

# 2SD1257, 2SD1257A

## Silicon NPN epitaxial planar type

For power switching

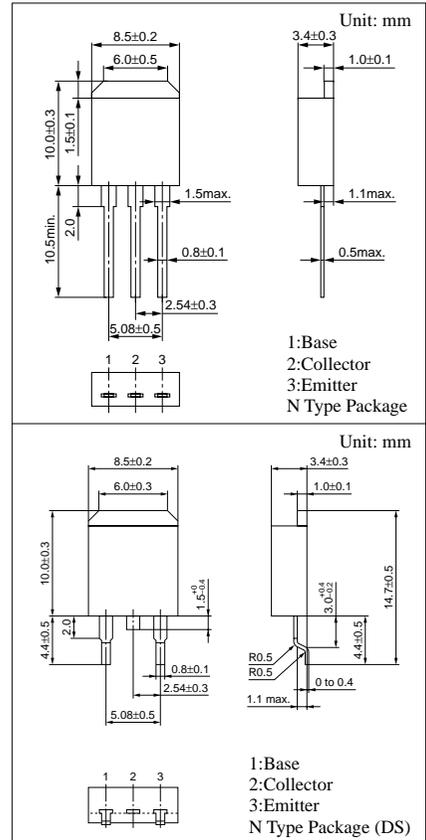
Complementary to 2SB0934 (2SB934)

### Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector current  $I_C$
- N type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ )

Parameter	Symbol	Rated	Unit
Collector to base voltage	2SD1257	130	V
	2SD1257A	150	
Collector to emitter voltage	2SD1257	80	V
	2SD1257A	100	
Emitter to base voltage	$V_{EBO}$	7	V
Peak collector current	$I_{CP}$	15	A
Collector current	$I_C$	7	A
Collector power dissipation	$T_C=25^\circ\text{C}$	40	W
	$T_a=25^\circ\text{C}$	1.3	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$



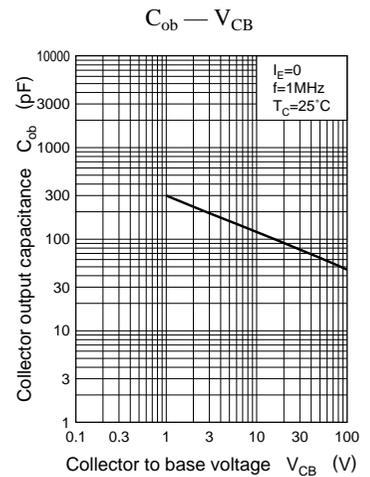
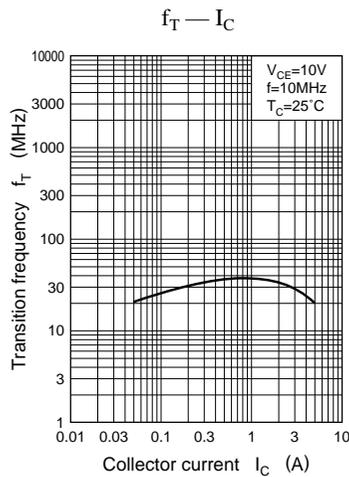
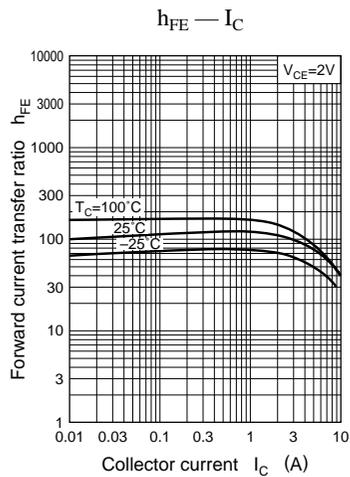
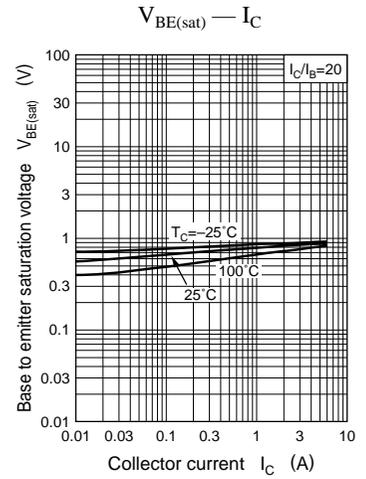
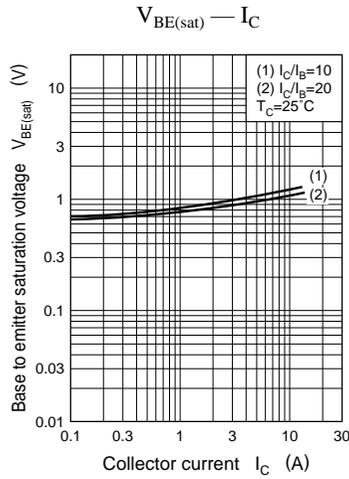
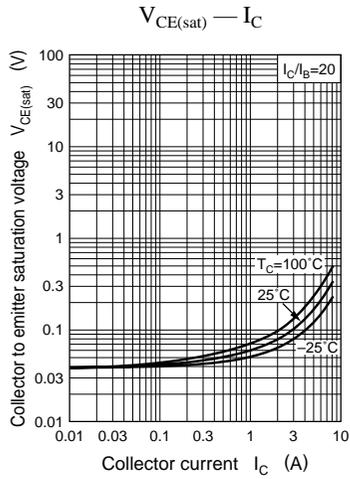
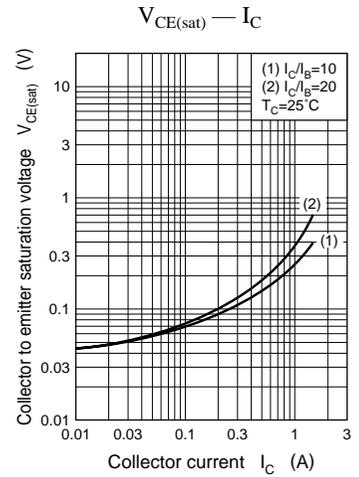
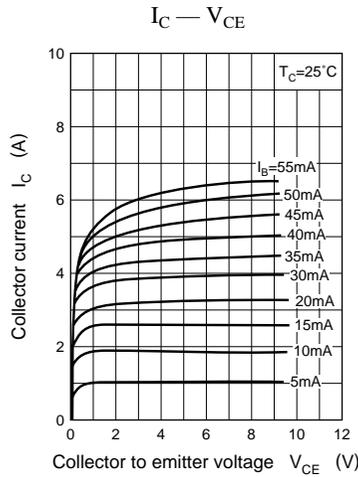
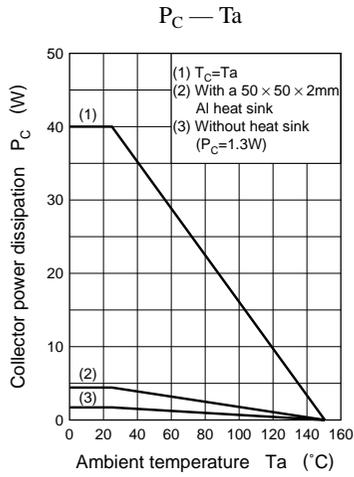
### Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 100V, I_E = 0$			10	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$			50	$\mu\text{A}$
Collector to emitter voltage	$V_{CEO}$	$I_C = 10\text{mA}, I_B = 0$	80			V
			100			
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 2V, I_C = 0.1A$	45			
	$h_{FE2}^*$	$V_{CE} = 2V, I_C = 3A$	60		260	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 5A, I_B = 0.25A$			0.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 5A, I_B = 0.25A$			1.5	V
Transition frequency	$f_T$	$V_{CE} = 10V, I_C = 0.5A, f = 10\text{MHz}$		30		MHz
Turn-on time	$t_{on}$	$I_C = 3A, I_{B1} = 0.3A, I_{B2} = -0.3A, V_{CC} = 50V$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$			1.5		$\mu\text{s}$
Fall time	$t_f$			0.1		$\mu\text{s}$

