NEC

SILICON POWER TRANSISTOR
2SA1395

PNP SILICON EPITAXIAL TRANSISTOR FOR HIGH-SPEED SWITCHING

The 2SA1395 is a mold power transistor developed for 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

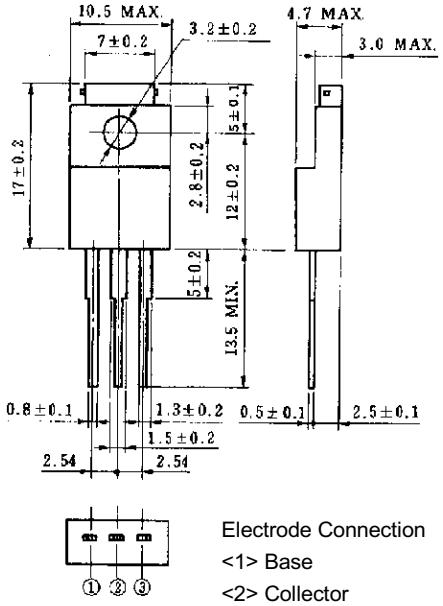
- Mold package that does not require an insulating board or insulation bushing
- Low collector saturation voltage: $V_{CE(sat)}$ = –0.6 V MAX. (@–1 A)
- Fast switching speed: t_f = 0.5 μs MAX. (@–1 A)
- Complementary transistor: 2SC3567

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)	$I_{C(DC)}$	–2.0	A
Collector current (pulse)	$I_{C(pulse)}$*	–4.0	A
Base current (DC)	$I_{B(DC)}$	–1.0	A
Total power dissipation	P_T (Tc = 25 °C)	15	W
Total power dissipation	P_T (Ta = 25 °C)	2.0	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

* PW ≤ 300 μs, duty cycle ≤ 10%

PACKAGE DRAWING (UNIT: mm)



Electrode Connection
<1> Base
<2> Collector
<3> Emitter

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

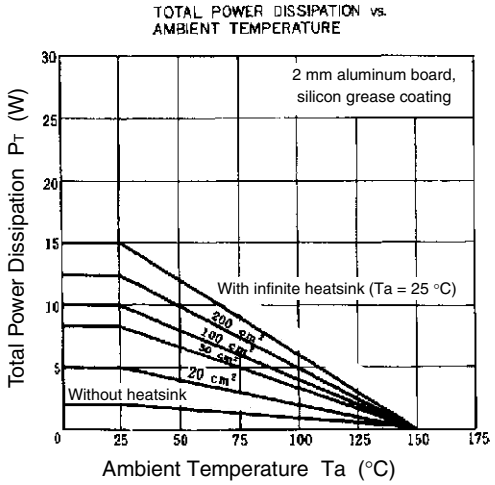
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	$V_{CEO(SUS)}$	I_C = –1.0 A, I_{B1} = –0.1 A, L = 1 mH	–100			V
Collector to emitter voltage	$V_{CEX(SUS)1}$	I_C = –1.0 A, I_{B1} = –I_{B2} = –0.1 A, $V_{BE(OFF)}$ = 5.0 V, L = 180 μH, clamped	–100			V
Collector to emitter voltage	$V_{CEX(SUS)2}$	I_C = –2.0 A, I_{B1} = –0.2 A, I_{B2} = 0.1 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, $V_{BE(OFF)}$ = 5.0 V			–10	μA
Collector cutoff current	I_{CEX2}	V_{CE} = –100 V, $V_{BE(OFF)}$ = 5.0 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 = –0.1 A	40			
DC current gain	h_{FE2}*	V_{CE} = –5.0 V, I_C = –1.0 A	40		200	
Collector saturation voltage	$V_{CE(sat)}$*	I_C = –1.0 A, I_B = –0.1 A			–0.6	V
Base saturation voltage	$V_{BE(sat)}$*	I_C = –1.0 A, I_B = –0.1 A			–1.5	V
Turn-on time	t_{on}	I_C = –1.0 A, R_L = 50 Ω, I_{B1} = –I_{B2} = –0.1 A, V_{CC} ≅ –50 V Refer to the test circuit.			0.5	μs
Storage time	t_{stg}				1.5	μs
Fall time	t_f				0.5	μs

