

PNP SILICON POWER TRANSISTORS 2SA1009, 2SA1009A

DESCRIPTION The 2SA1009, 2SA1009A are PNP triple diffused transistors designed for switching regulator, DC-DC converter and high frequency power amplifier application.

- FEATURES**
- Low Collector Saturation Voltage.
 - High Speed Switching.
 - Wide Reverse Bias Safe Operating Area.

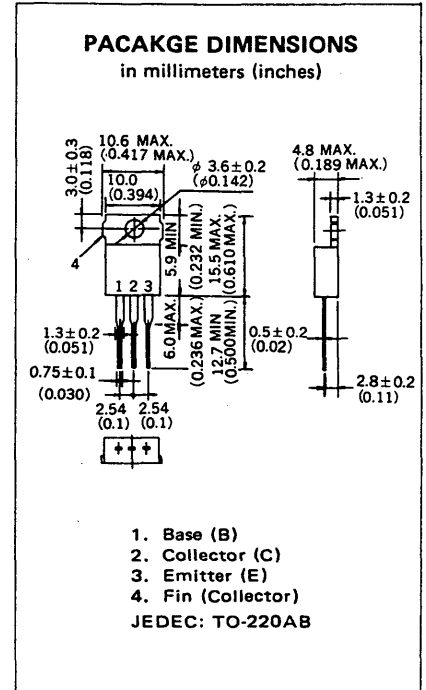
ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures
 Storage Temperature -55 to +150 °C
 Junction Temperature 150 °C Maximum
 Maximum Power Dissipation (T_c = 25 °C)
 Total Power Dissipation 15 W
 Maximum Voltages and Currents (T_a = 25 °C)

2SA1009/2SA1009A

V _{CB0}	Collector to Base Voltage	-350/ -400	V
V _{CEO}	Collector to Emitter Voltage . . .	-350/ -400	V
V _{EBO}	Emitter to Base Voltage	-7.0	V
I _{C(DC)}	Collector Current (DC)	-2.0	A
I _{C(pulse)}	Collector Current (pulse)*	-4.0	A
I _{B(DC)}	Base Current (DC)	-1.0	A

* PW ≤ 300 μs, Duty Cycle ≤ 10 %



ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT.	TEST CONDITIONS
t _{on}	Turn-on Time			1.0	μs	(I _C = -0.3 A, I _{B1} = -I _{B2} = -60 mA R _L = 500 Ω, V _{CC} = -150 V)
t _{stg}	Storage Time			2.5	μs	
t _f	Fall Time			1.0	μs	
h _{FE1}	DC Current Gain**	20		200	-	V _{CE} = -5.0 V, I _C = -0.1 A
h _{FE2}	DC Current Gain**	10			-	V _{CE} = -5.0 V, I _C = -0.3 A
V _{CE(sat)}	Collector Saturation Voltage**			-1.0	V	I _C = -0.3 A, I _B = -60 mA
V _{BE(sat)}	Base Saturation Voltage**			-1.2	V	I _C = -0.3 A, I _B = -60 mA
V _{CEO(SUS)}	Collector to Emitter Sustaining Voltage	-350/-400			V	I _C = -0.3 A, I _B = -60 mA, L = 1 mH
V _{CEX(SUS)1}	Collector to Emitter Sustaining Voltage	-350/-400			V	I _C = -0.3 A, I _{B1} = -I _{B2} = -60 mA, L = 180 μH, Clamped
V _{CEX(SUS)2}	Collector to Emitter Sustaining Voltage	-350/-400			V	I _C = -0.6 A, I _{B1} = -0.2 A, -I _{B2} = 60 mA, L = 180 μH, Clamped
I _{CB0}	Collector Cutoff Current			-10	μA	V _{CB} = -350/-400 V, I _E = 0
I _{CER}	Collector Cutoff Current			-1.0	mA	V _{CE} = -350/-400 V, R _{BE} = 51 Ω, T _a = 125 °C
I _{CEX1}	Collector Cutoff Current			-10	μA	V _{CE} = -350/-400 V, V _{BE(OFF)} = 1.5 V
I _{CEX2}	Collector Cutoff Current			-1.0	mA	V _{CE} = -350/-400 V, V _{BE(OFF)} = 1.5 V, T _a = 125 °C
I _{EBO}	Emitter Cutoff Current			-10	μA	V _{EB} = -5.0 V, I _C = 0

