NEC

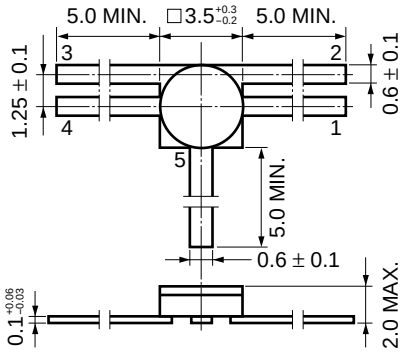
SILICON TRANSISTOR
2SC3809

NPN SILICON EPITAXIAL TRANSISTOR FOR MICROWAVE AMPLIFIERS AND ULTRA HIGH SPEED SWITCHINGS INDUSTRIAL USE

FEATURES

- The 2SC3809 is an NPN silicon epitaxial dual transistor having a large-gain-bandwidth product performance in a wide operating current range.
- Dual chips in one package can achieve high performance for differential amplifiers and current mode logic (CML) circuits.

PACKAGE DIMENSIONS (in millimeters)



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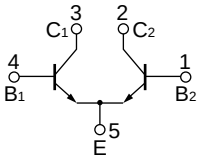
PIN CONNECTIONS



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	V_{CBO}	20	V
Collector to Emitter Voltage	V_{CEO}	12	V
Emitter to Base Voltage	V_{EBO}	3	V
Collector Current	I_C	100/unit	mA
Total Power Dissipation	P_T	300/unit	mW
Thermal Resistance (junction to case)	$R_{th\ (j\text{-}c)}$	90/unit	°C/W
Junction Temperature	T_j	200	°C
Storage Temperature	T_{stg}	-65 to +200	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector to Base Breakdown Voltage	BV_{CBO}	I_C = 100 μA	20			V
Emitter to Base Breakdown Voltage	BV_{EBO}	I_E = 100 μA, I_C = 0	3			V
Collector to Emitter Breakdown Voltage	BV_{CEO}	I_C = 1 mA, R_{BE} = ∞	12			V
Collector Cut-off Current	I_{CBO}	V_{CB} = 10 V, I_C = 0			1.0	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1 V, I_E = 0			1.0	μA
DC Current Gain	h_{FE}	V_{CE} = 10 V, I_C = 20 mA	50		250	
h_{FE} Ratio	h_{FE1}/h_{FE2} Note 1	V_{CE} = 10 V, I_C = 20 mA	0.6		1.0	
Difference of Base to Emitter Voltage	$V_{BE\ (on)}$	V_{CE} = 10 V, I_C = 20 mA			30	mV
Gain Bandwidth Product	f_T Note 2	V_{CE} = 10 V, I_C = 20 mA	6	7		GHz
Feedback Capacitance	C_{re} Note 3	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz		0.75	1.0	pF

Notes 1. h_{FE1} is the smaller h_{FE} value of the 2 transistors.

2. Measured using a single-type device (equivalent to the 2SC3603).

3. Measured with a 3-terminal bridge, terminals other than the collector and base of the device under test should be connected to the guard terminal of the bridge.

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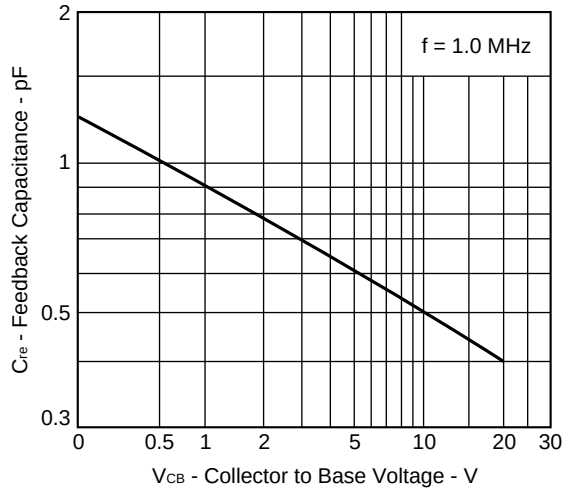
REGARDING CLEANSING

Cleanse the flux after soldering. Particularly, cleanse the bottom surface of the transistor so that flux does not remain. If any flux remains on the bottom surface, it may absorb moisture, resulting in short circuit among pins due to metal-migration at the metalized area of the transistor. You can use **alcohol** as a solvent.

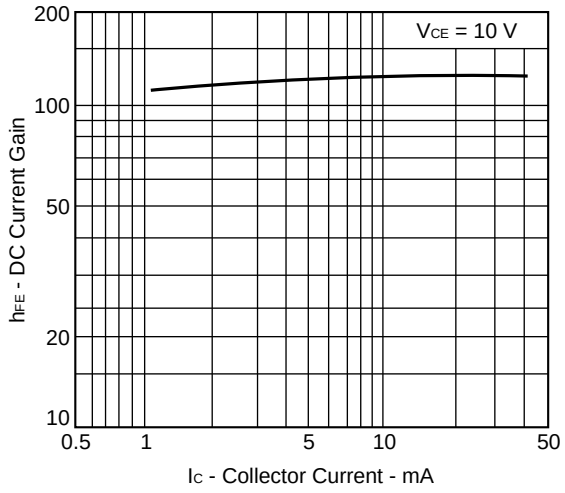
Do not apply ultra-sonic-cleaning on this product.

TYPICAL CHARACTERISTICS (T_A = 25 °C)

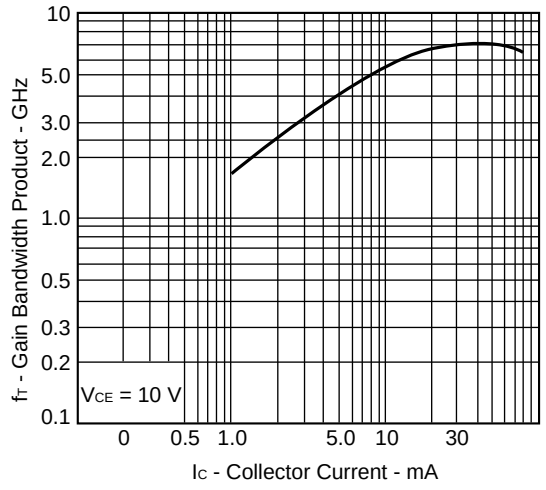
FEEDBACK CAPACITANCE vs.
COLLECTOR TO BASE VOLTAGE



DC CURRENT GAIN vs.
COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs.
COLLECTOR CURRENT



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