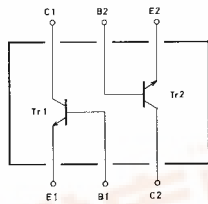


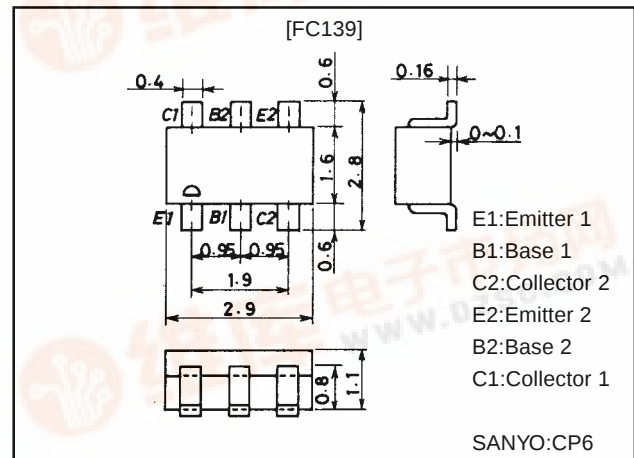
SANYO**FC139****NPN Epitaxial Planar Silicon Composite Transistor
Low-Frequency General-Purpose Amp,
General Driver Applications****Features**

- Composite type with 2 transistors contained in the CP package currently in use, improving the mounting efficiency greatly.
- The FC139 is formed with two chips, being equivalent to the 2SC3689, placed in one package.
- Adoption of FBET process.
- High DC current gain ($h_{FE}=800$ to 3200).
- High V_{EBO} ($V_{EBO} \geq 15V$)
- Excellent in thermal equilibrium and pair capability.

Electrical Connection**Package Dimensions**

unit:mm

2067

**Specifications****Absolute Maximum Ratings at $T_a = 25^\circ C$**

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		60	V
Collector-to-Emitter Voltage	V_{CEO}		50	V
Emitter-to-Base Voltage	V_{EBO}		15	V
Collector Current	I_C		100	mA
Collector Current (Pulse)	I_{CP}		200	mA
Base Current	I_B		20	mA
Collector Dissipation	P_C	1 unit	200	mW
Total Dissipation	P_T		300	mW
Junction Temperature	T_j		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

