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Edition 1.1

FUJITSU

PRODUCT PROFILE

2SC2522, 2C2522A, 2C2523
Silicon High Speed Power Transistor

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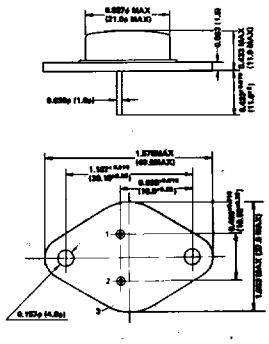
DESCRIPTION

The 2SC2522/2SC2522A/2SC2523 are silicon NPN general purpose, high power switching transistors fabricated with Fujitsu's unique Ring Emitter Transitor (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 2SC2522/2SC2522A/2SC2523 are especially well-suited for high frequency power amplifiers, audio power amplifiers, switching regulators and DC-DC converters. PNP complements, 2SA1072/2SA1072A/2SA1073, are available.

- High f_T = 80 MHz (typ)
- Ultra fast switching speed
- Excellent safe operating area
- Improved reverse second-breakdown capability

OUTLINE DIMENSION
JEDEC TO–3



1: Emitter 2: Base 3: Collector (Case)
Dimension in inches and (millimeters)

ABSOLUTE MAXIMUM RATINGS

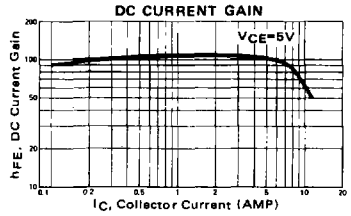
Rating	Symbol	Value			Unit
		2SC2522	2SC2522A	2SC2523	
Collector to Base Voltage	V_{CBO}	120	150	160	V
Emitter to Base Voltage	V_{EBO}	7	7	7	V
Collector to Emitter Voltage	V_{CEO}	120	150	160	V
Collector Current	I_C	12	12	12	A
Collector Power Dissipation (T_C = 25°C)	P_C	120	120	120	W
Junction Temperature	T_j	+150			°C
Storage Temperature Range	T_{stg}	–65 to +150			°C

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

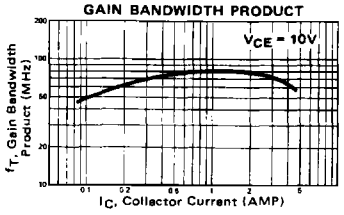
Parameter	Symbol	Test Conditions	Limits						Unit
			2SC2522/2SC2522A			2SC2523			
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Collector Cutoff Current	I_{CBO}	V_{CB} = 120V/160V, I_E = 0	—	—	50/–	—	—	–/50	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 7 V, I_C = 0	—	—	50	—	—	50	μA
Collector Cutoff Current	I_{CEO}	V_{CE} = 120V/160V, R_{BE} = ∞	—	—	1/–	—	—	–/1	mA
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 50 μA, I_E = 0	120 150†	—	—	160	—	—	V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 50 μA, I_C = 0	7	—	—	7	—	—	V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1 mA, R_{BE} = ∞	120 150†	—	—	160	—	—	V
DC Current Gain	h_{FE1}	V_{CE} = 5 V, I_C = 1 A*	60	—	200	60	—	200	
DC Current Gain	h_{FE2}	V_{CE} = 5 V, I_C = 7 A*	40	—	—	40	—	—	—
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 5 A, I_B = 0.5 A*	—	0.7	1.8	—	0.7	1.8	V
Base to Emitter Voltage	V_{BE}	V_{CE} = 5 V, I_C = 5 A*	—	1.25	1.7	—	1.25	1.7	V
Gain-Bandwidth Product	f_T	V_{CE} = 10 V, I_C = 1 A, f = 10MHz	50	80	—	50	80	—	MHz
Output Capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1MHz		180	300	—	180	300	pF
Rise Time	t_r	I_C = 7.5 A, R_L = 4Ω I_{B1} = –I_{B2} = 0.75 A	—	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%
† For 2SC2522A only

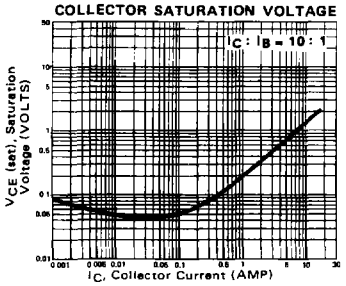
DC CURRENT GAIN



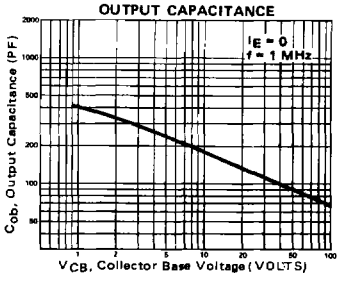
GAIN BANDWIDTH PRODUCT



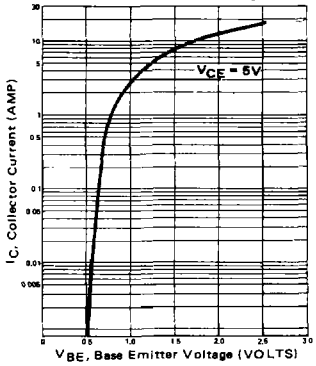
COLLECTOR SATURATION VOLTAGE



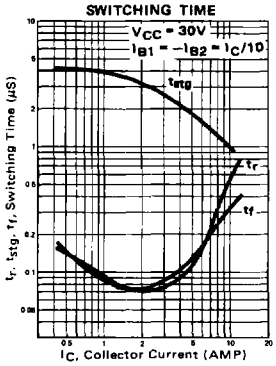
OUTPUT CAPACITANCE



TRANSFER CHARACTERISTICS



SWITCHING TIME



SAFE OPERATING AREAS