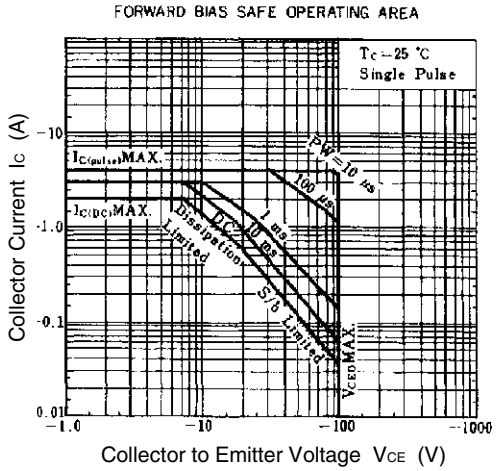
* Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

h_{FE} CLASSIFICATION

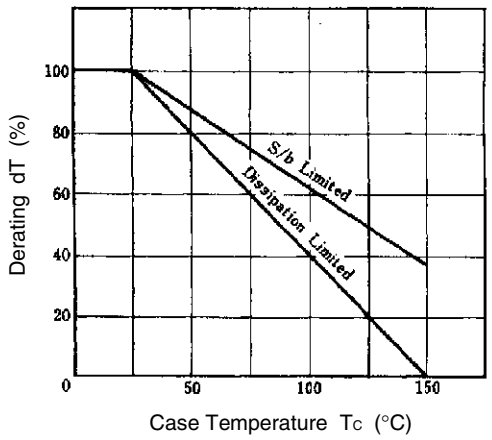
Marking	M	L	K
h_{FE2}	40 to 80	60 to 120	100 to 200

TYPICAL CHARACTERISTICS (Ta = 25 °C)

