

# 2SD2220

## Silicon NPN triple diffusion planar type Darlington

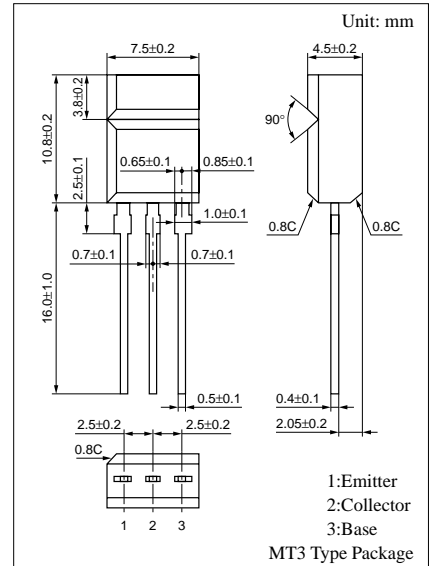
For low-frequency amplification

### Features

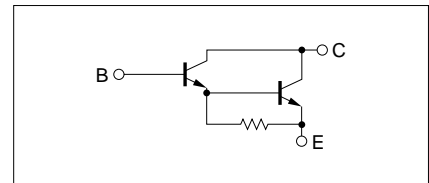
- Suitable for the driver circuit of a motor, a printer hammer and like that, since this transistor is designed for the high forward current transfer ratio  $h_{FE}$
- A shunt resistor is omitted from the driver
- Allowing supply with the radial taping

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

Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	100	V
Collector to emitter voltage	$V_{CEO}$	80	V
Emitter to base voltage	$V_{EBO}$	5	V
Peak collector current	$I_{CP}$	1.5	A
Collector current	$I_C$	1	A
Collector power dissipation ( $T_C=25^\circ\text{C}$ )	$P_C$	1.5	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$



### Internal Connection



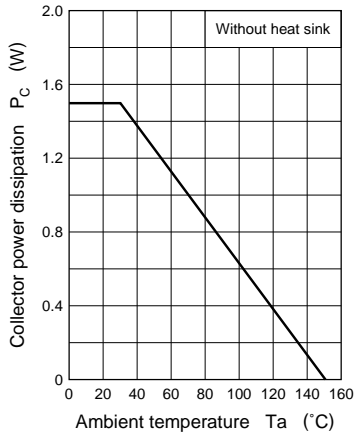
### Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 25\text{V}, I_E = 0$			100	nA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 4\text{V}, I_C = 0$			100	nA
Collector to base voltage	$V_{CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	100			V
Collector to emitter voltage	$V_{CEO}$	$I_C = 1\text{mA}, I_B = 0$	80			V
Emitter to base voltage	$V_{EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	5			V
Forward current transfer ratio	$h_{FE}^*$	$V_{CE} = 10\text{V}, I_C = 1\text{A}$	4000		20000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1\text{A}, I_B = 1\text{mA}$			1.8	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1\text{A}, I_B = 1\text{mA}$			2.2	V
Transition frequency	$f_T$	$V_{CB} = 10\text{V}, I_E = -50\text{mA}, f = 200\text{MHz}$		150		MHz

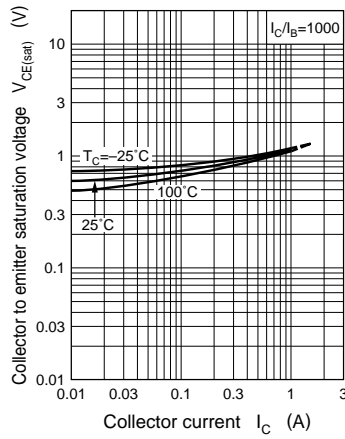
\* $h_{FE}$  Rank classification

Rank	Q	R
$h_{FE}$	4000 to 10000	8000 to 20000

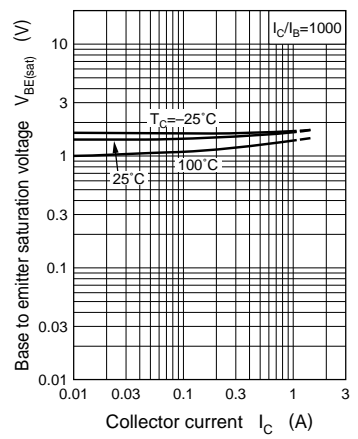
$P_C — T_a$



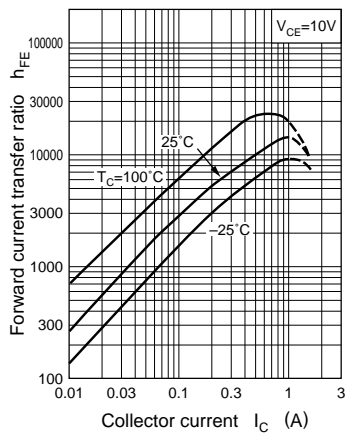
$V_{CE(sat)} — I_C$



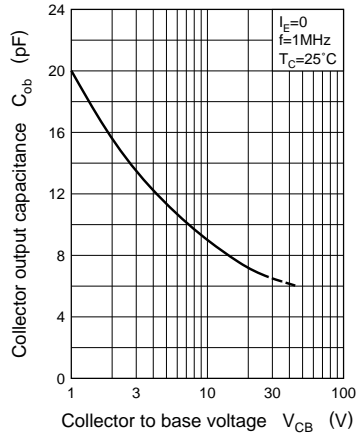
$V_{BE(sat)} — I_C$



$h_{FE} — I_C$



$C_{ob} — V_{CB}$



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