

2SD1776, 2SD1776A

Silicon NPN triple diffusion planar type

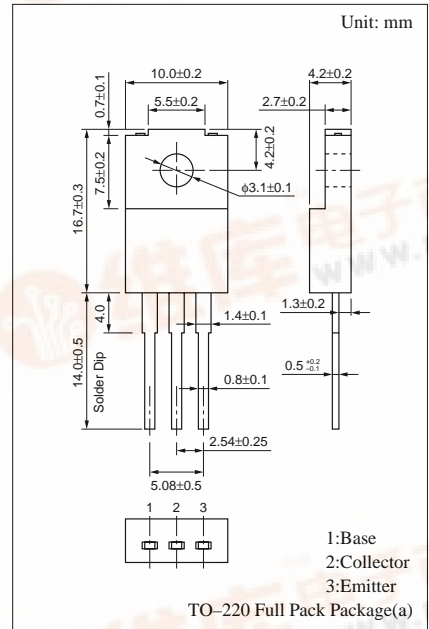
For power amplification with high forward current transfer ratio

Features

- High forward current transfer ratio h_{FE}
- Satisfactory linearity of forward current transfer ratio h_{FE}
- Full-pack package which can be installed to the heat sink with one screw

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

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	80	V
2SD1776A		100	
Collector to emitter voltage	V_{CEO}	60	V
2SD1776A		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	P_C	25	W
$T_C=25^\circ\text{C}$ $T_a=25^\circ\text{C}$		2	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



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

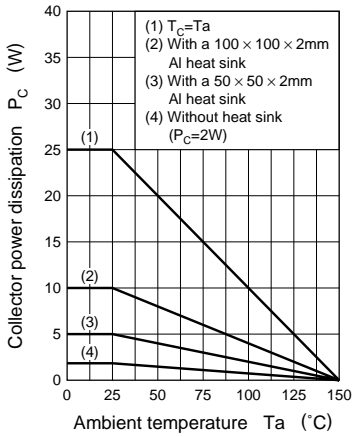
Parameter	Symbol	Conditions	min	typ	max	Unit	
Collector cutoff current	I_{CBO}	$V_{CB} = 80\text{V}, I_E = 0$			100	μA	
2SD1776A		$V_{CB} = 100\text{V}, I_E = 0$			100		
Collector cutoff current	I_{CEO}	$V_{CE} = 40\text{V}, I_B = 0$			100	μA	
Emitter cutoff current	I_{EBO}	$V_{EB} = 6\text{V}, I_C = 0$			100	μA	
Collector to emitter voltage	V_{CEO}	$I_C = 25\text{mA}, I_B = 0$	60			V	
2SD1776A			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	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		μs	
Storage time	t_{stg}				2.5		μs
Fall time	t_f				1		μs

h_{FE} Rank classification

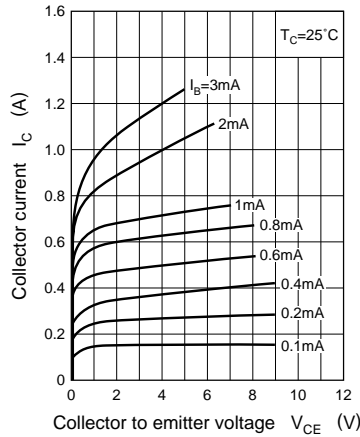
Rank	Q	P
h_{FE}	500 to 1000	800 to 1500



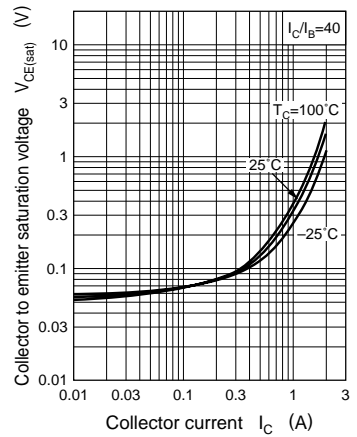
$P_C - T_a$



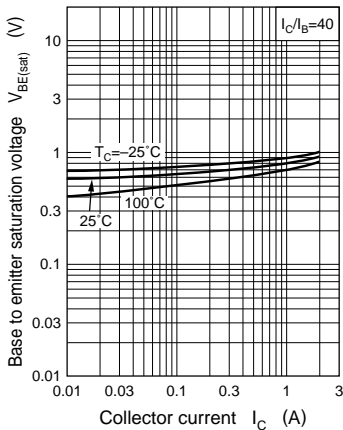
$I_C - V_{CE}$



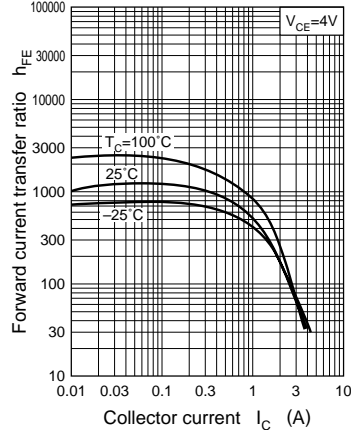
$V_{CE(sat)} - I_C$



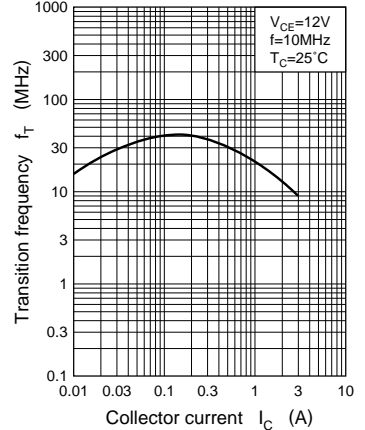
$V_{BE(sat)} - I_C$



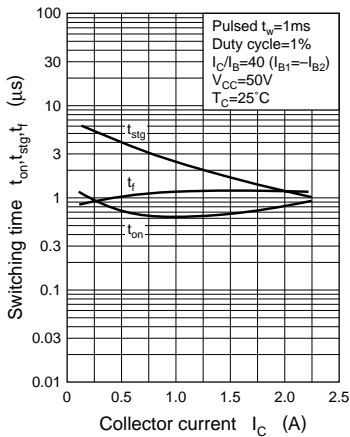
$h_{FE} - I_C$



$f_T - I_C$



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



Area of safe operation (ASO)

