# **2SA0963** (2SA963)

## Silicon PNP epitaxial planar type

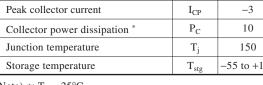
For low-frequency power amplification Complementary to 2SC2209

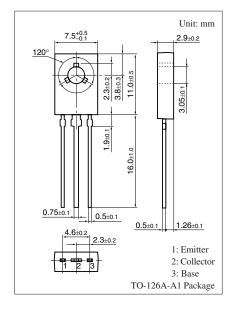
#### ■ Features

- Large collector power dissipation P<sub>C</sub>
- Output of 4 W to 5 W can be obtained by a complementary pair with

### ■ Absolute Maximum Ratings $T_a = 25$ °C

Parameter	Symbol	Rating	Unit	
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	-50	V	
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	-40	V	
Emitter-base voltage (Collector open)	$V_{EBO}$	-5	V	
Collector current	$I_C$	-1.5	A	
Peak collector current	$I_{CP}$	-3	A	
Collector power dissipation *	P <sub>C</sub>	10	W	
Junction temperature	$T_{j}$	150	°C	
Storage temperature	$T_{stg}$	-55 to +150	°C	





Note) \*:  $T_C = 25^{\circ}C$ 

### ■ Electrical Characteristics $T_a = 25$ °C $\pm 3$ °C

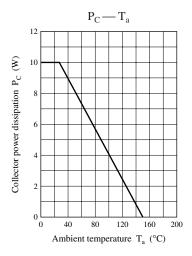
Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	$I_C = -1 \text{ mA}, I_E = 0$	-50			V
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	$I_C = -2 \text{ mA}, I_B = 0$	-40			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = -20 \text{ V}, I_E = 0$			-1	μΑ
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = -10 \text{ V}, I_B = 0$			-100	μΑ
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = -5 \text{ V}, I_{C} = 0$			-10	μΑ
Forward current transfer ratio *	h <sub>FE</sub>	$V_{CE} = -5 \text{ V}, I_{C} = -1 \text{ A}$	80		220	_
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	$I_C = -1.5 \text{ A}, I_B = -0.15 \text{ A}$			-1.0	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	$I_C = -2 \text{ A}, I_B = -0.2 \text{ A}$			-1.5	V
Transition frequency	$f_T$	$V_{CB} = -5 \text{ V}, I_E = 0.5 \text{ A}, f = 200 \text{ MHz}$		150		MHz
Collector output capacitance	C <sub>ob</sub>	$V_{CB} = -5 \text{ V}, I_E = 0, f = 1 \text{ MHz}$		70		pF
(Common base, input open circuited)						

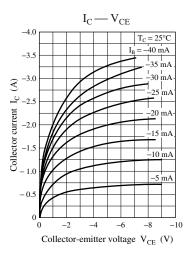
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

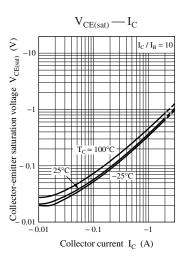
#### 2. \*: Rank classification

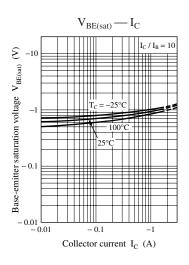
Rank	Q	R
$h_{FE}$	80 to 160	120 to 220

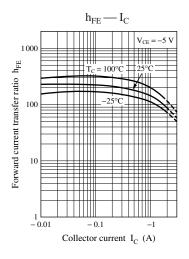
Note) The part number in the parenthesis shows conventional part number.

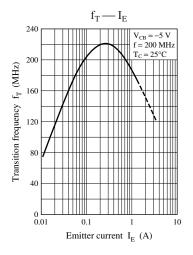


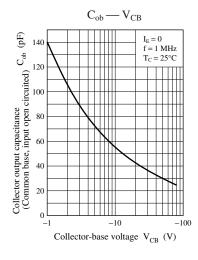


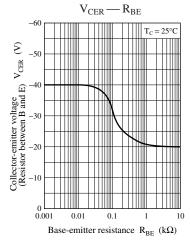


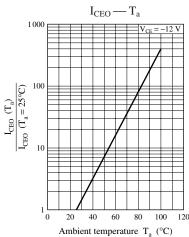


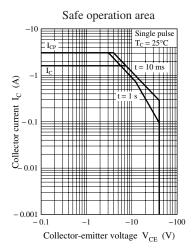












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