Electrical Characteristics at $T_a = 25^\circ C$

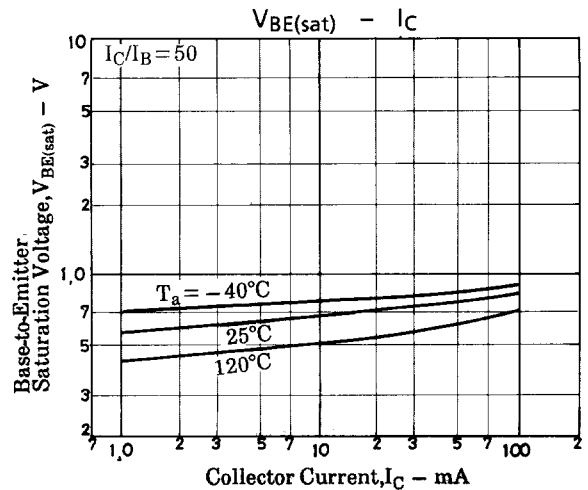
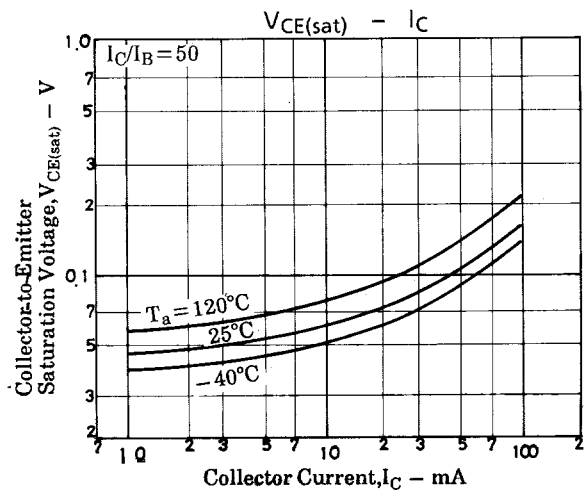
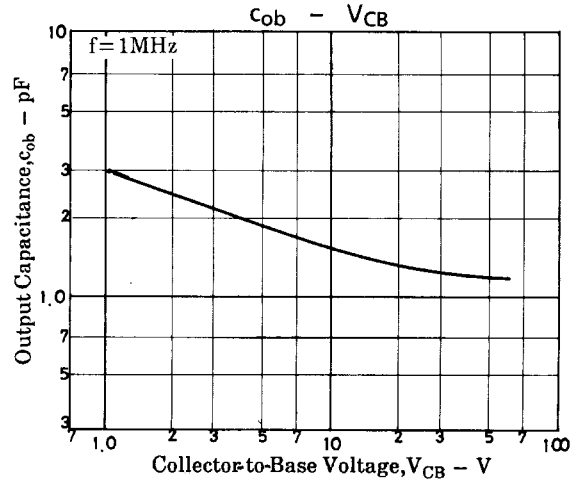
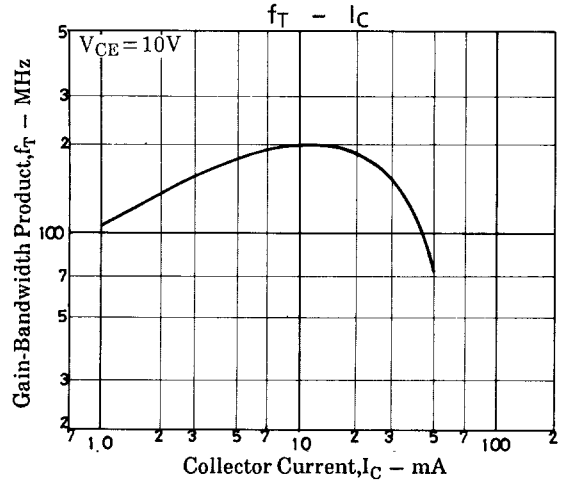
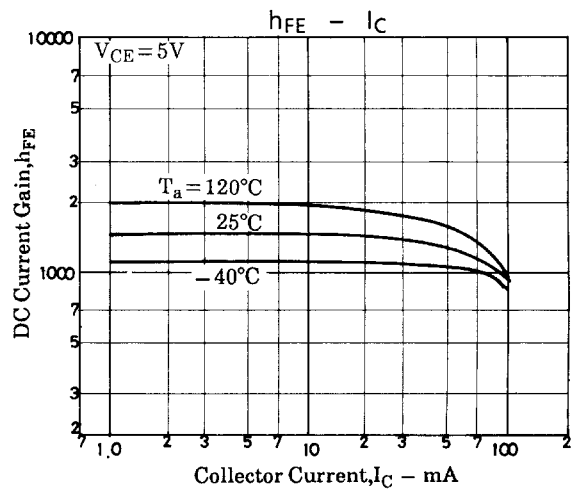
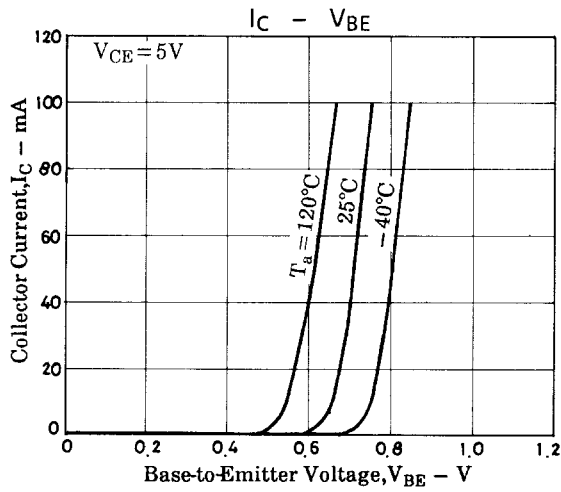
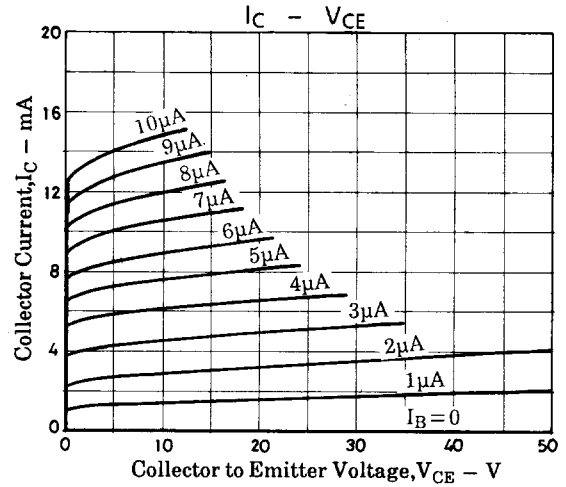
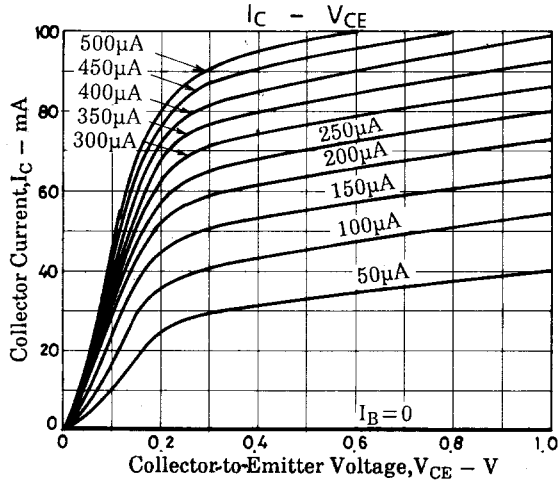
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=40V, I_E=0$			0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=10V, I_C=0$			0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=5V, I_C=10mA$	800	1500	3200	
DC Current Gain Ratio	$h_{FE}(small/large)$	$V_{CE}=5V, I_C=10mA$	0.8	0.98		
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=10mA$		200		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		1.5		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=50mA, I_B=1mA$		0.1	0.5	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=50mA, I_B=1mA$		0.8	1.1	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	15			V

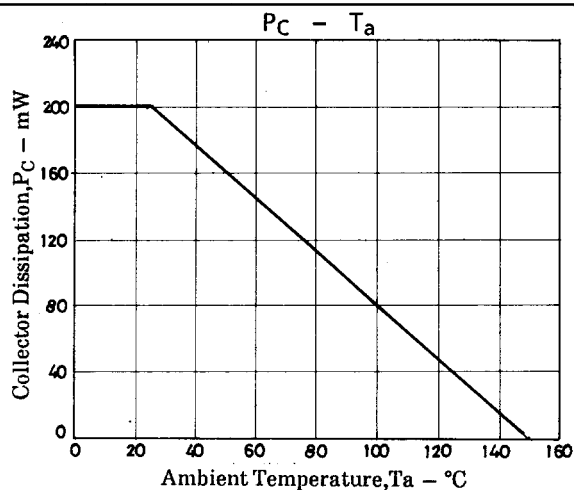
Note: The specifications shown above are for each individual transistor.

Marking: 139

SANYO Electric Co., Ltd. Semiconductor Business Headquarters

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN





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