

SILICON POWER TRANSISTOR

2SC2334

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

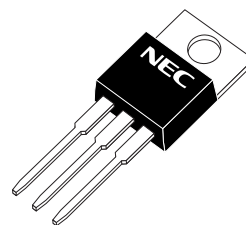
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V _{CB0}		150	V
Collector to emitter voltage	V _{CE0}		100	V
Emitter to base voltage	V _{EB0}		7.0	V
Collector current (DC)	I _{C(DC)}		7.0	A
Collector current (pulse)	I _{C(pulse)}	PW ≤ 300 μs, duty cycle ≤ 10%	15	A
Base current (DC)	I _{B(DC)}		3.5	A
Total power dissipation	P _T	T _C = 25°C	40	W
		T _A = 25°C	1.5	W
Junction temperature	T _j		150	°C
Storage temperature	T _{stg}		-55 to +150	°C

ORDERING INFORMATION

Part No.	Package
2SC2334	TO-220AB

(TO-220AB)



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

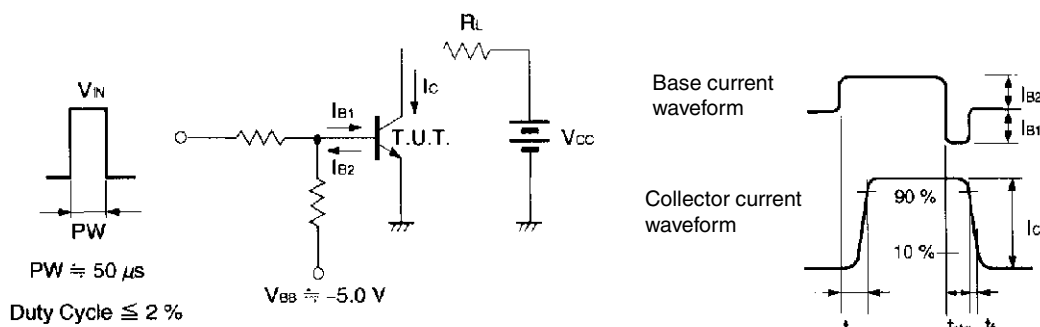
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	$V_{CE0(\text{SUS})}$	$I_C = 5.0\text{ A}$, $I_{B1} = 0.5\text{ A}$, $L = 1\text{ mH}$	100			V
	$V_{CE(\text{SUS})1}$	$I_C = 5.0\text{ A}$, $I_{B1} = -I_{B2} = 0.5\text{ A}$, $V_{BE(\text{OFF})} = -5.0\text{ V}$, $L = 180\text{ }\mu\text{H}$, clamped	100			V
	$V_{CE(\text{SUS})2}$	$I_C = 10\text{ A}$, $I_{B1} = 1.0\text{ A}$, $I_{B2} = -0.5\text{ A}$, $V_{BE(\text{OFF})} = -5.0\text{ V}$, $L = 180\text{ }\mu\text{H}$, clamped	100			V
Collector cutoff current	I_{CBO}	$V_{CB} = 100\text{ V}$, $I_E = 0\text{ A}$			10	μA
	I_{CER}	$V_{CE} = 100\text{ V}$, $R_{BE} = 51\text{ }\Omega$, $T_A = 125^\circ\text{C}$			1.0	mA
	I_{CEX1}	$V_{CE} = 100\text{ V}$, $V_{BE(\text{OFF})} = -1.5\text{ V}$			10	μA
	I_{CEX2}	$V_{CE} = 100\text{ V}$, $V_{BE(\text{OFF})} = -1.5\text{ V}$, $T_A = 125^\circ\text{C}$			1.0	mA
Emitter cutoff current	I_{EBO}	$V_{EB} = 5.0\text{ V}$, $I_C = 0\text{ A}$			10	μA
DC current gain	h_{FE1}	$V_{CE} = 5.0\text{ V}$, $I_C = 0.5\text{ A}$ ^{Note}	40			
	h_{FE2}	$V_{CE} = 5.0\text{ V}$, $I_C = 3.0\text{ A}$ ^{Note}	40		200	
	h_{FE3}	$V_{CE} = 5.0\text{ V}$, $I_C = 5.0\text{ A}$ ^{Note}	20			
Collector saturation voltage	$V_{CE(\text{sat})}$	$I_C = 5.0\text{ A}$, $I_B = 0.5\text{ A}$ ^{Note}			0.6	V
Base saturation voltage	$V_{BE(\text{sat})}$	$I_C = 5.0\text{ A}$, $I_B = 0.5\text{ A}$ ^{Note}			1.5	V
Turn-on time	t_{on}	$I_C = 5.0\text{ A}$, $R_L = 10\text{ }\Omega$, $I_{B1} = -I_{B2} = -0.5\text{ A}$, $V_{CC} \cong 50\text{ V}$ Refer to the test circuit.			0.5	μs
Storage time	t_{stg}				1.5	μs
Fall time	t_f				0.5	μs

