UP05C8B

Silicon NPN epitaxial planar type (Tr)
Silicon epitaxial planar type (CCD load device)

For CCD output circuits

■ Features

- Two elements incorporated into one package (Tr + CCD load device)
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.

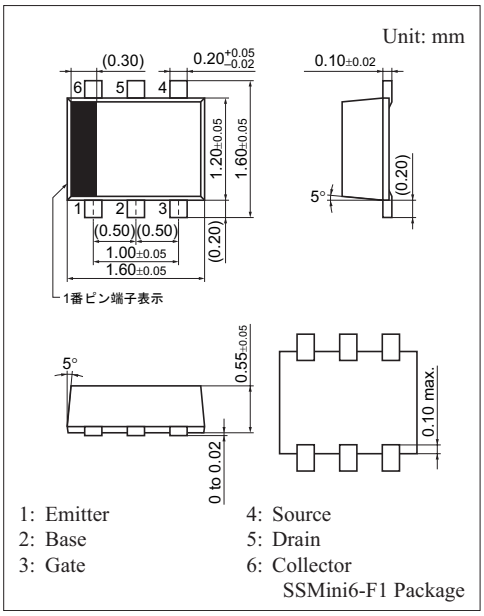
■ Basic Part Number

- 2SC3931 + CCD load device

■ Absolute Maximum Ratings $T_a = 25°C$

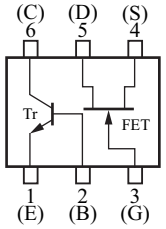
Parameter		Symbol	Rating	Unit
Tr	Collector-base voltage (Emitter open)	V_{CBO}	30	V
	Collector-emitter voltage (Base open)	V_{CEO}	20	V
	Emitter-base voltage (Collector open)	V_{EBO}	3	V
	Collector current	I_C	15	mA
CCD load device	Limiting element voltage	V_{max}	40	V
	Limiting element current	I_{max}	10	mA
Overall	Total power dissipation *	P_T	125	mW
	Junction temperature	T_j	125	°C
	Storage temperature	T_{stg}	–55 to +125	°C

Note) * : Measuring on substrate at 17 mm × 10 mm × 1 mm



Marking Symbol: 4F

Internal Connection



■ Electrical Characteristics T_a = 25°C±3°C

• Tr

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	I_C = 10 μA, I_E = 0	30			V
Emitter-base voltage (Collector open)	V_{EBO}	I_E = 10 μA, I_C = 0	3			V
Base-emitter voltage	V_{BE}	V_{CE} = 6 V, I_C = 1 mA		720		mV
Forward current transfer ratio	h_{FE}	V_{CE} = 6 V, I_C = 1 mA	65		160	—
Reverse transfer capacitance (Common emitter)	C_{re}	V_{CB} = 6 V, I_E = –1 mA, f = 10.7 MHz		0.8		pF
Transition frequency	f_T	V_{CB} = 6 V, I_E = –1 mA, f = 200 MHz		640		MHz
Noise figure	NF	V_{CB} = 6 V, I_E = –1 mA, f = 100 MHz		3.3		dB
Power gain	G_P	V_{CB} = 6 V, I_E = –1 mA, f = 100 MHz		24		dB

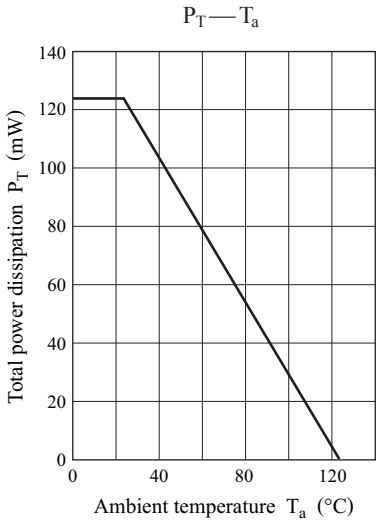
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

• CCD Load Device

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Pinchi off current	I_P	V_{DS} = 10 V, V_G = 0	3.5		5.5	mA
Output impedance	Z_O	V_{DS} = 10 V, V_G = 0		0.05		MΩ

