

SILICON POWER TRANSISTOR 2SA1010

PNP SILICON EPITAXIAL TRANSISTOR FOR HIGH-VOLTAGE HIGH-SPEED SWITCHING

The 2SA1010 is a mold power transistor developed for high-voltage high-speed switching, and is ideal for use as a driver in devices such as switching regulators, DC/DC converters, and high-frequency power amplifiers.

FEATURES

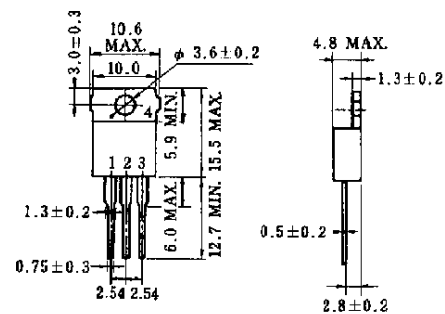
- Low collector saturation voltage
- Fast switching speed
- Complementary transistor: 2SC2334

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	-100	V
Collector to emitter voltage	V_{CEO}	-100	V
Emitter to base voltage	V_{EBO}	-7.0	V
Collector current (DC)	$I_{C(DC)}$	-7.0	A
Collector current (pulse)	$I_{C(pulse)}^*$	-15	A
Base current (DC)	$I_{B(DC)}$	-3.5	A
Total power dissipation	$P_T (T_C = 25\text{ }^\circ\text{C})$	40	W
Total power dissipation	$P_T (T_a = 25\text{ }^\circ\text{C})$	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

* $PW \leq 300\ \mu s$, duty cycle $\leq 10\%$

PACKAGE DRAWING (UNIT: mm)



Pin Connection

1. Base
2. Collector
3. Emitter
4. Fin (Collector)

EIAJ : SC-46
JEDEC : TO-220AB
IEC : —

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

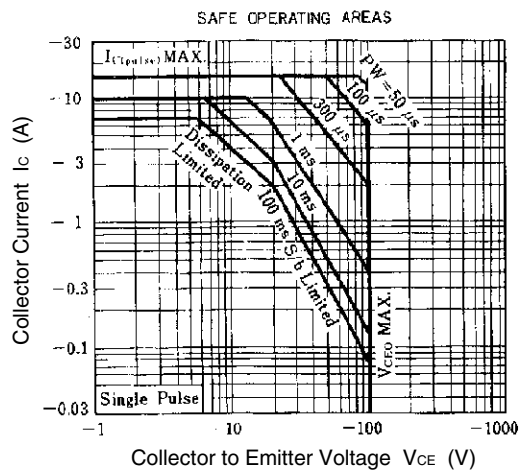
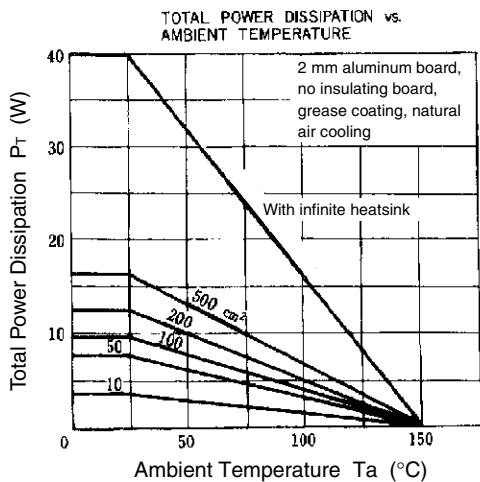
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	V _{CE0(SUS)}	I _c = -5.0 A, I _{B1} = -0.5 A, L = 1 mH	-100			V
Collector to emitter voltage	V _{CEX(SUS)1}	I _c = -5.0 A, I _{B1} = -I _{B2} = -0.5 A, V _{BE(OFF)} = 5.0 V, L = 180 μH, clamped	-100			V
Collector to emitter voltage	V _{CEX(SUS)2}	I _c = -10 A, I _{B1} = -1.0 A, I _{B2} = -0.5 A, V _{BE(OFF)} = 5.0 V, L = 180 μH, clamped	-100			V
Collector cutoff current	I _{CBO}	V _{CB} = -100 V, I _E = 0			-10	μA
Collector cutoff current	I _{CER}	V _{CE} = -100 V, R _{BE} = 51 Ω, Ta = 125 °C			-1.0	mA
Collector cutoff current	I _{CEx1}	V _{CE} = -100 V, V _{BE(OFF)} = 1.5 V			-10	μA
Collector cutoff current	I _{CEx2}	V _{CE} = -100 V, V _{BE(OFF)} = 1.5 V, Ta = 125 °C			-1.0	mA
Emitter cutoff current	I _{EBO}	V _{EB} = -5.0 V, I _c = 0			-10	μA
DC current gain	h _{FE1}	V _{CE} = -5.0 V, I _c = -0.5 A*	40		200	
DC current gain	h _{FE2}	V _{CE} = -5.0 V, I _c = -3.0 A*	40		200	
DC current gain	h _{FE3}	V _{CE} = -5.0 V, I _c = -5.0 A*	20			
Collector saturation voltage	V _{CE(sat)}	I _c = -5.0 A, I _B = -0.5 A*			-0.6	V
Base saturation voltage	V _{BE(sat)}	I _c = -5.0 A, I _B = -0.5 A*			-1.5	V
Turn-on time	t _{on}	I _c = -5.0 A, R _L = 10 Ω, I _{B1} = -I _{B2} = -0.5 A, V _{CC} ≅ -50 V			0.5	μs
Storage time	t _{stg}	Refer to the test circuit.			1.5	μs
Fall time	t _f				0.5	μs

