

2SD2138A

Silicon NPN triple diffusion planar type darlington

For power amplification
Complementary to 2SB1418A

■ Features

- High forward current transfer ratio h_{FE} which has satisfactory linearity.
- Allowing supply with the radial taping

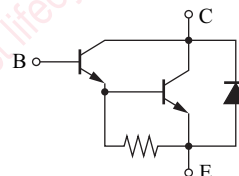
■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	80	V
Collector-emitter voltage (Base open)	V_{CEO}	80	V
Emitter-base voltage (Collector open)	V_{EBO}	5	V
Collector current	I_C	2	A
Peak collector current	I_{CP}	4	A
Collector power dissipation	P_C	15	W
		$T_C = 25^\circ\text{C}$	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

■ Package

- Code
MT-4-A1
- Pin Name
 1. Base
 2. Collector
 3. Emitter

■ Internal Connection



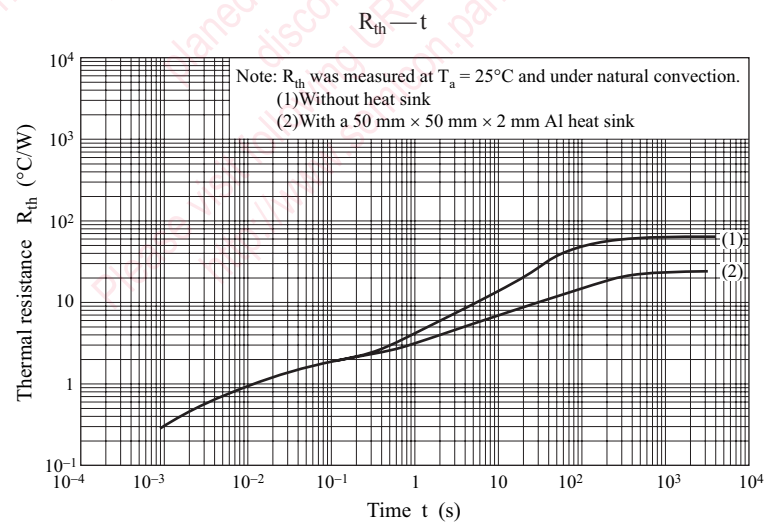
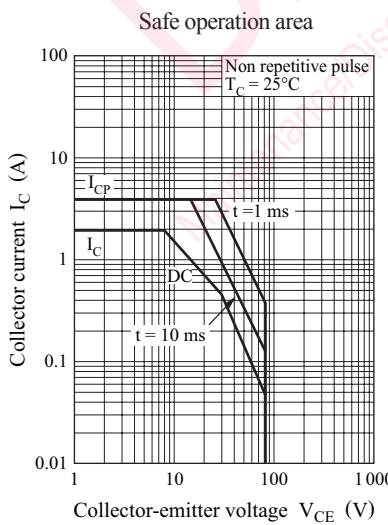
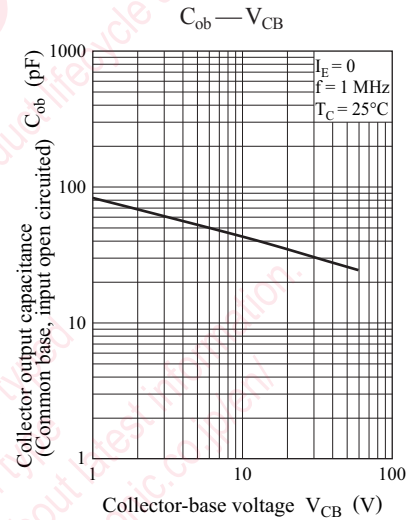
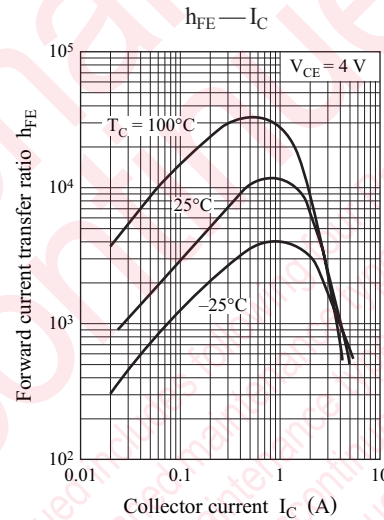
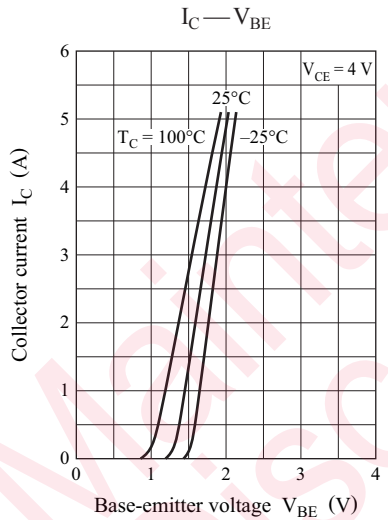
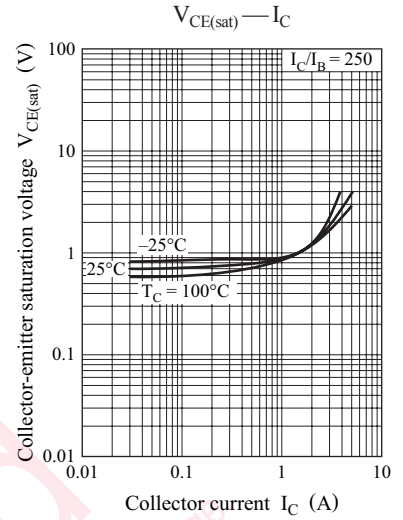
