

# 2SD1775, 2SD1775A

## Silicon NPN triple diffusion planar type

For high-speed switching and high current amplification ratio

### Features

- High forward current transfer ratio  $h_{FE}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- N type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

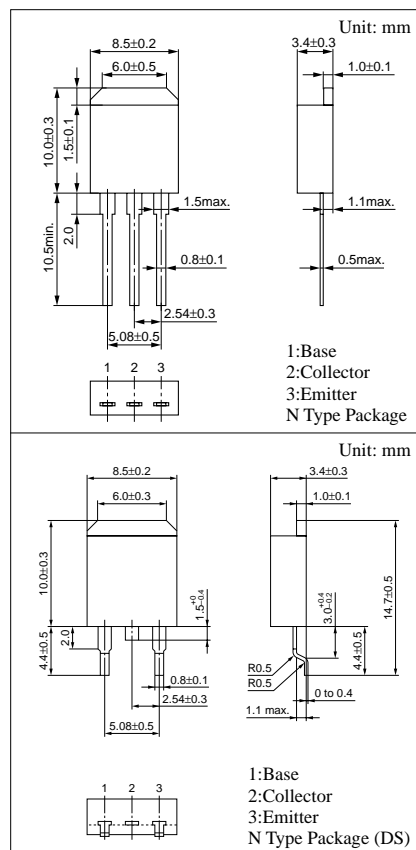
Parameter		Symbol	Ratings	Unit
Collector to base voltage	2SD1775	$V_{CBO}$	80	V
	2SD1775A		100	
Collector to emitter voltage	2SD1775	$V_{CEO}$	60	V
	2SD1775A		80	
Emitter to base voltage		$V_{EBO}$	6	V
Peak collector current		$I_{CP}$	4	A
Collector current		$I_C$	2	A
Base current		$I_B$	0.5	A
Collector power dissipation	$T_C=25^{\circ}\text{C}$	$P_C$	25	W
	$T_a=25^{\circ}\text{C}$		1.3	
Junction temperature		$T_j$	150	$^{\circ}\text{C}$
Storage temperature		$T_{\text{stg}}$	-55 to +150	$^{\circ}\text{C}$

