
| L | 1.50 MAX |
| M | 2.54 |
| N | 4.70 MAX |
| O | 2.60 |
| P | 1.50 MAX |
| Q | 1.50 |
| R | 9.50±0.20 |
| S | 8.00±0.20 |
| T | 2.90 MAX |

TO-220AB

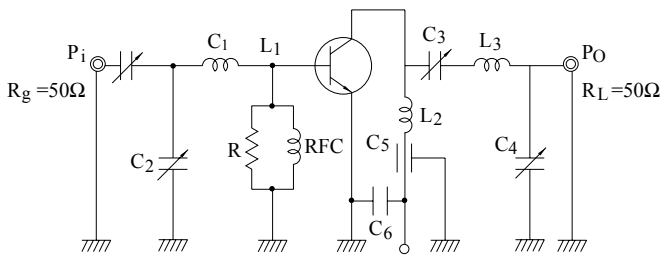
MAXIMUM RATING (Ta=25℃)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 80 | V |
| Collector-Emitter Voltage ($R_{BE}$=50Ω) | $V_{CER}$ | 80 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 4 | V |
| Collector Current | $I_C$ | 4 | A |
| Emitter Current | $I_E$ | -4 | A |
| Collector Power Dissipation (Tc=25℃) | $P_C$ | 10 | W |
| Junction Temperature | $T_j$ | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | -55～150 | ℃ |

ELECTRICAL CHARACTERISTICS (Ta=25℃)

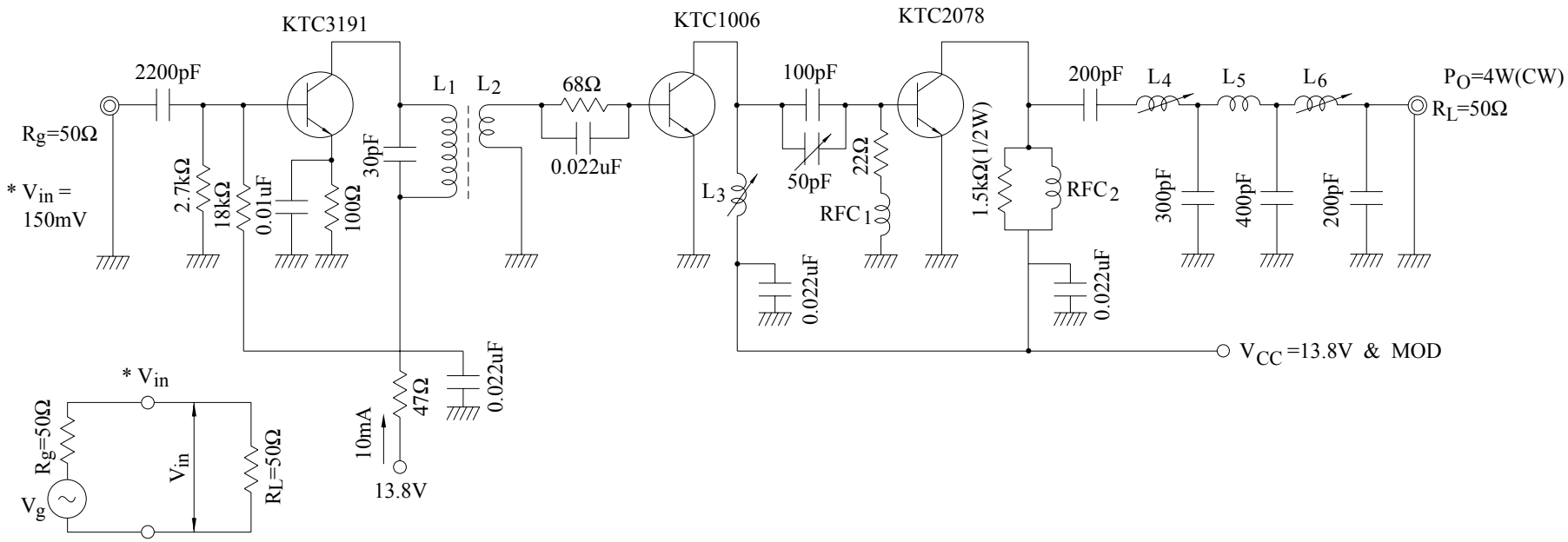
| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Collector Cut-off Current | | $I_{CBO}$ | $V_{CB}$=30V, $I_E$=0 | - | - | 10 | μA |
| Breakdown Voltage | Collector-Emitter | $V_{(BR)CER}$ | $I_C$=10mA, $R_{BE}$=50Ω | 80 | - | - | V |
| | Emitter-Base | $V_{(BR)EBO}$ | $I_E$=1.0mA, $I_C$=0 | 4 | - | - | V |
| DC Current Gain | | $h_{FE}$ | $V_{CE}$=5V, $I_C$=0.5A | 100 | - | 200 | |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | $I_C$=3A, $I_B$=0.3A | - | - | 1.5 | V |
| Transition Frequency | | $f_T$ | $V_{CE}$=5V, $I_C$=500mA | 100 | - | - | MHz |
| Collector Output Capacitance | | $C_{ob}$ | $V_{CB}$=10V, $I_E$=0, f=1MHz | - | 40 | - | pF |
| Output Power (Fig.1) | | $P_o$ | $V_{CC}$=12V, $P_i$=0.3W, f=27MHz | 4 | - | | W |

