

# SILICON TRANSISTORS

# 2SC2885, 2946, 2946(1)

## NPN SILICON EPITAXIAL TRANSISTOR FOR HIGH-VOLTAGE HIGH-SPEED SWITCHING

The 2SC2885, 2946, and 2946(1) are high-voltage high-speed switching power transistors featuring a small package (MP-3) which is suitable for high-density mounting. These transistors are ideal for drivers in DC/DC converters and switching regulators.

There are three types of transistors selectable according to the reliability requirements: 2SC2946 and 2946(1) for industrial use, 2SC2885 for general use. The 2SC2946(1) is produced with leads so as to enable mounting directly in a hybrid IC.

### QUALITY GRADES

- Standard

Please refer to "Quality Grades on NEC Semiconductor Devices" (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V <sub>CBO</sub>	330	V
Collector to emitter voltage	V <sub>CEO</sub>	200	V
Emitter to base voltage	V <sub>EBO</sub>	7.0	V
Collector current (DC)	I <sub>C(DC)</sub>	2.0	A
Collector current (pulse)	I <sub>C(pulse)*</sub>	4.0	A
Base current (DC)	I <sub>B(DC)</sub>	1.0	A
Total power dissipation	P <sub>T</sub> (T <sub>C</sub> = 25°C)	15	W
Total power dissipation	P <sub>T</sub> (T <sub>a</sub> = 25°C)	600	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\* PW ≤ 300 μs, duty cycle ≤ 10%

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

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**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

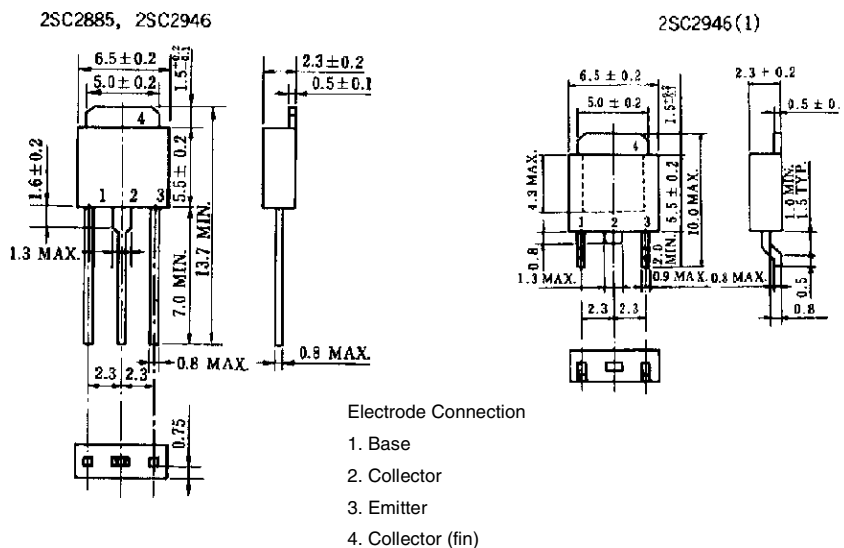
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	$V_{CE0(SUS)}$	$I_C = 1.0\text{ A}$ , $I_B = 0.1\text{ A}$ , $L = 500\ \mu\text{H}^*$	200			V
Collector to emitter voltage	$V_{CEX(SUS)}$	$I_C = 1.0\text{ A}$ , $I_{B1} = -I_{B2} = 0.1\text{ A}^*$ $T_a = 125^\circ\text{C}$ , $L = 180\ \mu\text{H}$ , clamped	200			V
Collector cutoff current	$I_{CBO}$	$V_{CB} = 250\text{ V}$ , $I_E = 0$			10	$\mu\text{A}$
Collector cutoff current	$I_{CEX1}$	$V_{CE} = 250\text{ V}$ , $V_{BE(OFF)} = -1.5\text{ V}$			10	$\mu\text{A}$
Collector cutoff current	$I_{CEX2}$	$V_{CE} = 250\text{ V}$ , $V_{BE(OFF)} = -1.5\text{ V}$ , $T_a = 125^\circ\text{C}$			1.0	mA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 5.0\text{ V}$ , $I_C = 0$			1.0	$\mu\text{A}$
DC current gain	$h_{FE1}$	$V_{CE} = 5.0\text{ V}$ , $I_C = 0.1\text{ A}^*$	20	60	160	
	$h_{FE2}$	$V_{CE} = 5.0\text{ V}$ , $I_C = 1.0\text{ A}^*$	15			
Collector saturation voltage	$V_{CE(sat)}$	$I_C = 1.0\text{ A}$ , $I_B = 0.1\text{ A}^*$			1.0	V
Base saturation voltage	$V_{BE(sat)}$	$I_C = 1.0\text{ A}$ , $I_B = 0.1\text{ A}^*$			1.5	V
Turn-on time	$t_{on}$	$I_C = 1.0\text{ A}$ , $R_L = 100\ \Omega$			1.0	$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = -I_{B2} = 0.1\text{ A}$ , $V_{CC} \cong 100\text{ V}$			2.0	$\mu\text{s}$
Fall time	$t_f$	Refer to the test circuit.			1.0	$\mu\text{s}$