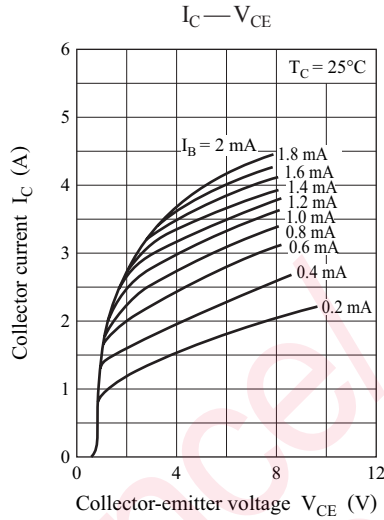
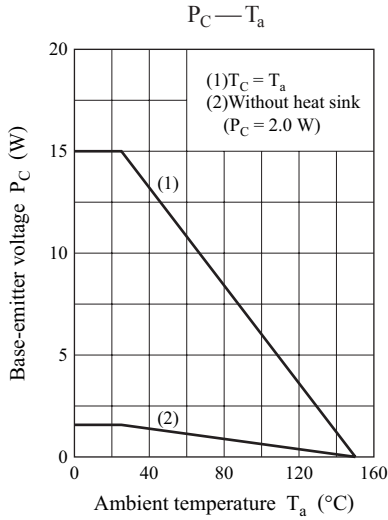
■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 30\text{ mA}, I_B = 0$	80			V
Base-emitter voltage	V_{BE}	$V_{CE} = 4\text{ V}, I_C = 2\text{ A}$			2.8	V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 80\text{ V}, I_E = 0$			100	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 40\text{ V}, I_B = 0$			100	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0$			100	μA
Forward current transfer ratio	h_{FE1}	$V_{CE} = 4\text{ V}, I_C = 1\text{ A}$	1000			—
	h_{FE2}^*	$V_{CE} = 4\text{ V}, I_C = 2\text{ A}$	2000		10000	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 2\text{ A}, I_B = 8\text{ mA}$			2.5	V
Transition frequency	f_T	$V_{CE} = 10\text{ V}, I_C = 0.5\text{ A}, f = 1\text{ MHz}$		20		MHz
Turn-on time	t_{on}	$I_C = 2\text{ A}, I_{B1} = 8\text{ mA}, I_{B2} = -8\text{ mA}, V_{CC} = 50\text{ V}$		0.4		μs
Turn-off time	t_{off}			4		μs

