

NPN SILICON EPITAXIAL TRANSISTOR  
FOR HIGH-SPEED SWITCHING

The 2SC2334 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

- Low collector saturation voltage
- Fast switching speed
- Complementary transistor: 2SA1010

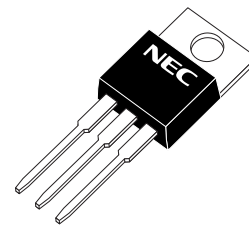
ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	$V_{CBO}$		150	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)	$I_{C(pulse)}$	$PW \leq 300 \mu\text{s}$ , duty cycle $\leq 10\%$	15	A
Base current (DC)	$I_{B(DC)}$		3.5	A
Total power dissipation	$P_T$	$T_C = 25^\circ\text{C}$	40	W
		$T_A = 25^\circ\text{C}$	1.5	W
Junction temperature	$T_j$		150	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

## ORDERING INFORMATION

Part No.	Package
2SC2334	TO-220AB

(TO-220AB)



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**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

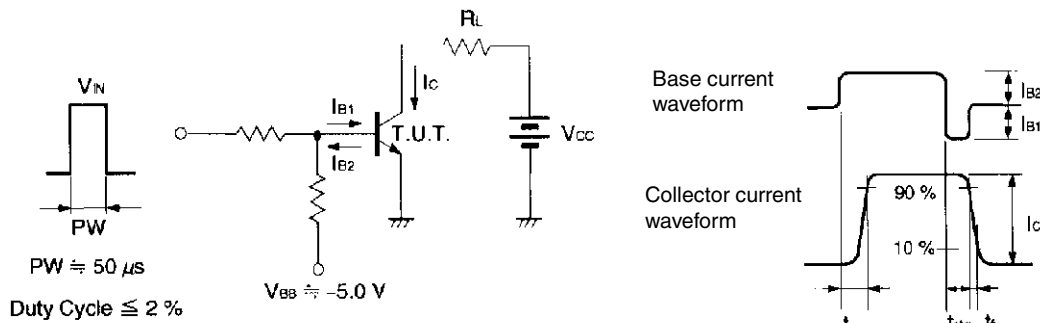
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	V <sub>CE0(SUS)</sub>	I <sub>C</sub> = 5.0 A, I <sub>B1</sub> = 0.5 A, L = 1 mH	100			V
	V <sub>CEX(SUS)1</sub>	I <sub>C</sub> = 5.0 A, I <sub>B1</sub> = -I <sub>B2</sub> = 0.5 A, V <sub>BE(OFF)</sub> = -5.0 V, L = 180 μH, clamped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