Fig. 1 $P_O$ TEST CIRCUIT




$C_1$: ～100pF, $C_2$,$C_3$: ～150pF, $C_4$: ～300pF, $C_5$:1000pF
$C_6$:0.01μF, R:250Ω
$L_1$:0.8mm ϕ UEW,7T,8mm I.D $L_2$:0.8mm ϕ UEW,5T,8mm I.D
$L_3$:0.8mm ϕ UEW,10T,8mm I.D RFC:0.35mm ϕ UEW,17T,5mm I.D

Fig.2 27MHz 4W OUTPUT AM TRANSCEIVER CIRCUIT




$L_1$ : 4mmΦ BOBBIN WITH FERRITE CORE, 0.08mmΦ UEW, 8 TURNS

$L_2$ : 4mmΦ BOBBIN WITH FERRITE CORE, 0.08mmΦ UEW, 2 TURNS

$L_3$ , $L_6$ : 6.5mmΦ BOBBIN WITH FERRITE CORE, 0.6mmΦ Sn PLATED COPPER WIRE $6\frac{1}{2}$ TURNS

$L_4$ : 6.5mmΦ BOBBIN WITH FERRITE CORE, 0.6mmΦ Sn PLATED COPPER WIRE $8\frac{1}{2}$ TURNS

$L_5$ : 0.6mmΦ Sn PLATED COPPER WIRE, 6.5mm I.D, $8\frac{1}{2}$ TURNS

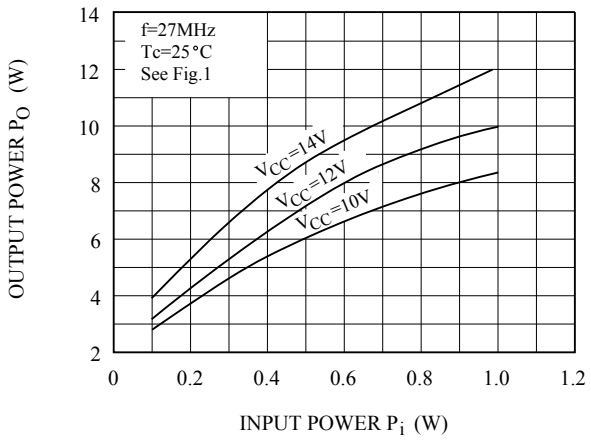
$RFC_1$ : 4.7uH, 7BA-480k (TOKO)

