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# 2SD2136

## Silicon NPN triple diffusion planar type

For power amplification

Complementary to 2SB1416

### ■ Features

- High forward current transfer ratio  $h_{FE}$  which has satisfactory linearity.
- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Allowing supply with the radial taping

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

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	60	V
Collector-emitter voltage (Base open)	$V_{CEO}$	60	V
Emitter-base voltage (Collector open)	$V_{EBO}$	6	V
Collector current	$I_C$	3	A
Peak collector current	$I_{CP}$	5	A
Collector power dissipation	$P_C$	1.5	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

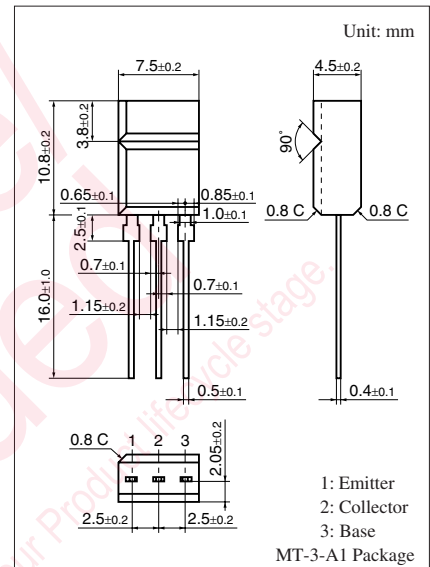
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 30\text{ mA}, I_B = 0$	60			V
Base-emitter voltage *1	$V_{BE}$	$V_{CE} = 4\text{ V}, I_C = 3\text{ A}$			1.8	V
Collector-emitter cutoff current (Emitter-base short)	$I_{CES}$	$V_{CE} = 60\text{ V}, V_{BE} = 0$			200	$\mu\text{A}$
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = 30\text{ V}, I_B = 0$			300	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 6\text{ V}, I_C = 0$			1	mA
Forward current transfer ratio	$h_{FE1}$ *2	$V_{CE} = 4\text{ V}, I_C = 1\text{ A}$	40		250	—
	$h_{FE2}$ *1	$V_{CE} = 4\text{ V}, I_C = 3\text{ A}$	10			
Collector-emitter saturation voltage *1	$V_{CE(sat)}$	$I_C = 3\text{ A}, I_B = 0.375\text{ A}$			1.2	V
Transition frequency	$f_T$	$V_{CE} = 5\text{ V}, I_E = -0.1\text{ A}, f = 200\text{ MHz}$		220		MHz
Turn-on time	$t_{on}$	$I_C = 1\text{ A}, I_{B1} = 0.1\text{ A}, I_{B2} = -0.1\text{ A}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$			2.5		$\mu\text{s}$
Fall time	$t_f$			0.4		$\mu\text{s}$

