FUJITSU

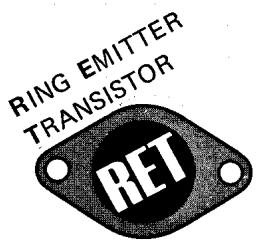
SILICON HIGH SPEED POWER TRANSISTORS

2SC2429

Preliminary Specification October 1979

SILICON NPN RING EMITTER TRANSISTOR (RET)

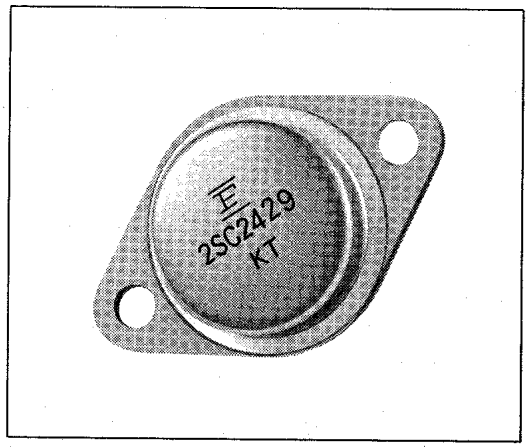
The 2SC2429 is a silicon NPN planer general purpose, high power switching transistor fabricated with Fujitsu's unique Ring Emitter Transistor (RET) technology. RET devices are constructed with multiple emitters connected through diffused ballast resistors which provide uniform current density. This structure permits the design of high power transistors with superior switching characteristics and frequency response in high current applications.



The 2SC2429 is especially well-suited for high speed/high voltage switching systems or other applications where large SOA is required.

Features

- ★ High voltage $V_{CEO\,(SUS)}$ = 400 V
- ★ Continuous collector current I_C = 15 A
- ★ Ultra-fast switching ..... t_r = 150 nsec, t_s = 1200 nsec, t_f = 100 nsec
- ★ Large safe operating area
  $V_{CEX\,(SUS)}$ = 450 V @ 8 A
- ★ High f_T = 35 MHz



Applications

—— High speed switching
- ★ Converters and inverters
- ★ Class C and D amplifiers

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector to Emitter Voltage	V_{CEO}	400	V
Collector to Base Voltage	V_{CBO}	450	V
Emitter to Base Voltage	V_{EBO}	7	V
Collector Current-Continuous	I_C	15	A
Collector Current-Pulse	I_C	20	A
Base Current-Continuous	I_B	5	A
Collector Power Dissipation (T_C = 25 °C)	P_C	150	W
Junction Temperature	T_j	+175	°C
Storage Temperature Range	T_{stg}	−65 ~ +175	°C

FUJITSU

2SC2429 SILICON HIGH SPEED POWER TRANSISTORS

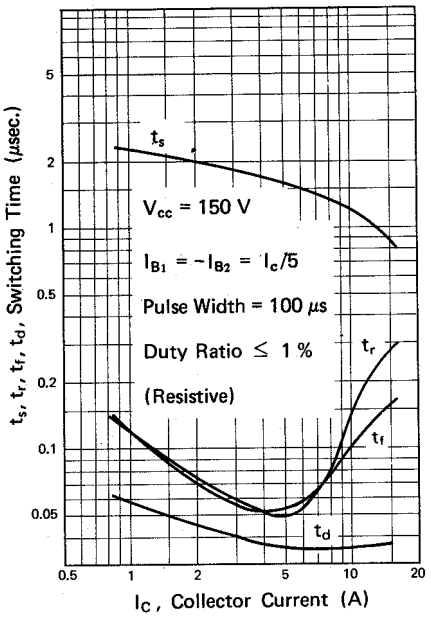
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Collector to Emitter Breakdown Voltage	$V_{CEO(sus)}$	I_C = 1 A, R_{BE} = ∞	400	–	–	V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E = 1 mA, I_C = 0	7	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 450 V, I_E = 0	–	–	100	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 6 V, I_C = 0	–	–	100	μA
DC Current Gain	h_{FE}*	V_{CE} = 5 V, I_C = 10 A	10	15	40	–
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$*	I_C = 10 A, I_B = 2 A	–	0.45	1.0	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$*		–	1.2	2.0	V
Gain-Bandwidth Product	f_T	V_{CE} = 10 V, I_C = 2 A, f = 10 MHz	–	35	–	MHz
Output Capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	–	230	–	pF
Rise Time	t_r	V_{CC} = 150 V I_C = 10 A I_{B1} = −I_{B2} = 2 A	–	0.15	0.5	μs
Storage Time	t_{stg}		–	1.20	2.5	μs
Fall Time	t_f		–	0.10	0.3	μs
Collector to Emitter Breekdown Voltage	$V_{CEX(SUS)}$	I_C = 8A, I_{B2} = −1A, L = 200μH Pulsed, Clamped	450	–	–	V