$RFC_2$ : 0.2mmΦ UEW, 30 TURNS

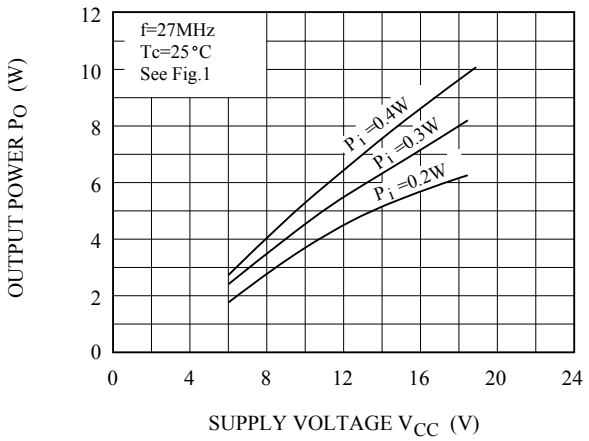
RESISTOR : 1/4W CARBON

CAPACITOR : CERAMIC

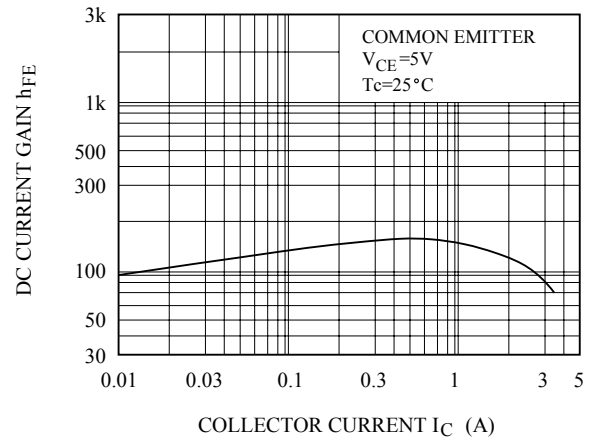
$P_O$ - $P_i$



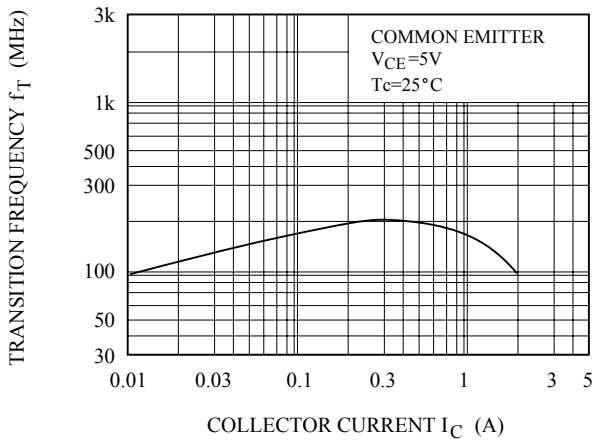

$P_O$ - $V_{CC}$



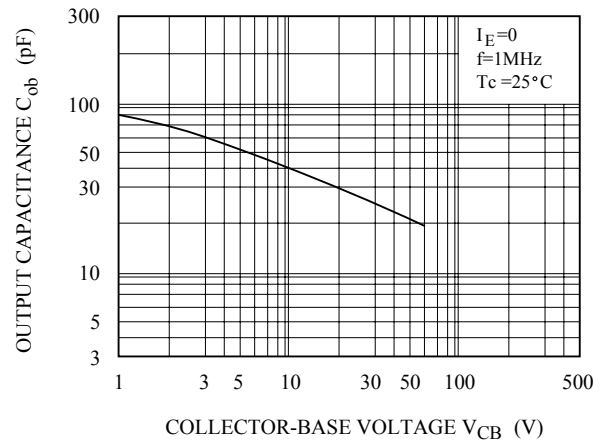

$h_{FE}$ - $I_C$



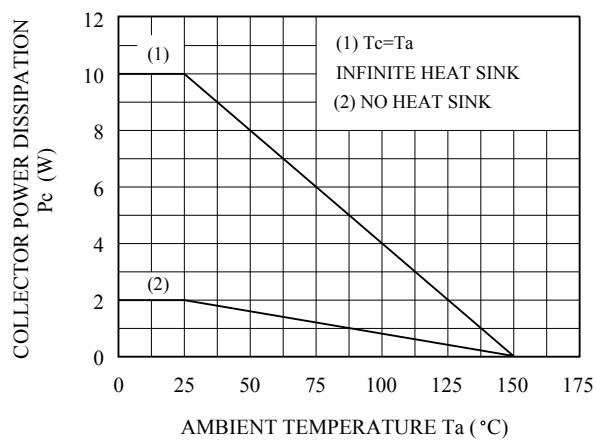

