

2SD1445, 2SD1445A

Silicon NPN epitaxial planar type

For power amplification, power switching and low-voltage switching

Complementary to 2SB0948 (2SB948) and 2SB0948A (2SB948A)

■ Features

- Low collector to emitter saturation voltage $V_{CE(sat)}$
- High-speed switching
- Satisfactory linearity of forward current transfer ratio h_{FE}
- Large collector current I_C
- 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	Rating	Unit
Collector to base voltage	2SD1445	40	V
	2SD1445A	50	
Collector to emitter voltage	2SD1445	20	V
	2SD1445A	40	
Emitter to base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	20	A
Collector current	I_C	10	A
Collector power dissipation	$T_C = 25^\circ\text{C}$	40	W
	$T_a = 25^\circ\text{C}$	2	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

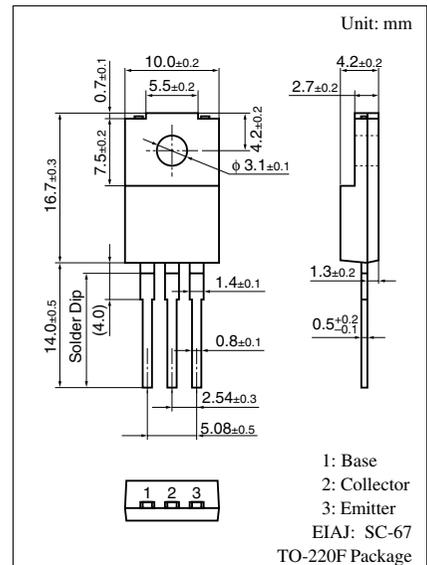
■ Electrical Characteristics $T_C = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	2SD1445	$V_{CB} = 40\text{ V}, I_E = 0$			50	μA
	2SD1445A					
Emitter cutoff current	I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0$			50	μA
Collector to emitter voltage	2SD1445	$I_C = 10\text{ mA}, I_B = 0$	20			V
	2SD1445A					
Forward current transfer ratio	h_{FE1}	$V_{CE} = 2\text{ V}, I_C = 0.1\text{ A}$	45			
	h_{FE2}^*	$V_{CE} = 2\text{ V}, I_C = 3\text{ A}$	90		260	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\text{ A}, I_B = 0.33\text{ A}$			0.6	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10\text{ A}, I_B = 0.33\text{ A}$			1.5	V
Transition frequency	f_T	$V_{CE} = 10\text{ V}, I_C = 0.5\text{ A}, f = 10\text{ MHz}$		120		MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$		200		pF
Turn-on time	t_{on}	$I_C = 3\text{ A}, I_{B1} = 0.1\text{ A}, I_{B2} = -0.1\text{ A}, V_{CC} = 20\text{ V}$		0.3		μs
Storage time	t_{stg}			0.4		μs
Fall time	t_f			0.1		μs

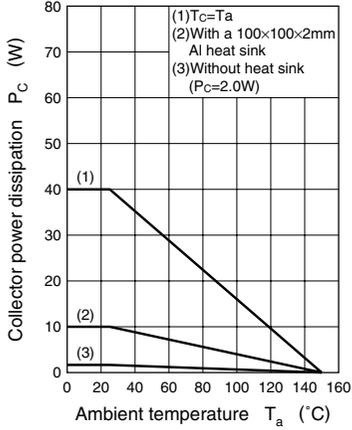
Note) *: Rank classification

Rank	Q	P
h_{FE2}	90 to 180	130 to 260

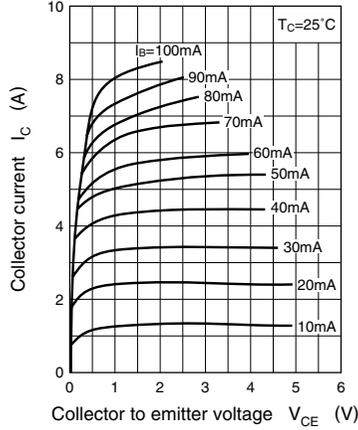
Note) The part numbers in the parenthesis show conventional part number. Ordering can be made by the common rank (PQ rank $h_{FE2} = 90$ to 260) in the rank classification. (2SD1445A only)



