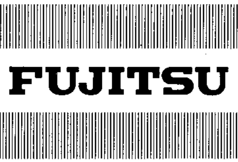
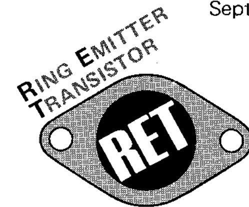


SILICON HIGH SPEED POWER TRANSISTOR

2SC 2522 2SC 2523

September 1979

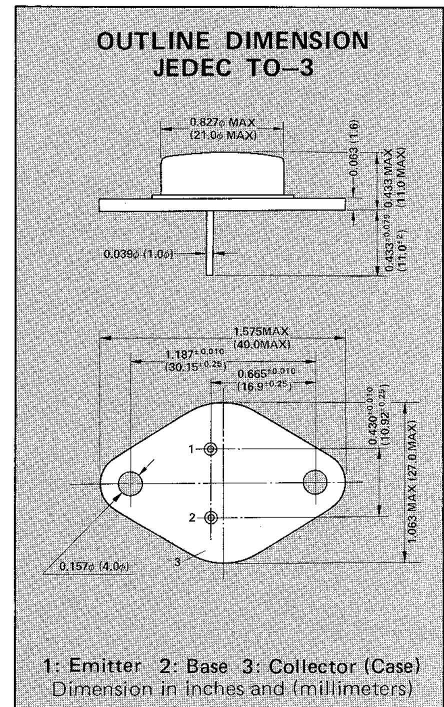
SILICON NPN RING EMITTER TRANSISTOR (RET)



The 2SC 2522/2SC 2523 are silicon NPN general purpose, high power switching transistors 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 high power transistors with exceptional switching characteristics and frequency response in high current applications.

The 2SC 2522/2SC 2523 are especially well-suited for High frequency power amplifiers, Audio power amplifiers, Switching regulators and DC-DC Converters. PNP complements, 2SA 1072/2SA 1073, are available.

- High f_T = 80 MHz (typ)
- Ultra fast switching speed
- Excellent Safe Operating Area
- Improved reverse Second-Breakdown Capability



ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value 2SC 2522	Value 2SC 2523	Unit
Collector to Base Voltage	V_{CBO}	120	160	V
Emitter to Base Voltage	V_{EBO}	7	7	V
Collector to Emitter Voltage	V_{CEO}	120	160	V
Collector Current	I_C	12	12	A
Collector Power Dissipation (T_C = 25°C)	P_C	120	120	W
Junction Temperature	T_j	+150		°C
Storage Temperature Range	T_{stg}	-65 ~ +150		°C

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

Parameter	Symbol	Test Conditions		2SC 2522 Min.	2SC 2522 Typ.	2SC 2522 Max.	2SC 2523 Min.	2SC 2523 Typ.	2SC 2523 Max.	Unit
Collector Cutoff Current	I_{CBO}	V_{CB} = 120V/160V, I_E = 0		–	–	50/–	–	–	–/50	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 7V, I_C = 0		–	–	50			50	μA
Collector Cutoff Current	I_{CEO}	V_{CE} = 120V/160V, R_{BE} = ∞		–	–	1/–	–	–	–/1	mA
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 50μA, I_E = 0		120	–	–	160	–	–	V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 50μA, I_C = 0		7	–	–	7	–	–	V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, R_{BE} = ∞		120	–	–	160	–	–	V
DC Current Gain	h_{FE1}	V_{CE} = 5V, I_C = 1A	*	60	–	200	60	–	200	
DC Current Gain	h_{FE2}	V_{CE} = 5V, I_C = 7A	*	40	–	–	40	–	–	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 5A, I_B = 0.5A	*	–	0.7	1.8	–	0.7	1.8	V
Base to Emitter Voltage	V_{BE}	V_{CE} = 5V, I_C = 5A	*	–	1.25	1.7	–	1.25	1.7	V
Gain-Bandwidth Product	f_T	V_{CE} = 10V, I_C=1A, f = 10MHz		50	80	–	50	80	–	MHz
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E=0, f = 1MHz		–	180	300	–	180	300	pF
Rise Time	t_r	I_C = 7.5A, R_L = 4Ω, I_{B1} = $-I_{B2}$ = 0.75A		–	0.3	–	–	0.3	–	μs
Storage Time	t_{stg}			–	1.3	–	–	1.3	–	μs
Fall Time	t_f			–	0.2	–	–	0.2	–	μs

* Pulsed: Pulse Width ≦ 300μs
Duty Cycle ≦ 6%