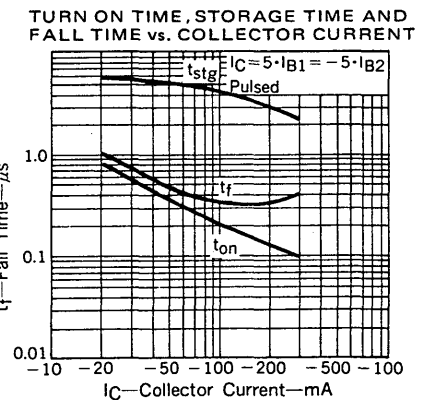
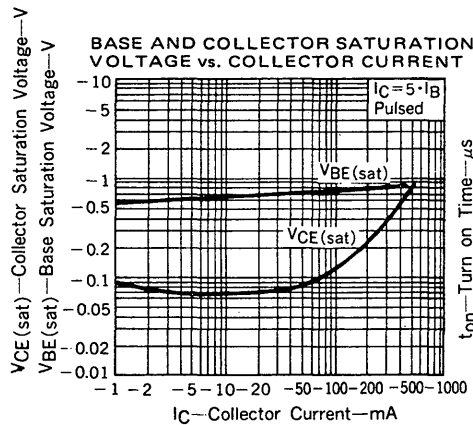
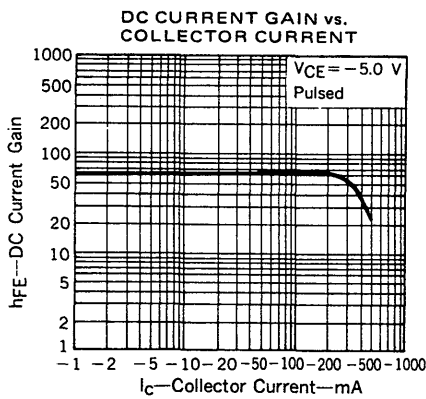
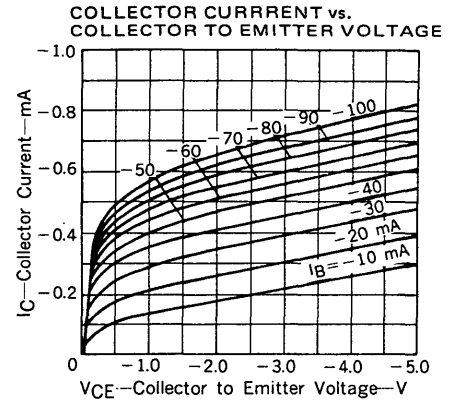
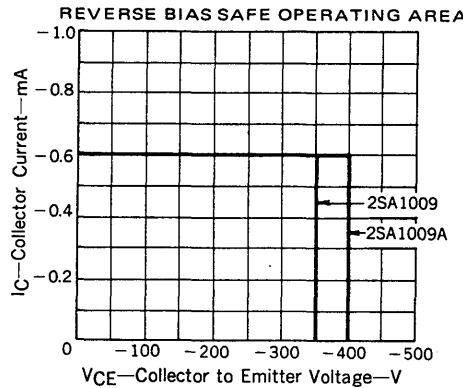
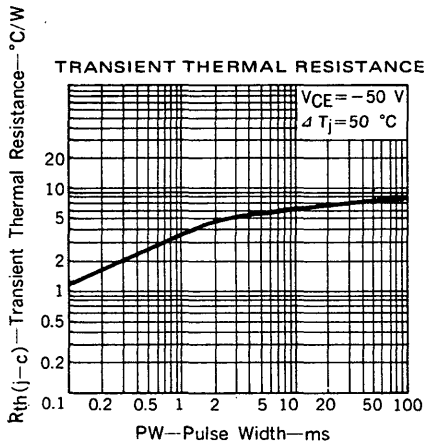
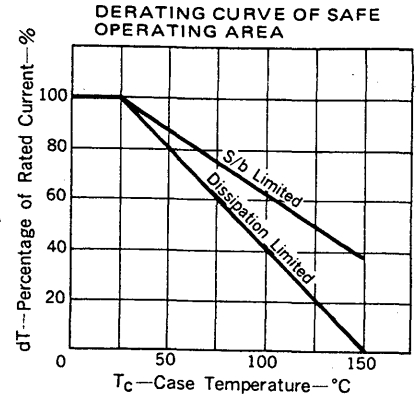
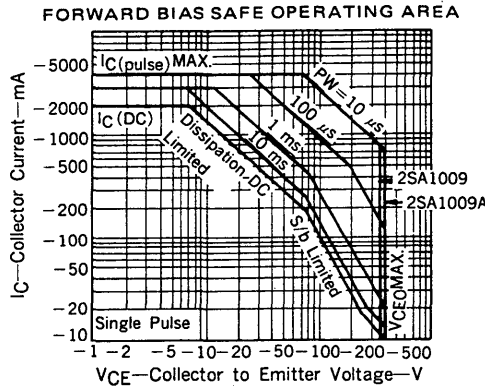
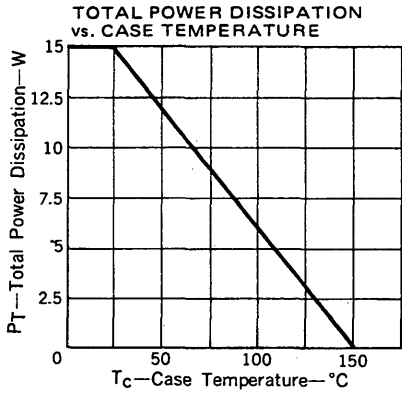
**PW ≤ 350 μs, Duty Cycle ≤ 2 %

Classification of h_{FE1}

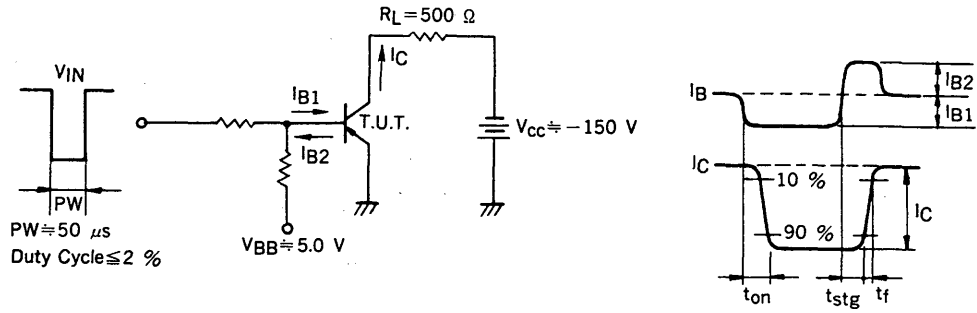
Rank	M	L	K	J	H
Range	20 to 40	30 to 60	40 to 80	60 to 120	100 to 200

Test Conditions: V_{CE} = -5.0 V, I_C = -0.1 A

TYPICAL CHARACTERISTICS (T_a = 25 °C)



SWITCHING TIME (t_{on} , t_{stg} , t_f) TEST CIRCUIT



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Datasheets for electronic components.