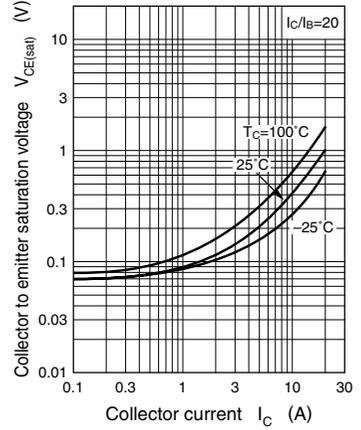
$P_C - T_a$



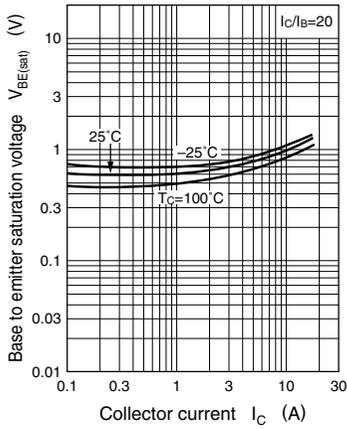
$I_C - V_{CE}$



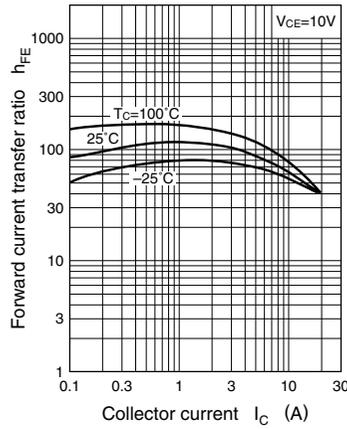
$V_{CE(sat)} - I_C$



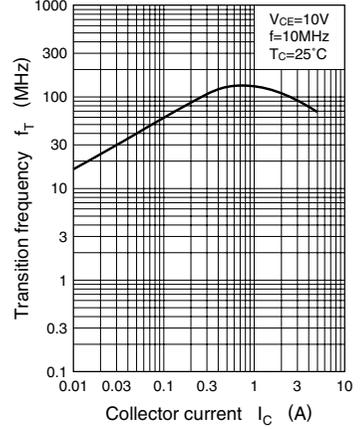
$V_{BE(sat)} - I_C$



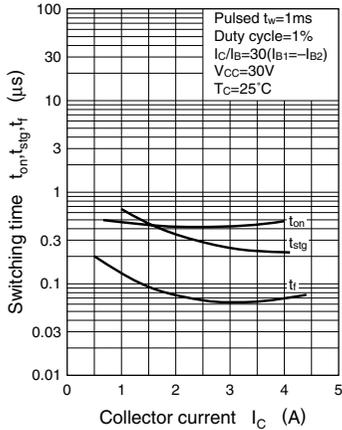
$h_{FE} - I_C$



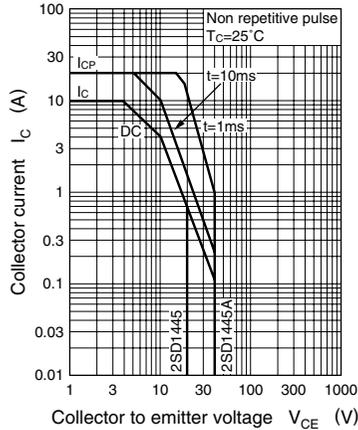
$f_T - I_C$

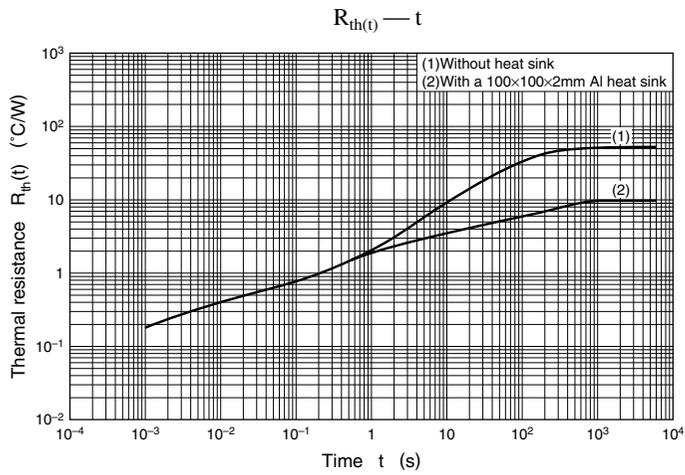


$t_{on}, t_{stg}, t_f - I_C$



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