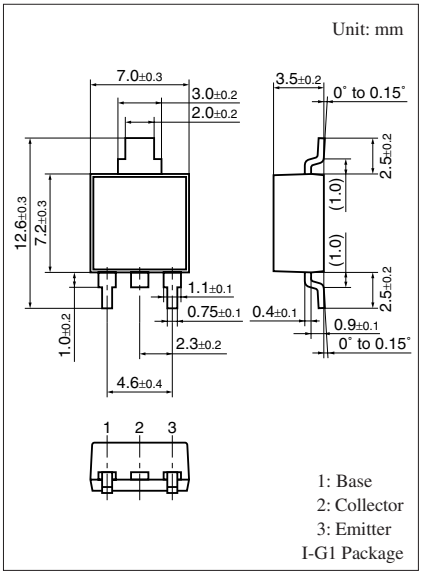
2SD1742, 2SD1742A

Silicon NPN triple diffusion planar type

For low-frequency power amplification
Complementary to 2SB1172 and 2SB1172A

■ Features

- High forward current transfer ratio h_{FE} which has satisfactory linearity
- Low collector-emitter saturation voltage $V_{CE(sat)}$
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment



Note) Self-supported type package is also prepared.

■ Absolute Maximum Ratings $T_C = 25°C$

Parameter		Symbol	Rating	Unit
Collector-base voltage (Emitter open)	2SD1742	V_{CBO}	60	V
	2SD1742A		80	
Collector-emitter voltage (Base open)	2SD1742	V_{CEO}	60	V
	2SD1742A		80	
Emitter-base voltage (Collector open)		V_{EBO}	6	V
Collector current		I_C	3	A
Peak collector current		I_{CP}	5	A
Collector power dissipation		P_C	15	W
	$T_a = 25°C$		1.3	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

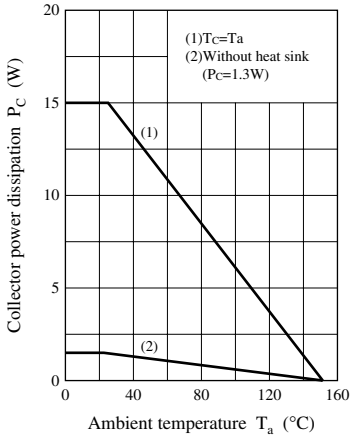
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	2SD1742	V_{CEO}	I_C = 30 mA, I_B = 0	60			V
	2SD1742A			80			
Base-emitter voltage		V_{BE}	V_{CE} = 4 V, I_C = 3 A			1.8	V
Collector-emitter cutoff current (E-B short)	2SB1742	I_{CES}	V_{CE} = 60 V, V_{BE} = 0			200	μA
	2SB1742A		V_{CE} = 80 V, V_{BE} = 0			200	
Collector-base cutoff current (Emitter open)	2SB1742	I_{CBO}	V_{CB} = 30 V, I_E = 0			300	μA
	2SB1742A		V_{CB} = 60 V, I_E = 0			300	
Emitter-base cutoff current (Collector open)		I_{EBO}	V_{EB} = 6 V, I_C = 0			1	mA
Forward current transfer ratio		h_{FE1} *	V_{CE} = 4 V, I_C = 1 A	70		250	—
		h_{FE2}	V_{CE} = 4 V, I_C = 3 A	10			
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C = 3 A, I_B = 0.375 A			1.2	V
Transition frequency		f_T	V_{CE} = 10 V, I_C = 0.5 A, f = 10 MHz		30		MHz
Turn-on time		t_{on}	I_C = 1 A, I_{B1} = 0.1 A, I_{B2} = − 0.1 A		0.5		μs
Storage time		t_{stg}	V_{CC} = 50 V		2.5		μs
Fall time		t_f			0.4		μs

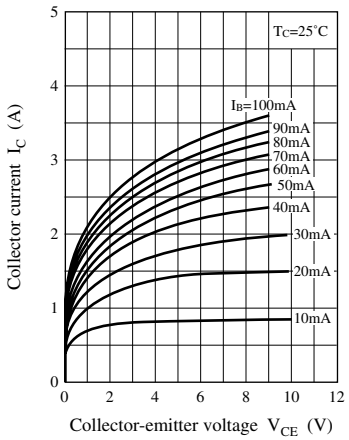
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	Q	P
h_{FE1}	70 to 150	120 to 250