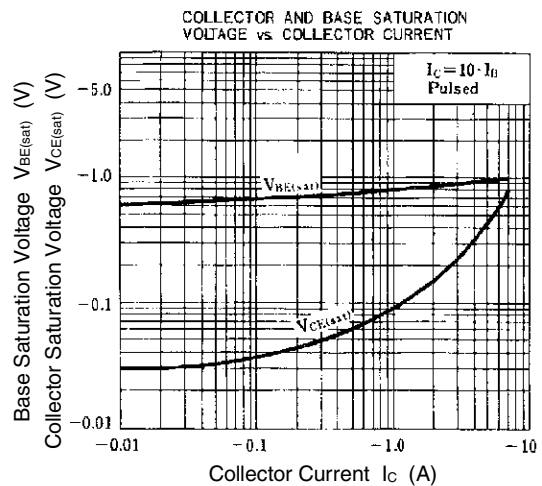
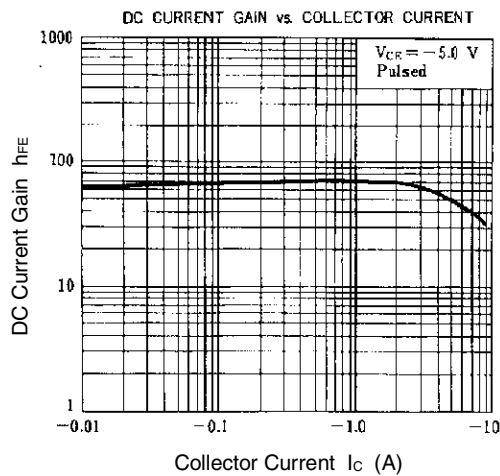
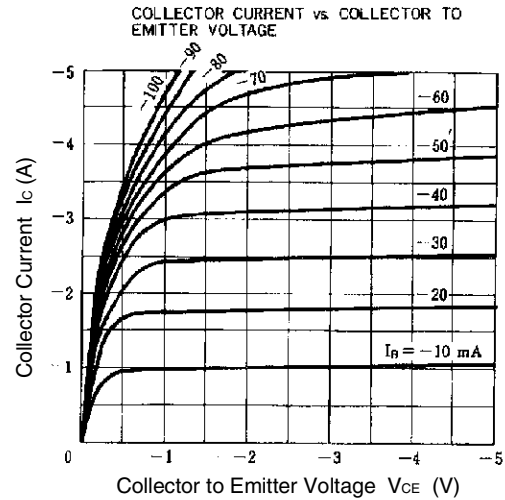
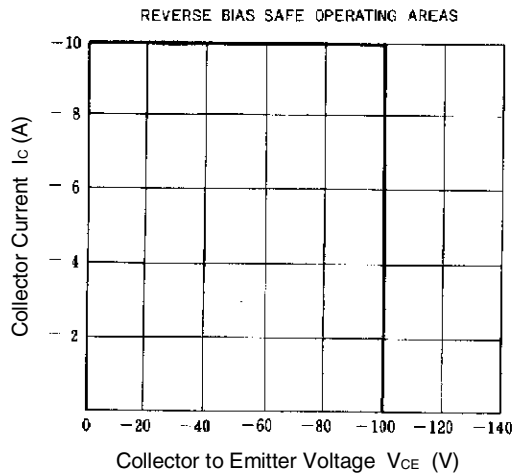
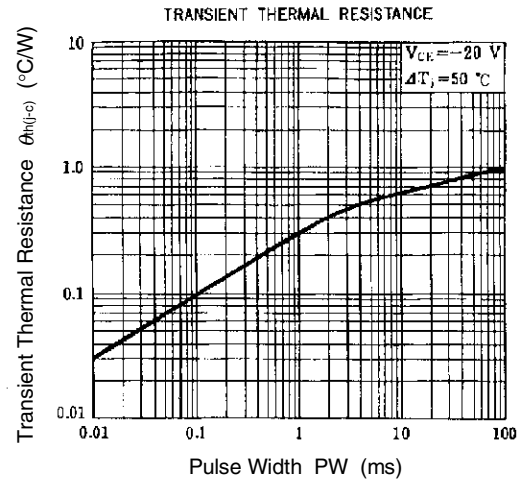
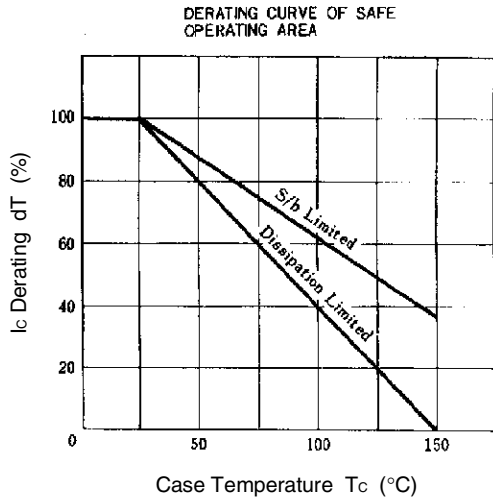
* Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