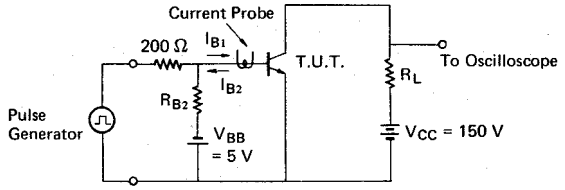
* Pulsed: Pulse width ≤ 300 μs
Duty ratio ≤ 6 %

TYPICAL CHARACTERISTICS (T_a = 25 °C)

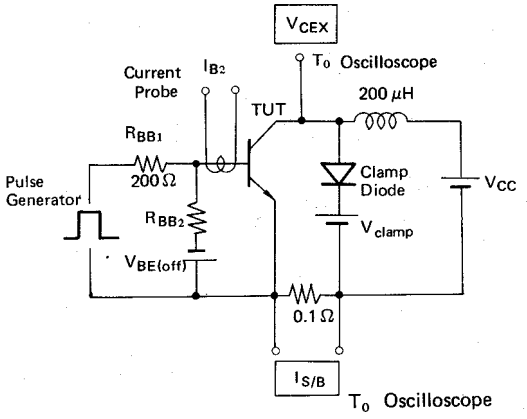
Switching Time



Test Circuit used for Measurement of Switching Time

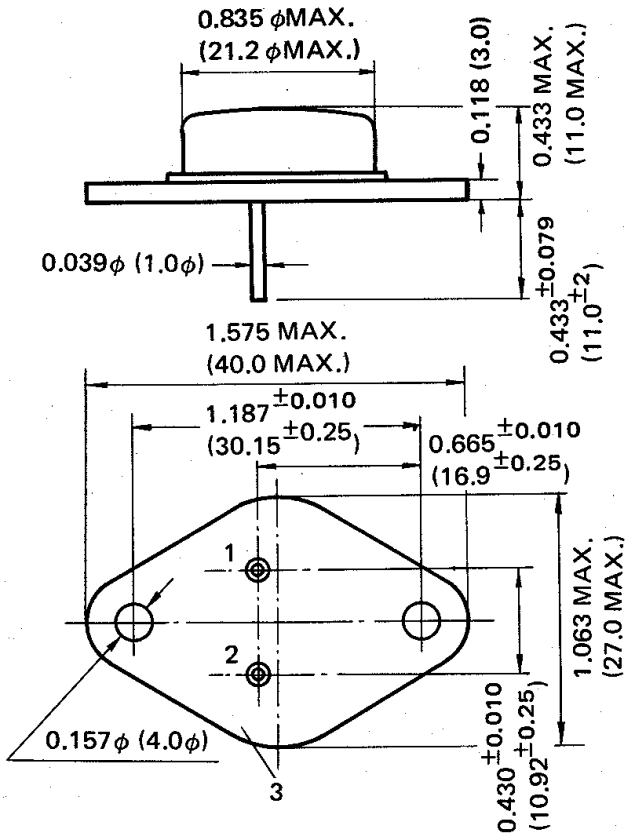


Test Circuit used for Measurement of Reverse Bias SOA and $V_{CEX\ (SUS)}$



FUJITSU **2SC2429 SILICON HIGH SPEED POWER TRANSISTORS**

OUTLINE DIMENSION
JEDEC TO–3



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