

SILICON NPN EPITAXIAL PLANAR TYPE

# 2SC2178

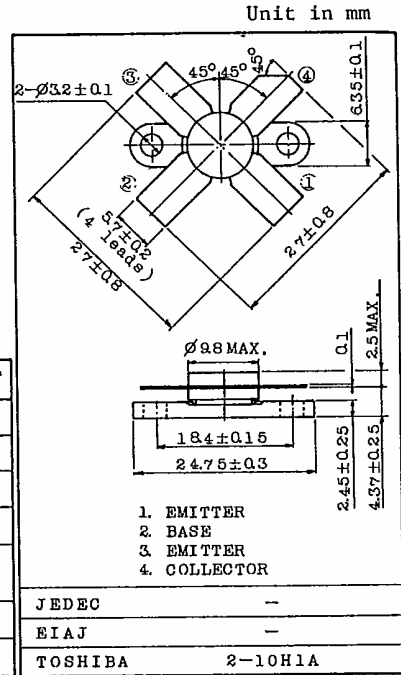
VHF BAND POWER AMPLIFIER APPLICATIONS.

**FEATURES :**

- . Output Power :  $P_o=15W$  (Min.)  
(  $f=175MHz$ ,  $V_{CC}=12.5V$ ,  $P_i=1.3W$  )
- . 100% Tested for Load Mismatch Stress at All Phase Angles with 30:1 VSWR @  $V_{CC}=15V$ ,  $P_i=1.3W$ ,  $f=175MHz$

**MAXIMUM RATINGS ( $T_a=25^\circ C$ )**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	35	V
Collector-Emitter Voltage	$V_{CEO}$	18	V
Emitter-Base Voltage	$V_{EBO}$	3.5	V
Collector Current	$I_C$	3.5	A
Collector Power Dissipation ( $T_c=25^\circ C$ )	$P_C$	35	W
Junction Temperature	$T_j$	175	$^\circ C$
Storage Temperature Range	$T_{stg}$	-65 ~ 175	$^\circ C$



Weight : 4.0g

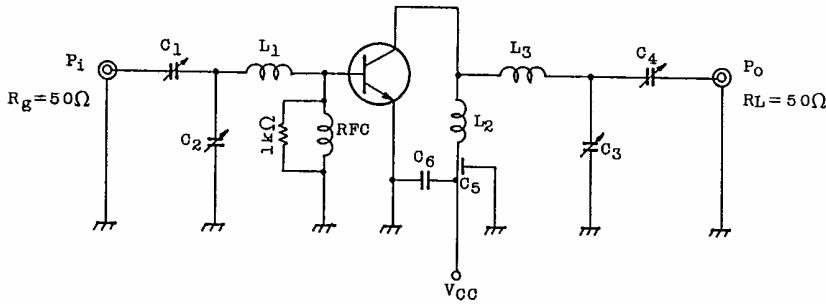
**ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ C$ )**

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=15V$ , $I_E=0$	-	-	1.0	mA
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10mA$ , $I_E=0$	35	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=25mA$ , $I_B=0$	18	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA$ , $I_C=0$	3.5	-	-	V
DC Current Gain	$h_{FE}$	$V_{CE}=5V$ , $I_C=1A$	10	-	-	
Collector Output Capacitance	$C_{ob}$	$V_{CB}=10V$ , $I_E=0$ , $f=1MHz$	-	-	80	pF
Output Power	$P_o$	(Fig.)	15	18	-	W
Power Gain	$G_{pe}$	$V_{CC}=12.5V$ , $f=175MHz$ ,	10.6	11.4	-	dB
Collector Efficiency	$\eta_c$	$P_i=1.3W$	60	72	-	%
Series Equivalent Input Impedance	$Z_{in}$	$V_{CC}=12.5V$ , $f=175MHz$ ,	-	1.25 +j0.6	-	$\Omega$
Series Equivalent Output Impedance	$Z_{OUT}$	$P_o=15W$	-	4.9 -j3.0	-	$\Omega$

TOHIBA CORPORATION

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Fig. P<sub>o</sub> TEST CIRCUIT



- C<sub>1</sub> : ~20pF
- C<sub>2</sub>, C<sub>3</sub>, C<sub>4</sub> : ~30pF
- C<sub>5</sub> : 1000pF FEED THROUGH
- C<sub>6</sub> : 0.01μF CERAMIC CONDENSER
- L<sub>1</sub>, L<sub>3</sub> : φ1 SILVER PLATED COPPER WIRE, 6ID, 1T
- L<sub>2</sub> : φ1 SILVER PLATED COPPER WIRE, 6ID, 2T
- RFC : φ1 ENAMEL COATED COPPER WIRE, 6ID, 3T