$f_T$ - $I_C$



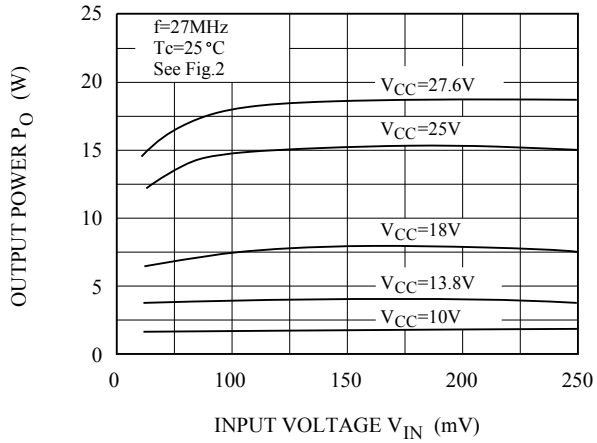

$C_{ob}$ - $V_{CB}$



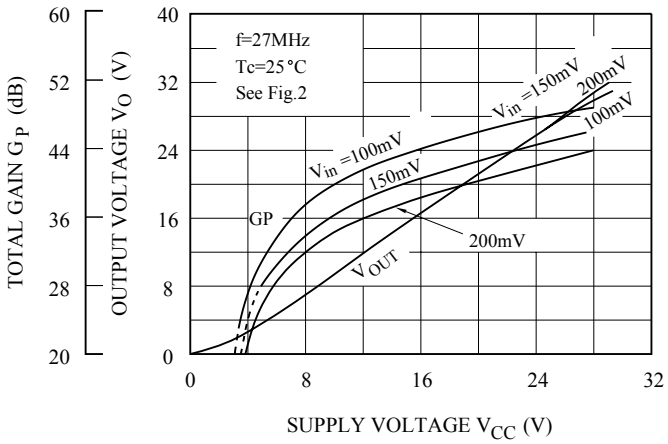

Pc - Ta



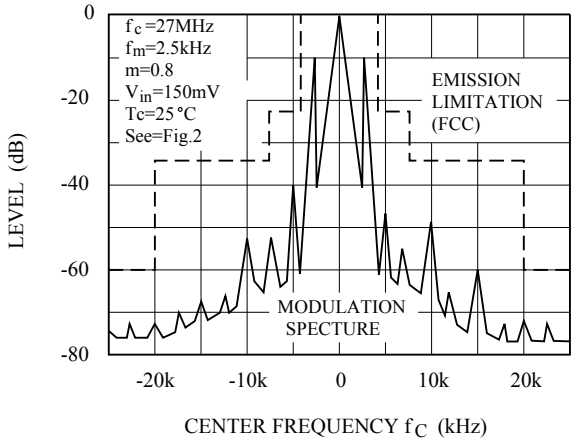
$P_O$ - $V_{IN}$




$V_O$ ,$G_P$ - $V_{CC}$




80% MODULATION SPECTRUM
EMISSION LIMITATION (FCC)




85% MODULATION SPECTRUM
EMISSION LIMITATION (FCC)