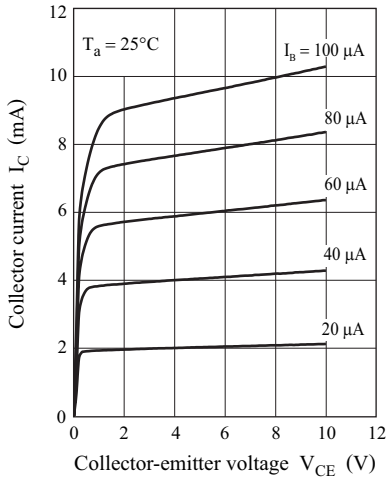
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

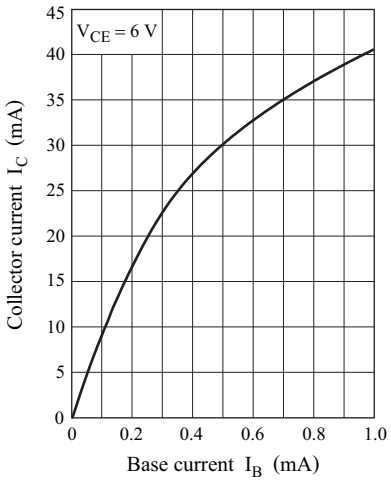


Characteristics charts of Tr

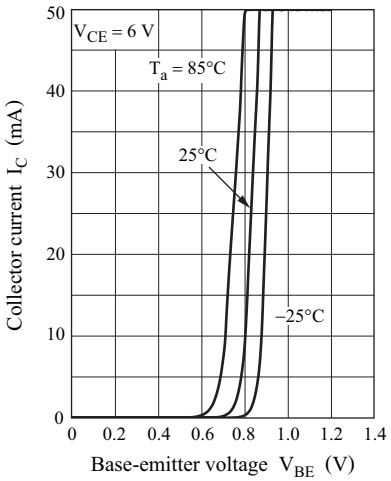
I_C — V_{CE}



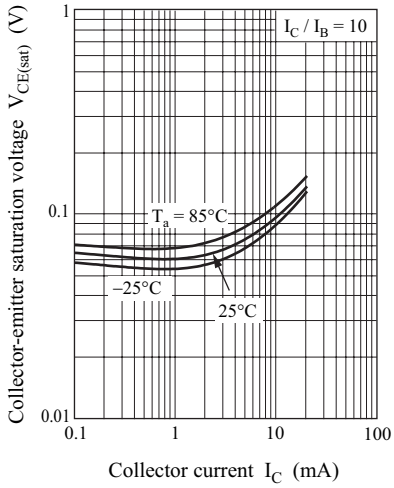
I_C — I_B



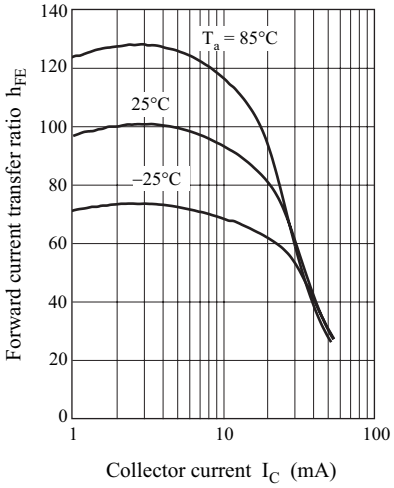
I_C — V_{BE}



$V_{CE(sat)}$ — I_C

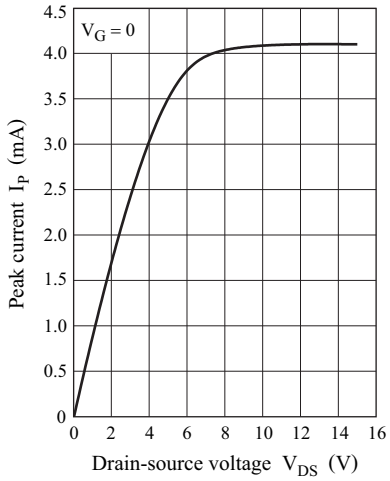


h_{FE} — I_C



Characteristics charts of CCD load device

I_P — V_{DS}



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