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

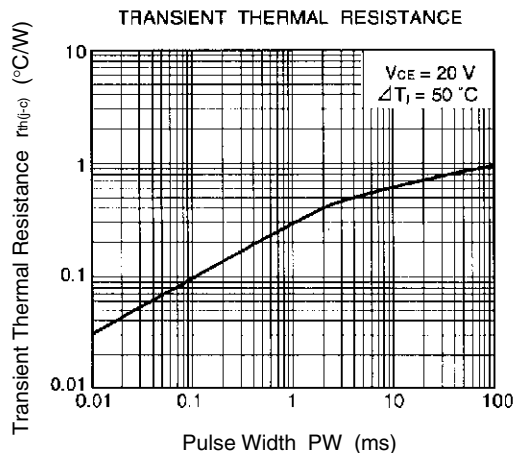
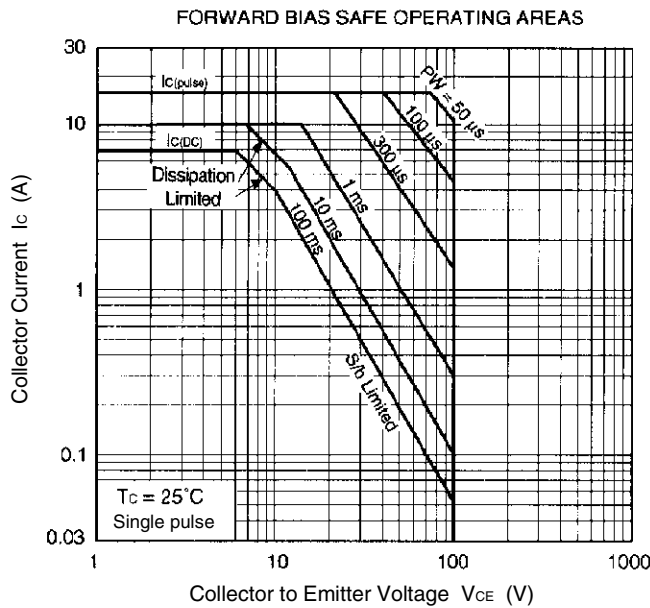
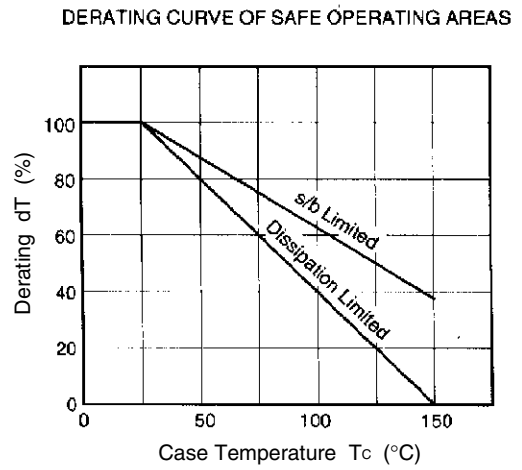
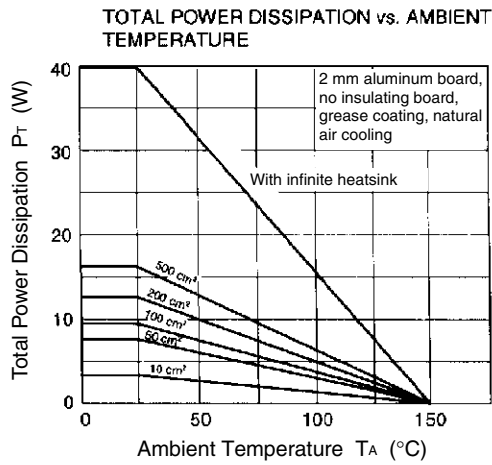
**h<sub>FE</sub> CLASSIFICATION**

Marking	M	L	K
h <sub>FE2</sub>	40 to 80	60 to 120	100 to 200

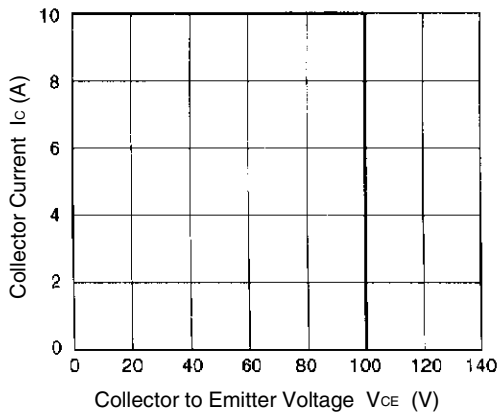
**SWITCHING TIME (t<sub>on</sub>, t<sub>stg</sub>, t<sub>f</sub>) TEST CIRCUIT**



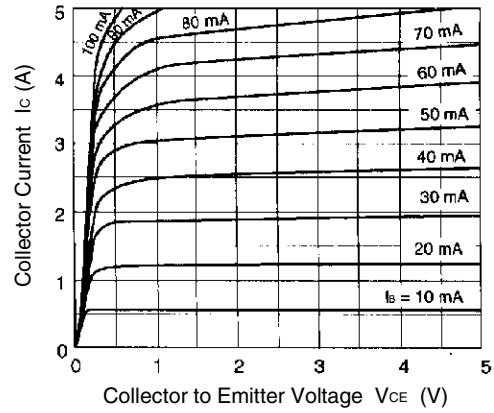
TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )