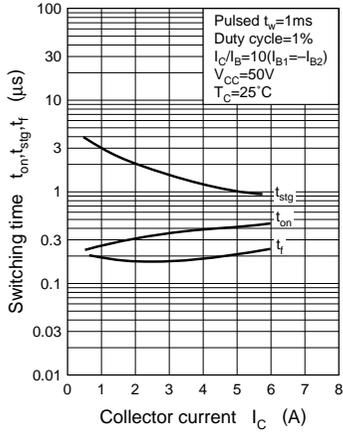
\* $h_{FE2}$  Rank classification

Rank	R	Q	P
$h_{FE2}$	60 to 120	90 to 180	130 to 260

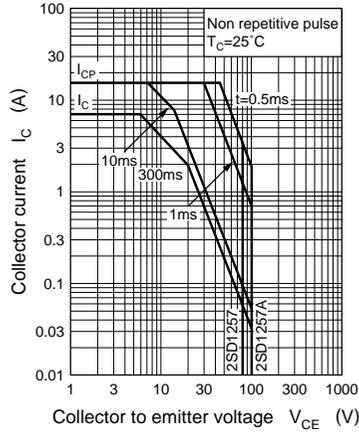
Note) The part numbers in the parenthesis show conventional part number.



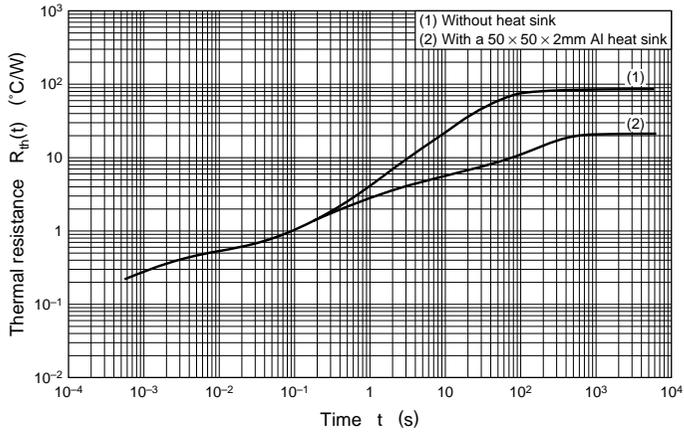
$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



$R_{th(t)} - t$



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