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

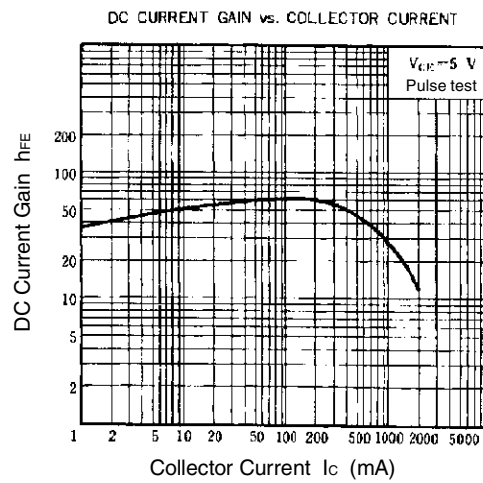
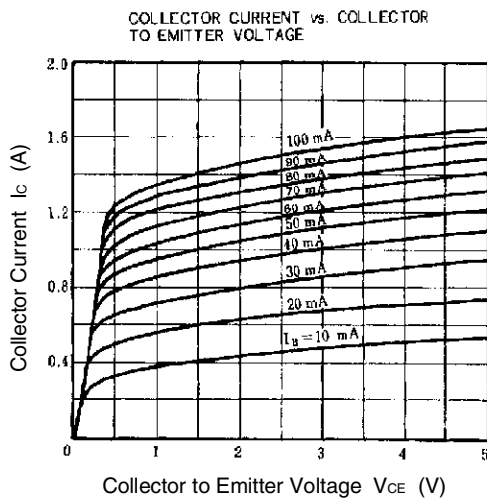
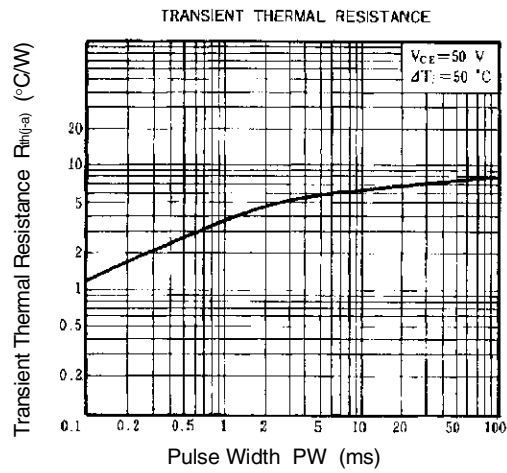
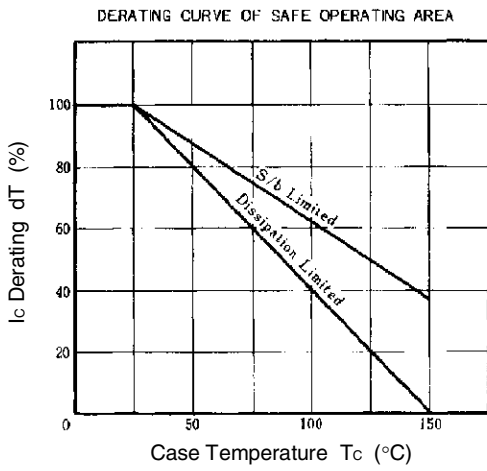
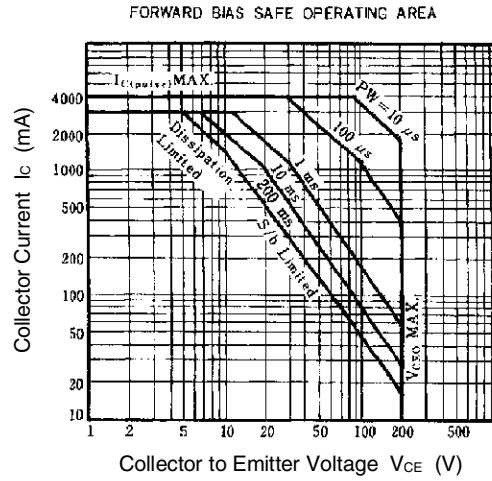
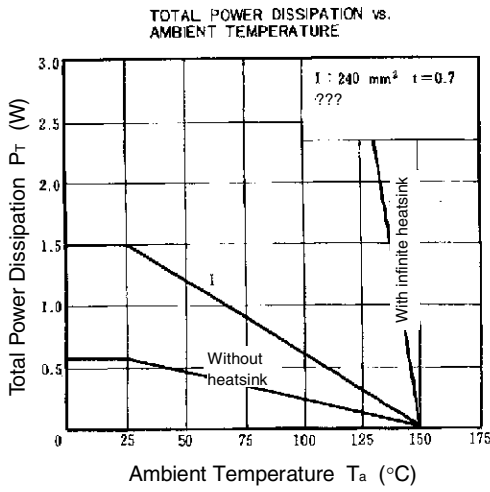
**$h_{FE}$  CLASSIFICATION**