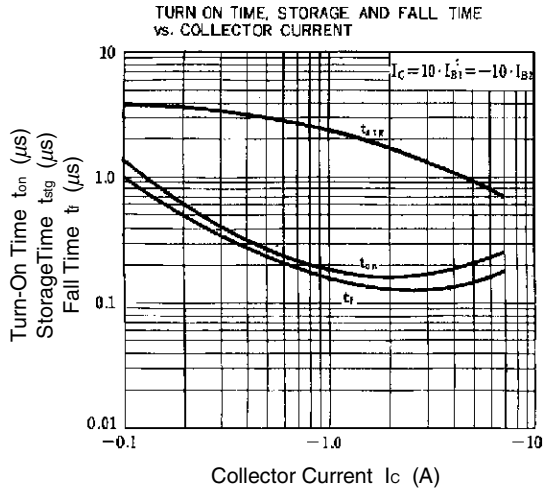
h_{FE} CLASSIFICATION

Marking	M	L	K
h _{FE2}	40 to 80	60 to 120	100 to 200

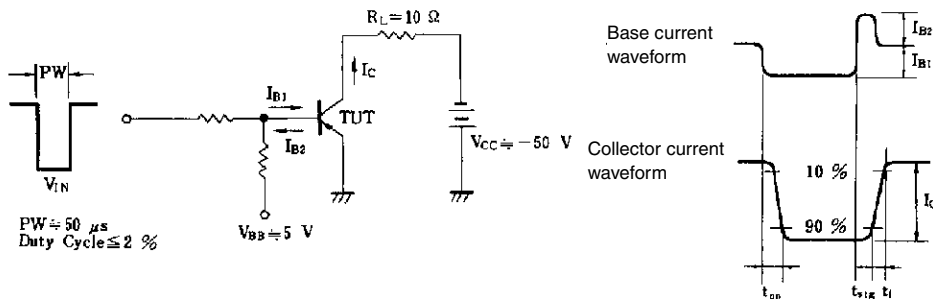
TYPICAL CHARACTERISTICS (Ta = 25°C)







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



[MEMO]

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