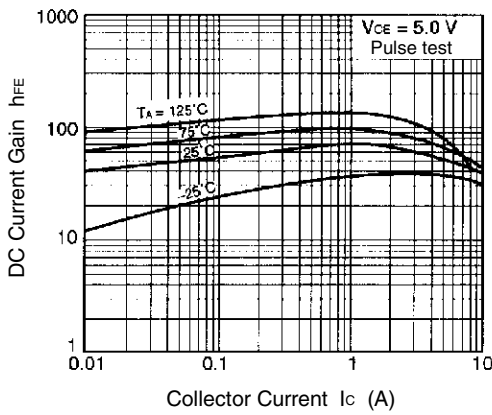
REVERSE BIAS SAFE OPERATING AREAS



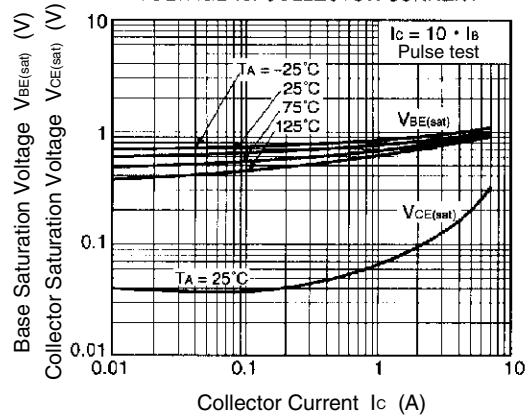
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



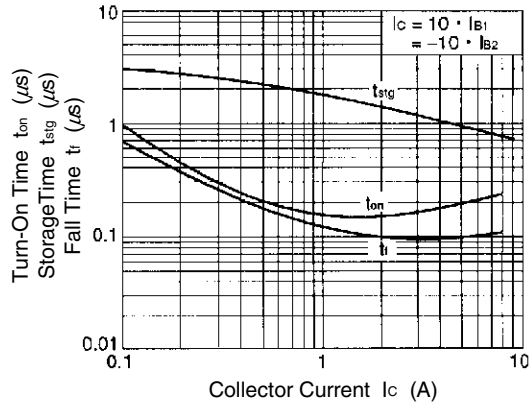
DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT

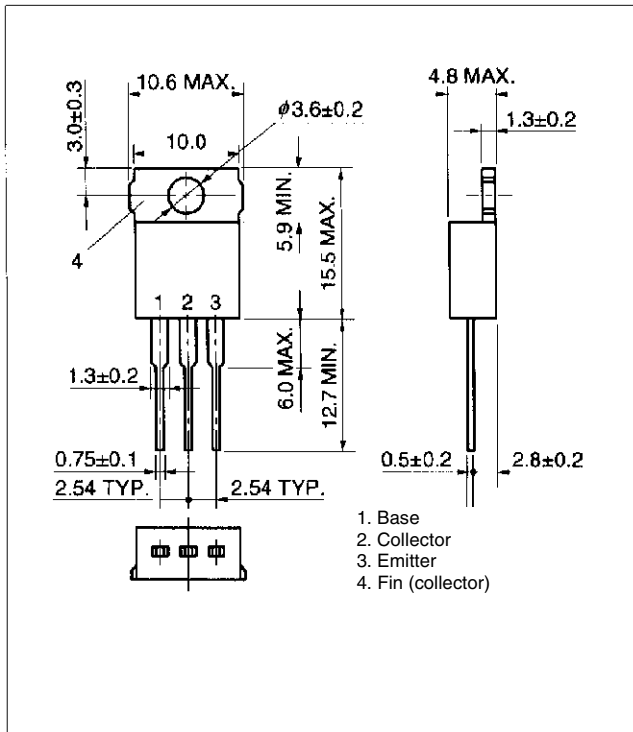


TURN ON TIME, STORAGE TIME AND FALL TIME vs. COLLECTOR CURRENT



PACKAGE DRAWING (UNIT: mm)

TO-220AB (MP-25)



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