Marking	N	M	L	K
$h_{FE1}$	20 to 50	30 to 70	50 to 100	80 to 160

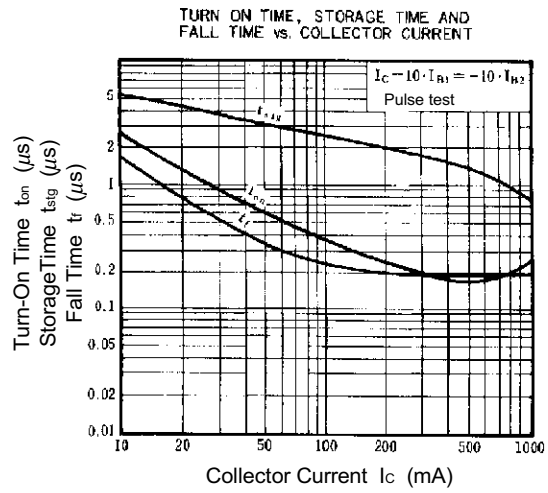
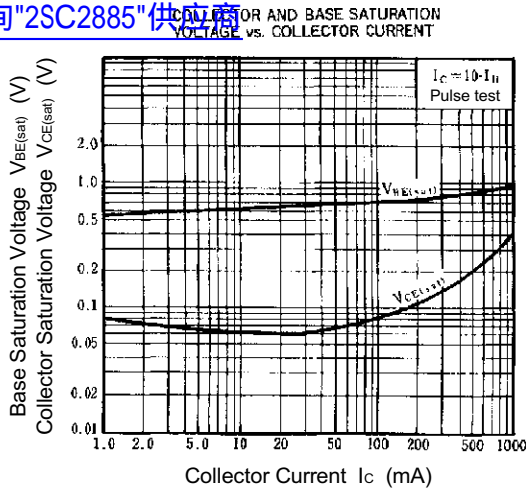
**PACKAGE DRAWING (UNIT: mm)**



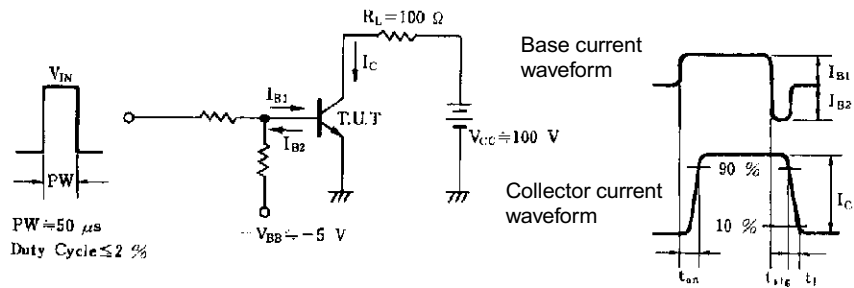
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**DC CHARACTERISTICS (Ta = 25°C)**



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**SWITCHING TIME ( $t_{on}$ ,  $t_{sg}$ ,  $t_r$ ) TEST CIRCUIT**



[查询"MEMO"供应商](#)

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