

# SILICON HIGH SPEED POWER TRANSISTOR

## 2SA 1078

### SILICON PNP RING EMITTER TRANSISTOR (RET)

September 1979

The 2SA1078 is a silicon PNP general purpose, medium power transistor fabricated with Fujitsu's unique Ring Emitter Transistor (RET) technology. RET devices are constructed with multiple emitters connected through diffused ballast resistors which provide uniform current density. This structure permits the design of medium power transistors with exceptional frequency response in high current applications.

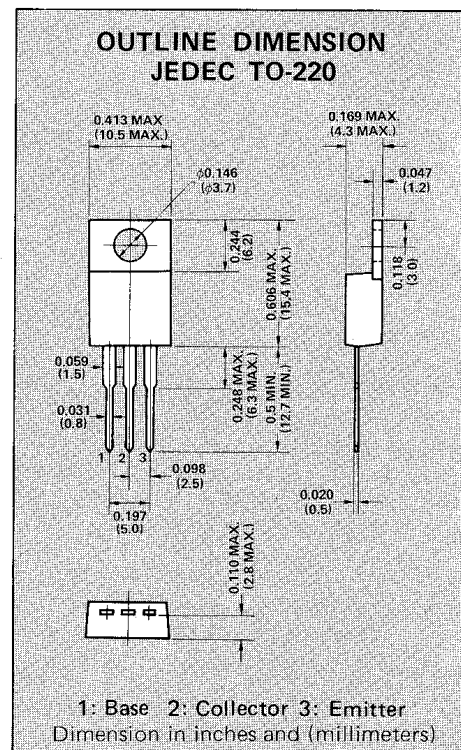
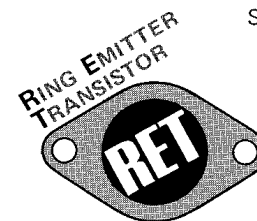
The 2SA1078 is especially well-suited for High frequency power amplifiers, Audio power amplifiers and drivers.

A NPN complement, 2SC2528, is available.

- High  $f_T = 140$  MHz (typ)
- Excellent Safe Operating Area
- Improved reverse Second-Breakdown Capability
- Excellent Current Gain Linearity

### ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector to Base Voltage	$V_{CBO}$	120	V
Emitter to Base Voltage	$V_{EBO}$	5	V
Collector to Emitter Voltage	$V_{CEO}$	120	V
Collector Current	$I_C$	2	A
Collector Power Dissipation ( $T_C = 25^\circ\text{C}$ )	$P_C$	25	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-65 \sim +150$	$^\circ\text{C}$



### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 120\text{V}, I_E = 0$	—	—	1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$	—	—	1	$\mu\text{A}$
Collector Cutoff Current	$I_{CEO}$	$V_{CE} = 120\text{V}, I_B = 0$	—	—	100	$\mu\text{A}$
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1\mu\text{A}, I_E = 0$	120	—	—	V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1\mu\text{A}, I_C = 0$	5	—	—	V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}, R_{BE} = \infty$	120	—	—	V
DC Current Gain	$h_{FE1}$	$V_{CE} = 5\text{V}, I_C = 0.3\text{A}^*$	60	—	350	
DC Current Gain	$h_{FE2}$	$V_{CE} = 5\text{V}, I_C = 0.7\text{A}^*$	50	—	—	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 0.7\text{A}, I_B = 0.07\text{A}^*$	—	0.45	1.0	V
Base to Emitter Voltage	$V_{BE}$	$V_{CE} = 5\text{V}, I_C = 0.7\text{A}^*$	—	0.8	1.7	V
Gain-Bandwidth Product	$f_T$	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 10\text{MHz}$	—	140	—	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 20\text{V}, I_E = 0, f = 1\text{MHz}$	—	100	—	pF

\* Pulsed: Pulse Width  $\leq 300\mu\text{s}$   
Duty Cycle  $\leq 6\%$