2SD1539, 2SD1539A

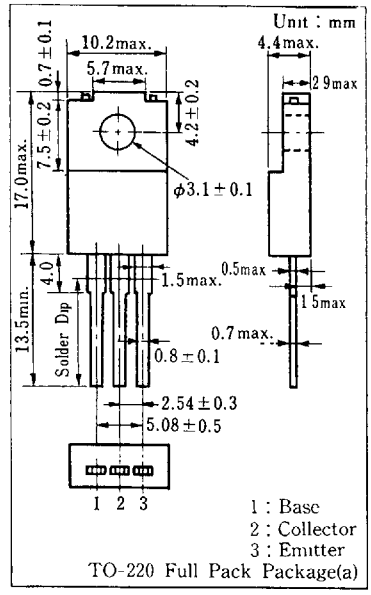
Silicon NPN Epitaxial Planar Type

Low Voltage Switching
Complementary Pair with 2SB1071, 2SB1071A

■ Features

- Low collector-emitter saturation voltage ($V_{CE(sat)}$)
- High speed switching
- "Full Pack" package for simplified mounting on a heat sink with one screw

■ Package Dimensions



■ Absolute Maximum Ratings (Tc=25°C)

Item		Symbol	Value	Unit
Collector-base voltage	2SD1539	V_{CBO}	40	V
	2SD1539A		50	
Collector-emitter voltage	2SD1539	V_{CEO}	20	V
	2SD1539A		40	
Emitter-base voltage		V_{EBO}	5	V
Peak collector current		I_{CP}	8	A
Collector current		I_C	4	A
Collector power dissipation	Tc=25℃	P_C	25	W
	Ta=25℃		2	
Junction temperature		T_j	150	℃
Storage temperature		T_{stg}	−55～+150	℃

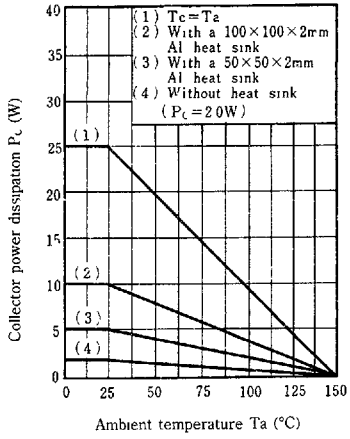
■ Electrical Characteristics (Tc=25°C)

Item		Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	2SD1539	I_{CBO}	V_{CB}=40 V, I_E=0			50	μA
	2SD1539A		V_{CB}=50 V, I_E=0			50	
Emitter cutoff current		I_{EBO}	V_{EB}=5 V, I_C=0			50	μA
Collector-emitter voltage	2SD1539	V_{CEO}	I_C=10 mA, I_B=0	20			V
	2SD1539A			40			
DC current gain		h_{FE1}	V_{CE}=2 V, I_C=0.1 A	45			
		h_{FE2}*	V_{CE}=2 V, I_C=1 A	60		260	
Base-emitter voltage		$V_{CE(sat)}$	I_C=2 A, I_B=0.1 A			0.5	V
Collector-emitter saturation voltage		$V_{BE(sat)}$	I_C=2 A, I_B=0.1 A			1.5	V
Transition frequency		f_T	V_{CE}=5V, I_C=0.5A, f=10MHz		120		MHz
Turn-on time		t_{on}	I_C=2 A		0.2		μs
Storage time		t_{stg}	I_{B1}=0.2 A, I_{B2}=−0.2 A		0.5		μs
Fall time		t_f	V_{CC}=20 V		0.1		μs