Note Pulse test $PW \leq 350\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

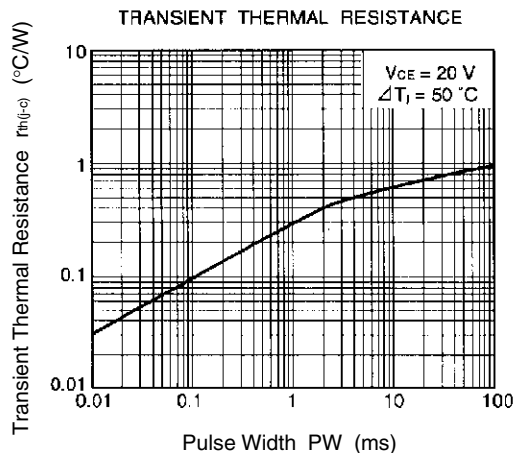
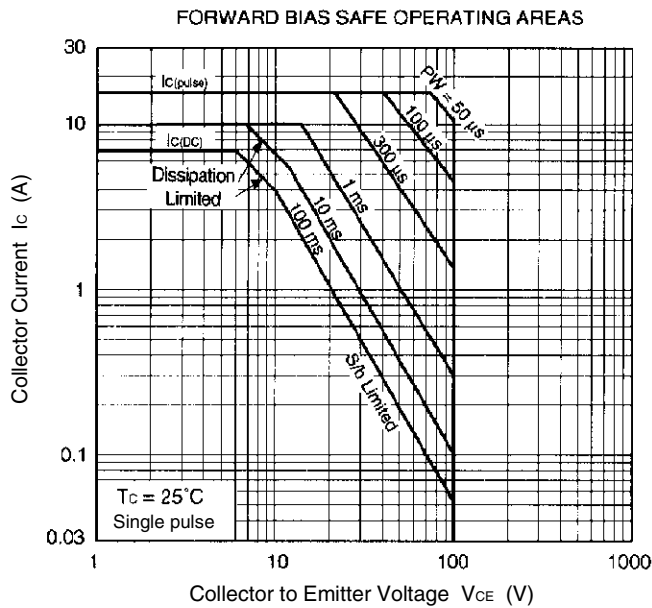
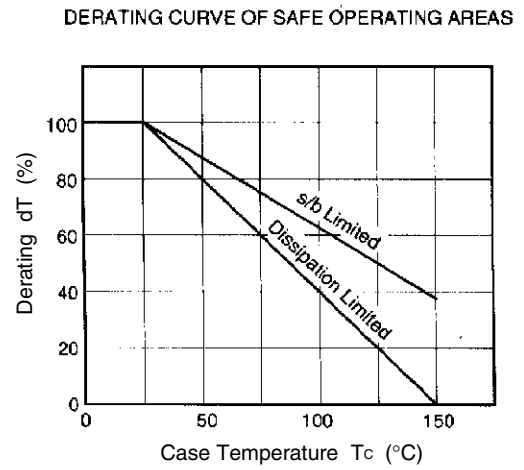
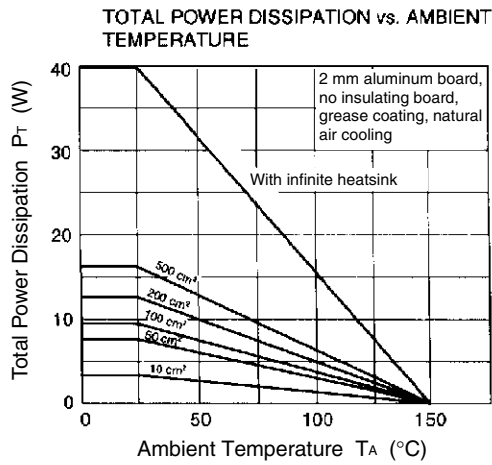
h_{FE} CLASSIFICATION

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

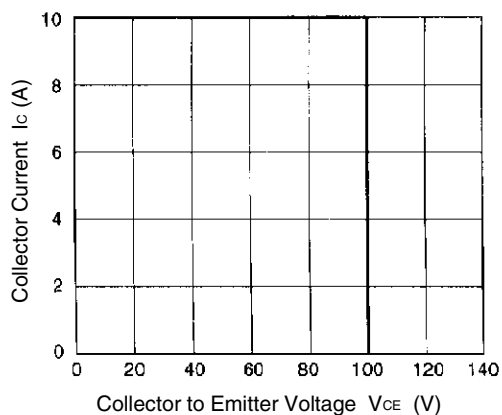
SWITCHING TIME (t_{on} , t_{stg} , t_f) TEST CIRCUIT