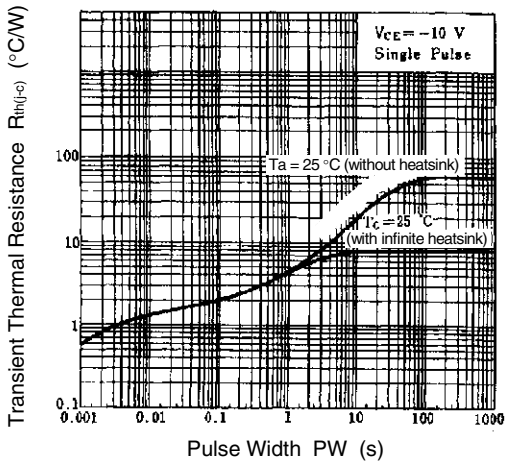




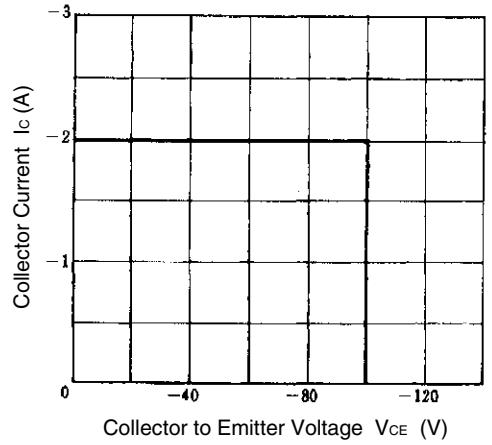
DERATING CURVE OF SAFE OPERATING AREA



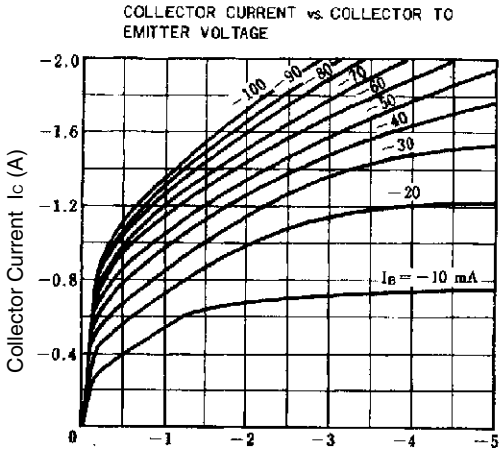
TRANSIENT THERMAL RESISTANCE



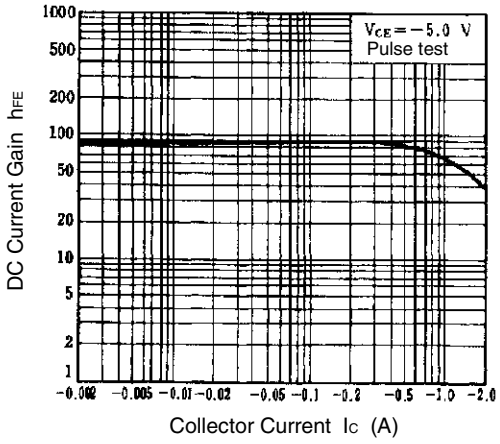
REVERSE BIAS SAFE OPERATING AREA



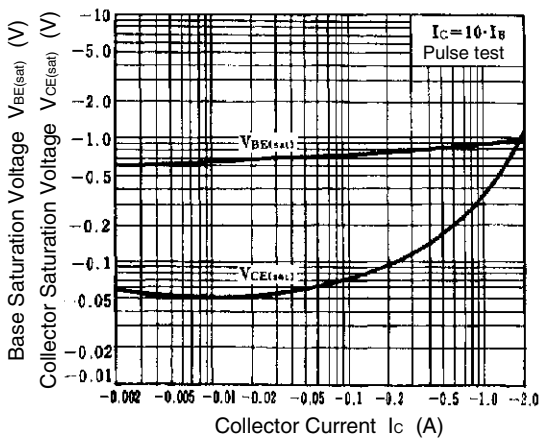
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE

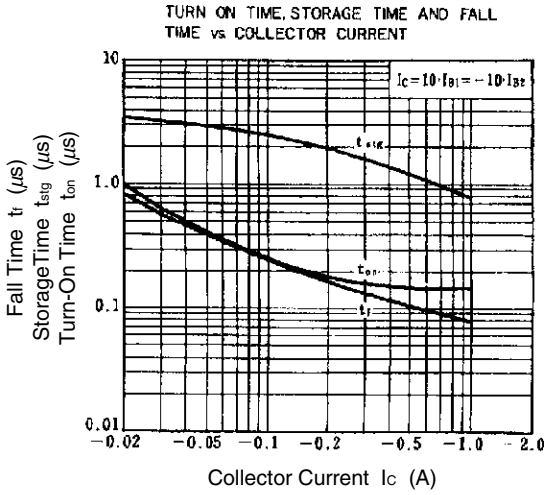


DC CURRENT GAIN vs. COLLECTOR CURRENT

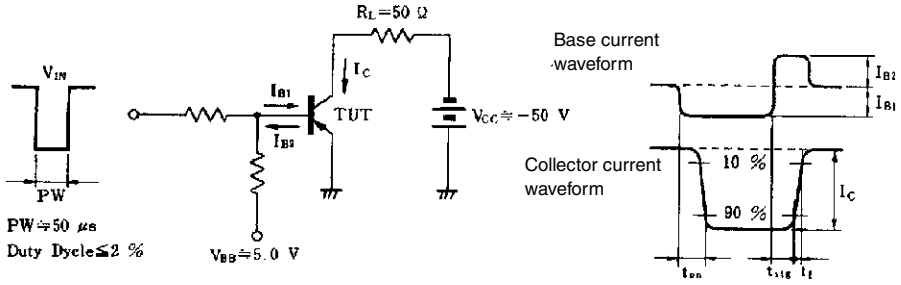


COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT





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



[MEMO]

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