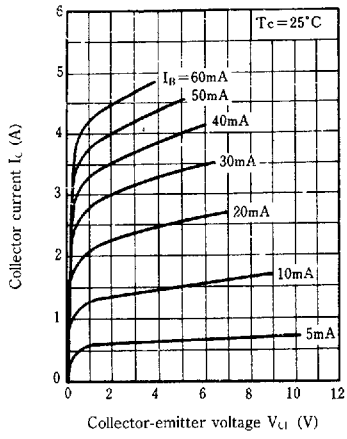
*h_{FE2} Classifications

Class	R	Q	P
h_{FE2}	60～120	90～180	130～260

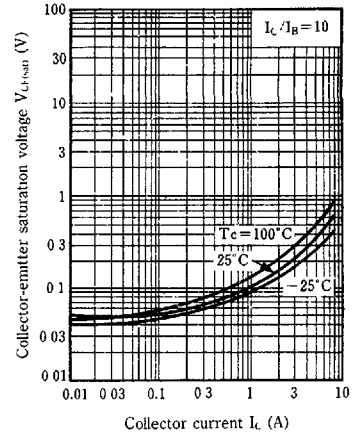
$P_C - Ta$



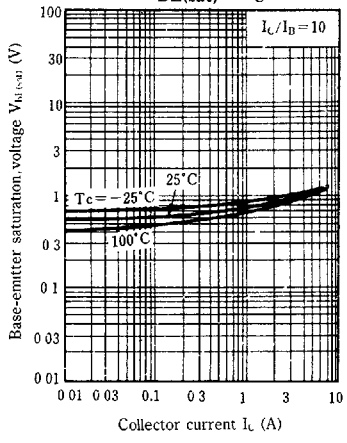
$I_C - V_{CE}$



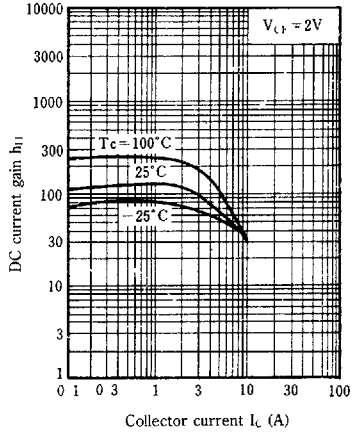
$V_{CE(sat)} - I_C$



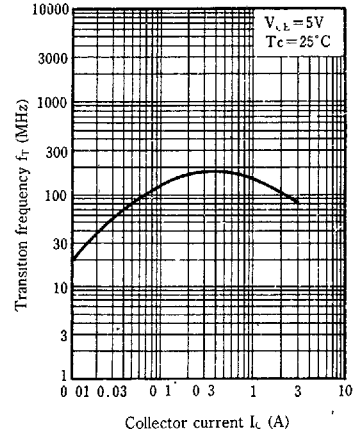
$V_{BE(sat)} - I_C$



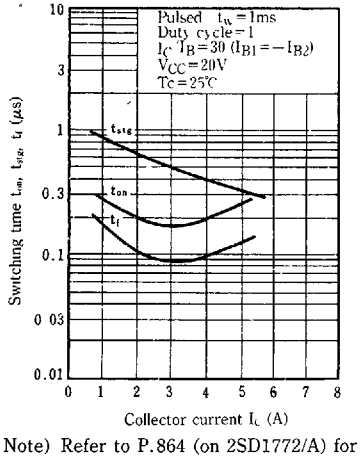
$h_{FE} - I_C$



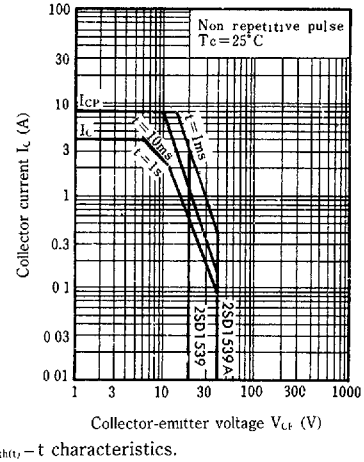
$f_T - I_C$



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



Area of safe operation (ASO)



Note) Refer to P.864 (on 2SD1772/A) for $R_{th(t)} - t$ characteristics.