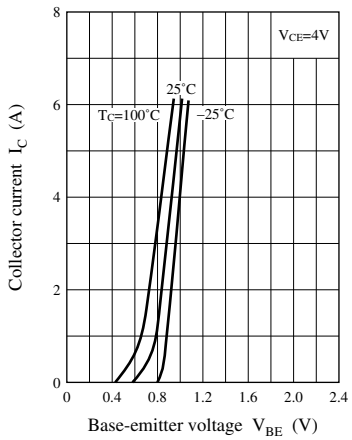
P_C — T_a



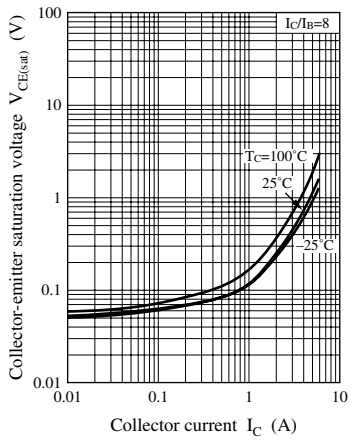
I_C — V_{CE}



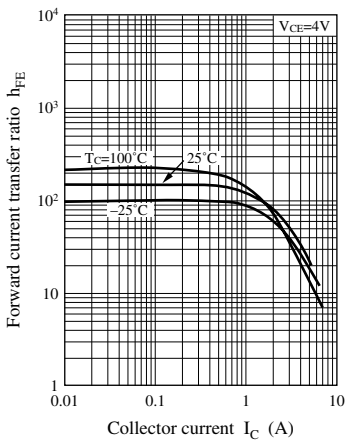
I_C — V_{BE}



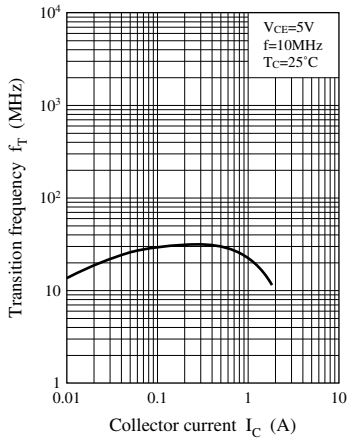
$V_{CE(sat)}$ — I_C



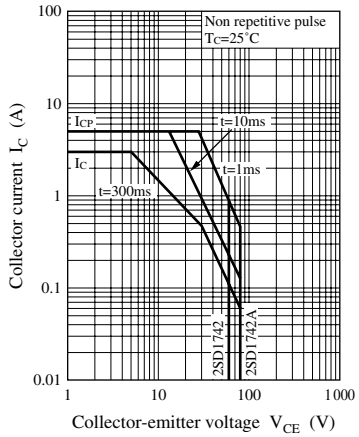
h_{FE} — I_C



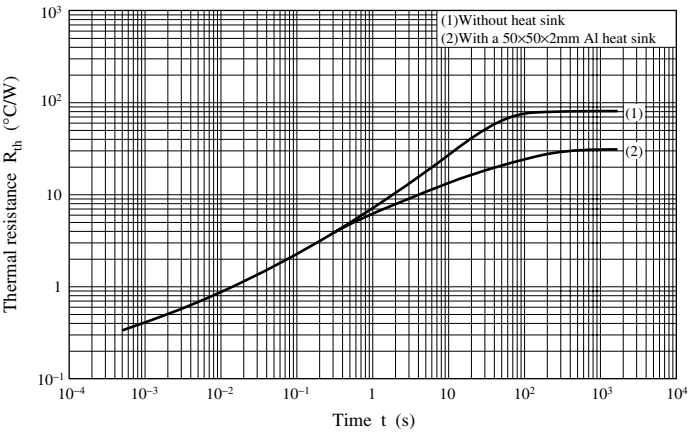
f_T — I_C



Safe operation area



R_{th} — t



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