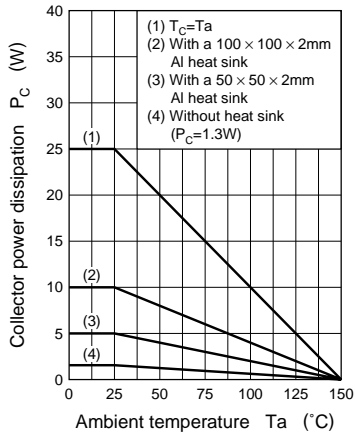
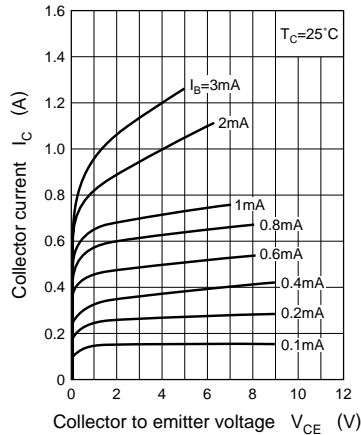
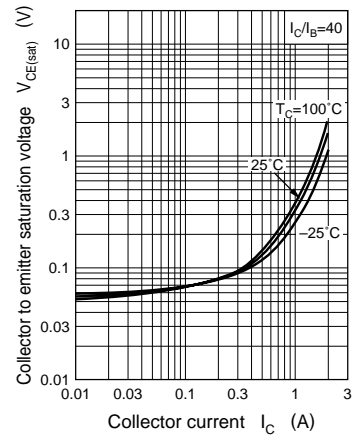
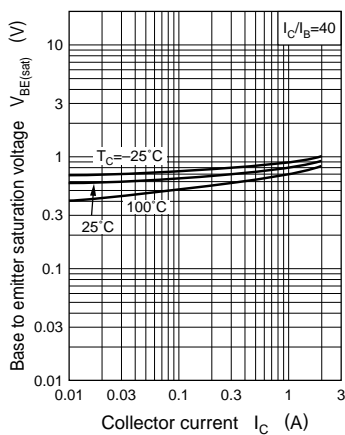
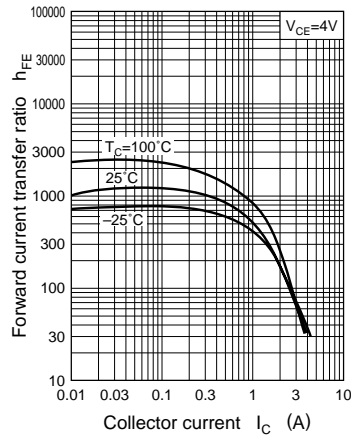
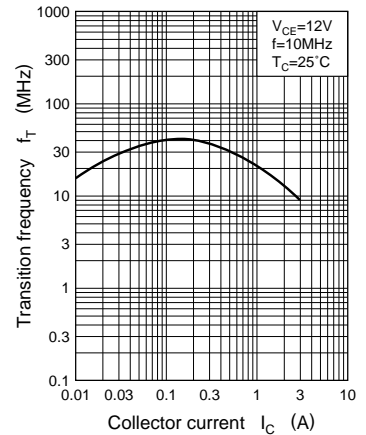
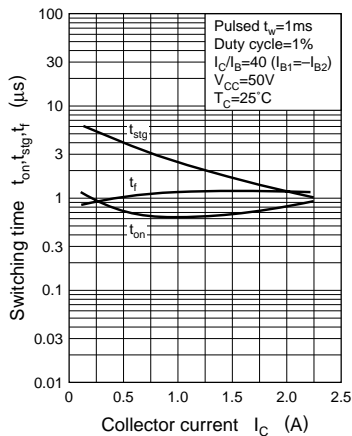
### Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 80\text{V}, I_E = 0$			100	$\mu\text{A}$
2SD1775A		$V_{CB} = 100\text{V}, I_E = 0$			100	
Collector cutoff current	$I_{CEO}$	$V_{CE} = 40\text{V}, I_B = 0$			100	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 6\text{V}, I_C = 0$			100	$\mu\text{A}$
Collector to emitter voltage	$V_{CEO}$	$I_C = 25\text{mA}, I_B = 0$	60			V
2SD1775A			80			
Forward current transfer ratio	$h_{FE}^*$	$V_{CE} = 4\text{V}, I_C = 300\text{mA}$	500		1500	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1\text{A}, I_B = 25\text{mA}$			1.0	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1\text{A}, I_B = 25\text{mA}$			1.2	V
Transition frequency	$f_T$	$V_{CE} = 12\text{V}, I_C = 200\text{mA}, f = 10\text{MHz}$		40		MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		30		pF
Turn-on time	$t_{on}$	$I_C = 1\text{A}, I_{B1} = 25\text{mA}, I_{B2} = -25\text{mA}, V_{CC} = 50\text{V}$		0.6		$\mu\text{s}$
Storage time	$t_{stg}$			2.5		$\mu\text{s}$
Fall time	$t_f$			1.0		$\mu\text{s}$

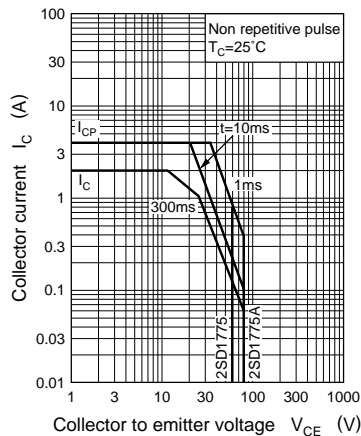
\* $h_{FE}$  Rank classification

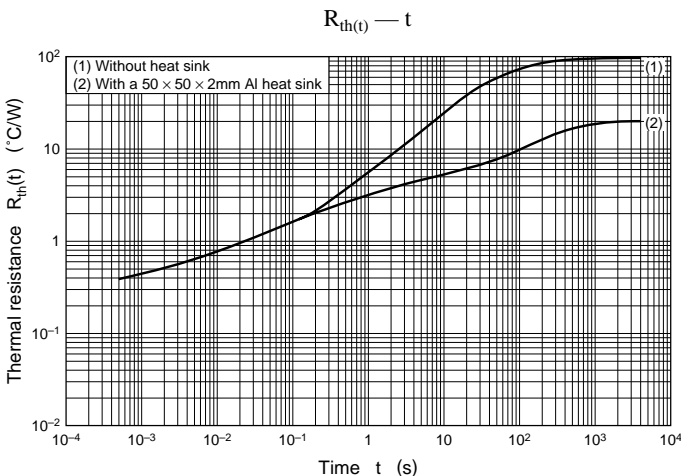
Rank	Q	P
$h_{FE}$	500 to 1000	800 to 1500



$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_C$  $t_{on}, t_{stg}, t_f - I_C$ 

Area of safe operation (ASO)





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