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

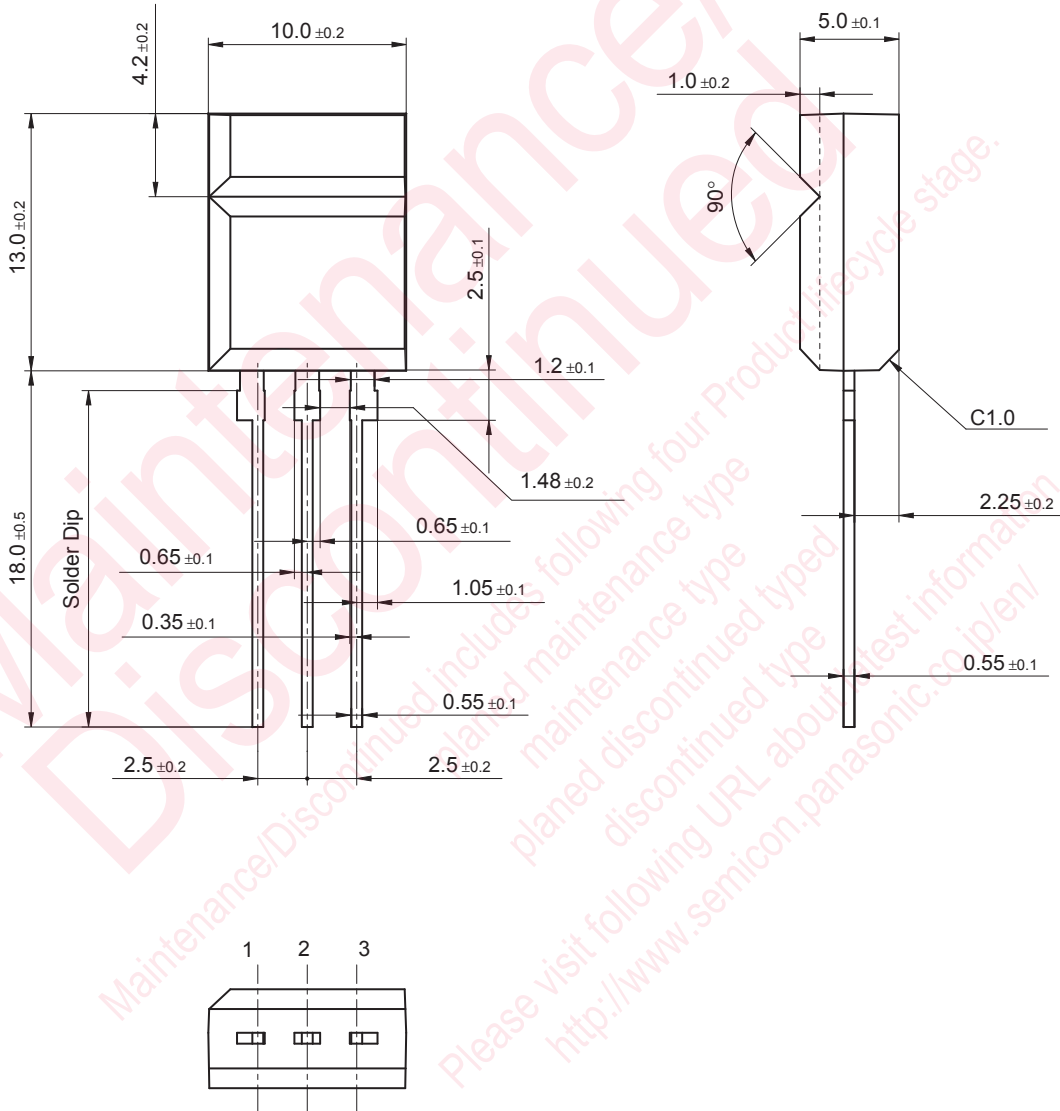
2. *: Rank classification

Rank	Q	P
h_{FE2}	2000 to 5000	4000 to 10000



MT-4-A1

Unit: mm



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