

# 2SD1938(F)

## Silicon NPN epitaxial planar type

For low-voltage output amplification

For muting

For DC-DC converter

### ■ Features

- Low ON resistance  $R_{on}$
- High forward current transfer ratio  $h_{FE}$
- Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	50	V
Collector-emitter voltage (Base open)	$V_{CEO}$	20	V
Emitter-base voltage (Collector open)	$V_{EBO}$	25	V
Collector current	$I_C$	300	mA
Peak collector current	$I_{CP}$	500	mA
Collector power dissipation	$P_C$	200	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

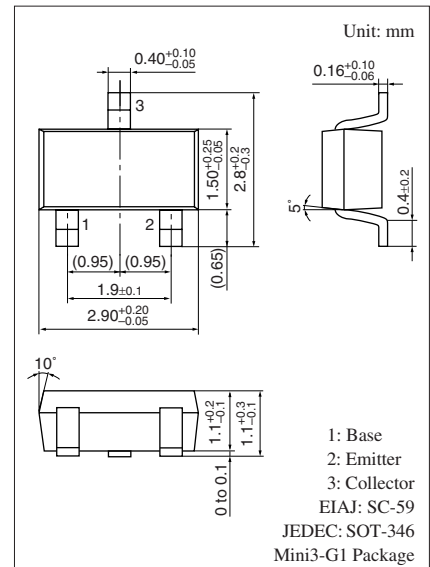
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 1 \text{ mA}, I_B = 0$	20			V
Base-emitter voltage	$V_{BE}$	$V_{CE} = 2 \text{ V}, I_C = 4 \text{ mA}$		0.6		V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 50 \text{ V}, I_E = 0$			0.1	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 25 \text{ V}, I_C = 0$			0.1	$\mu\text{A}$
Forward current transfer ratio *1	$h_{FE}$	$V_{CE} = 2 \text{ V}, I_C = 4 \text{ mA}$	500		2500	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 30 \text{ mA}, I_B = 3 \text{ mA}$			0.1	V
Transition frequency	$f_T$	$V_{CB} = 6 \text{ V}, I_E = -4 \text{ mA}, f = 200 \text{ MHz}$		80		MHz
Collector output capacitance (Common base, input open circuited)	$C_{ob}$	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$			7	pF
ON resistance *2	$R_{on}$			1.0		$\Omega$

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*1: Rank classification

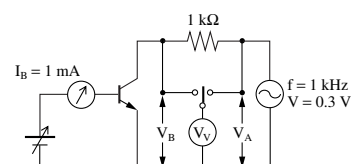
Rank	S	T	No rank
$h_{FE}$	500 to 1500	800 to 2500	500 to 2500

Product of no-rank classification is not marked.

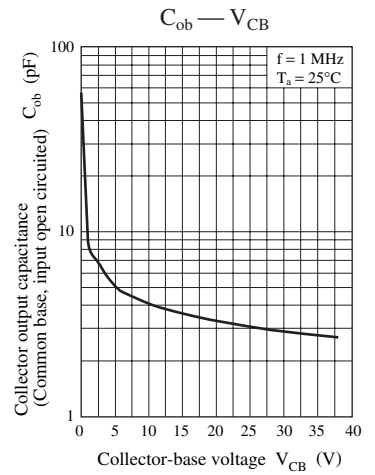
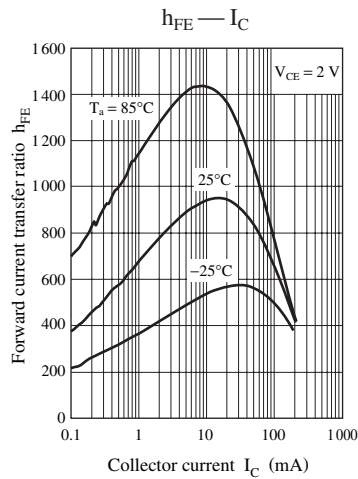
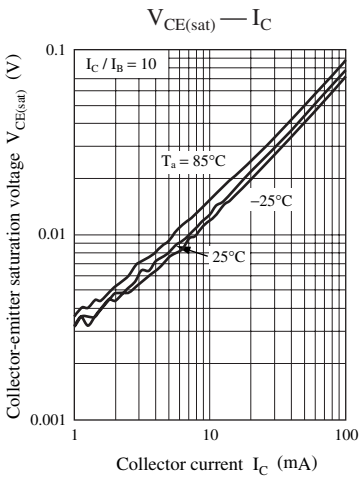
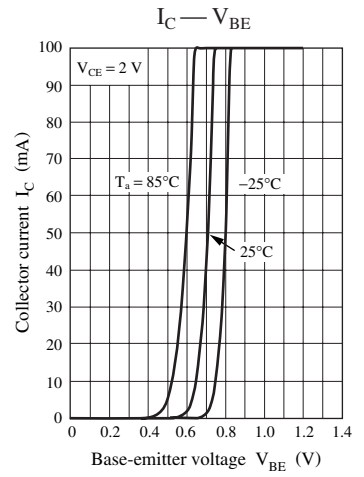
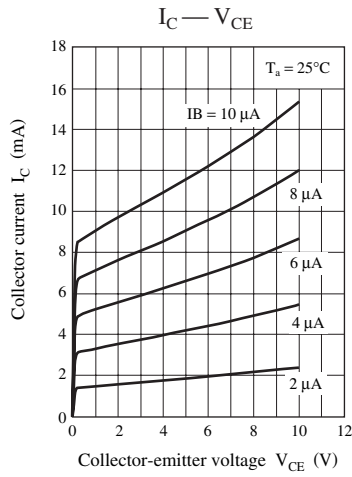
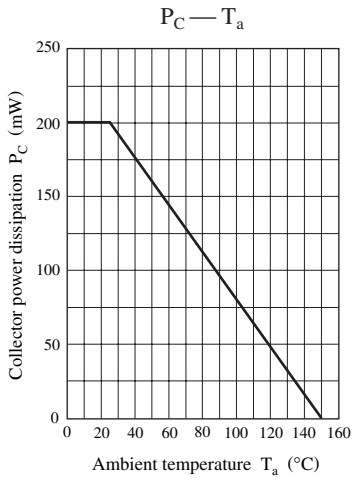


Marking symbol: 3W

\*2:  $R_{on}$  Measurement circuit



$$R_{on} = \frac{V_B}{V_A - V_B} \times 1000 (\Omega)$$



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