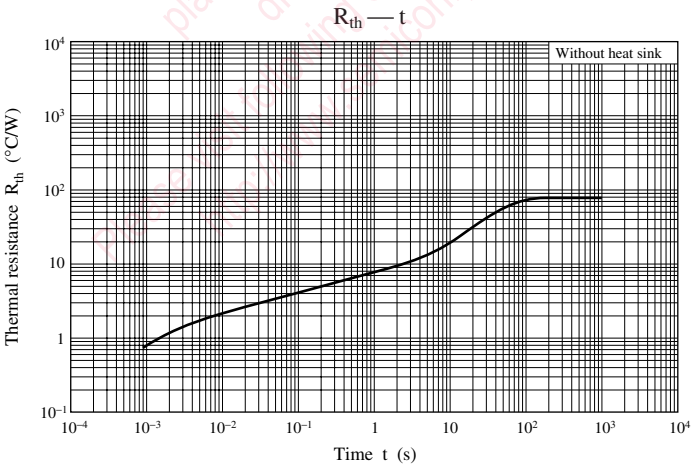
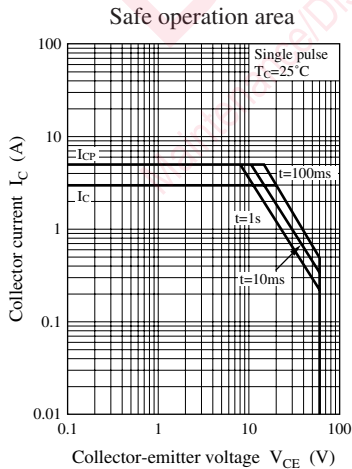
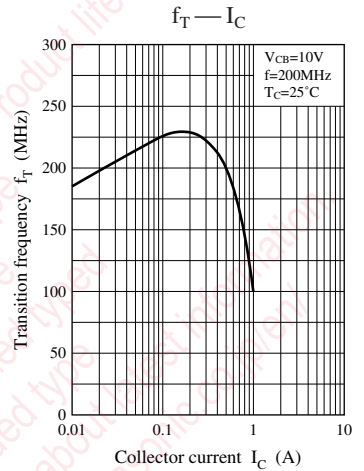
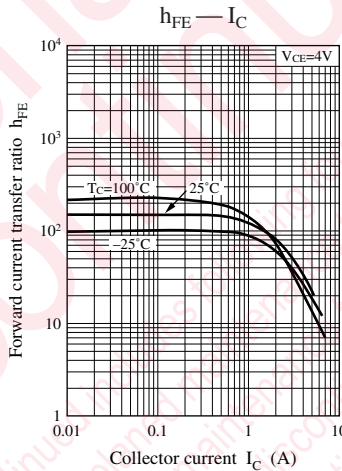
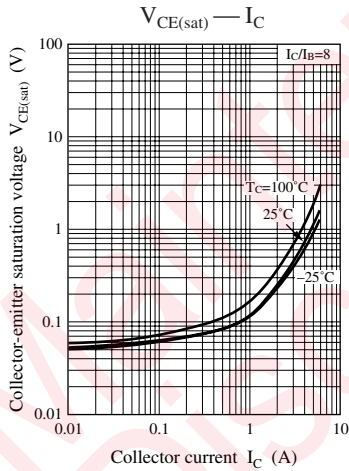
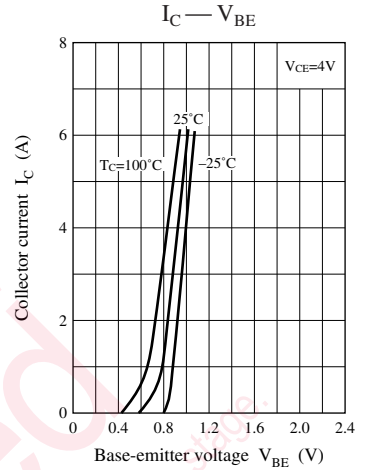
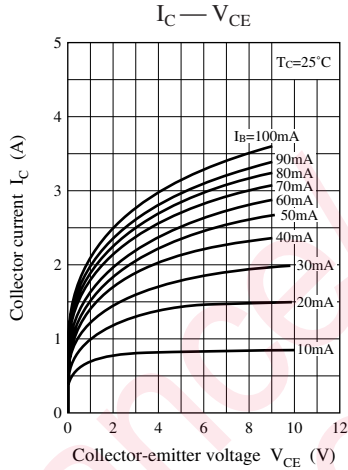
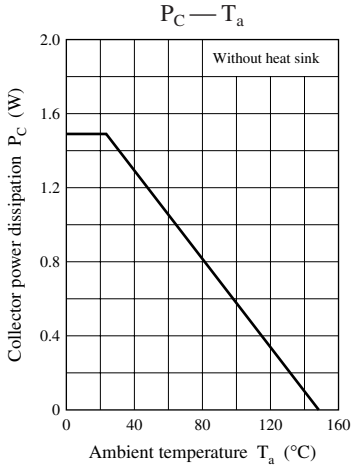
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*1: Pulse measurement

\*2: Rank classification

Rank	P	Q	R
$h_{FE1}$	40 to 90	70 to 150	120 to 250





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