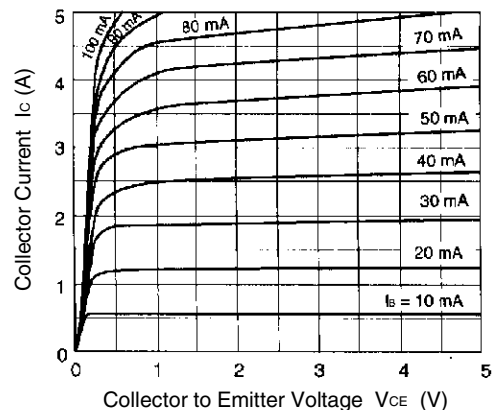
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



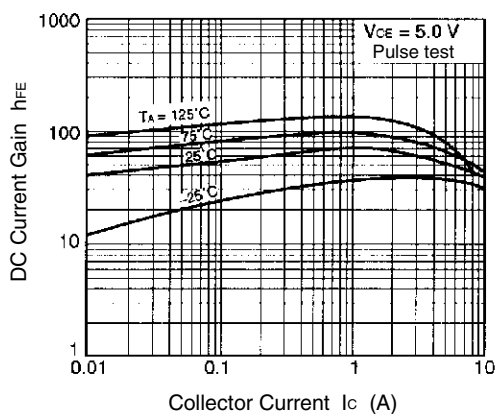
REVERSE BIAS SAFE OPERATING AREAS



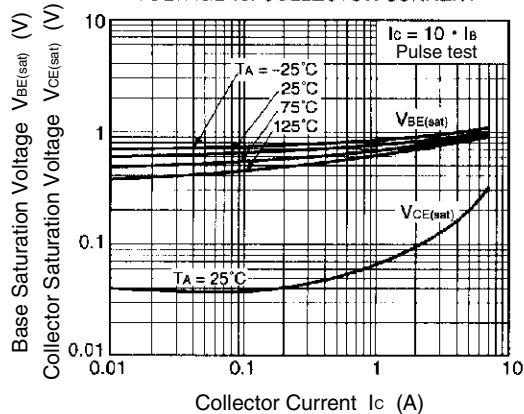
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



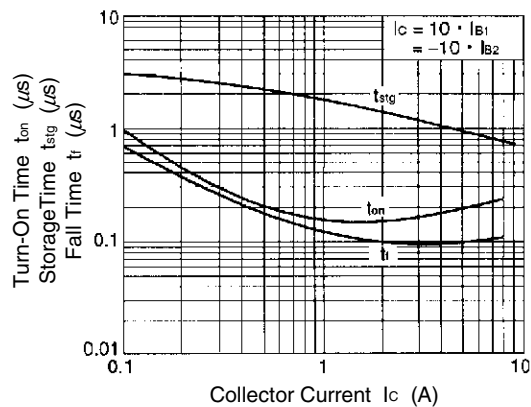
DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT

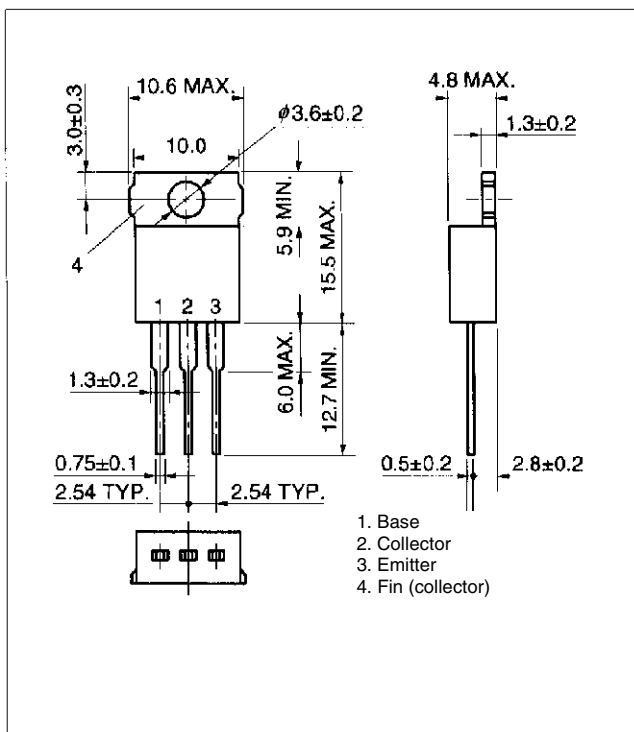


TURN ON TIME, STORAGE TIME AND FALL TIME vs. COLLECTOR CURRENT



PACKAGE DRAWING (UNIT: mm)

TO-220AB (MP-25)



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