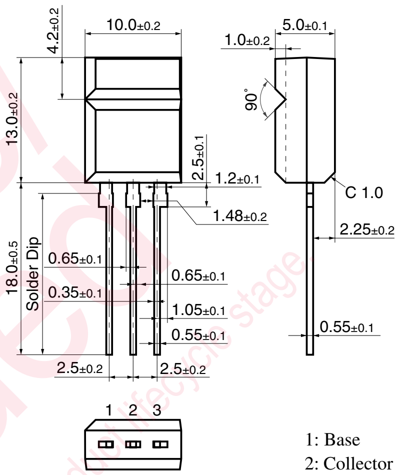
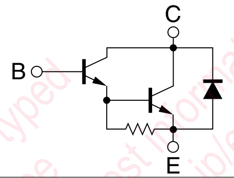
2SD2242, 2SD2242A

Silicon NPN triple diffusion planar type Darlington

For power amplification



Internal Connection



■ Features

- High forward current transfer ratio h_{FE}
- High-speed switching
- Allowing supply with the radial taping

■ Absolute Maximum Ratings $T_C = 25°C$

Parameter		Symbol	Rating	Unit
Collector to base voltage	2SD2242	V_{CBO}	60	V
	2SD2242A		80	
Collector to emitter voltage	2SD2242	V_{CEO}	60	V
	2SD2242A		80	
Emitter to base voltage		V_{EBO}	5	V
Peak collector current		I_{CP}	8	A
Collector current		I_C	4	A
Collector power dissipation	$T_C = 25°C$	P_C	15	W
	$T_a = 25°C$		2	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

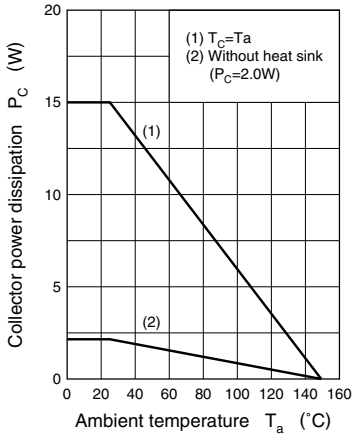
■ Electrical Characteristics $T_C = 25°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	2SD2242	I_{CBO}	$V_{CB} = 60$ V, $I_E = 0$			200	µA
	2SD2242A		$V_{CB} = 80$ V, $I_E = 0$			200	
Collector cutoff current	2SD2242	I_{CEO}	$V_{CE} = 30$ V, $I_B = 0$			500	µA
	2SD2242A		$V_{CE} = 40$ V, $I_B = 0$			500	
Emitter cutoff current		I_{EBO}	$V_{EB} = 5$ V, $I_C = 0$			2	µA
Collector to emitter voltage	2SD2242	V_{CEO}	$I_C = 30$ mA, $I_B = 0$	60			V
	2SD2242A			80			
Forward current transfer ratio		h_{FE1}	$V_{CE} = 3$ V, $I_C = 0.5$ A	1 000			
		h_{FE2} *	$V_{CE} = 3$ V, $I_C = 3$ A	2 000		10 000	
Base to emitter voltage		V_{BE}	$V_{CE} = 3$ V, $I_C = 3$ A			2.5	V
Collector to emitter saturation voltage		$V_{CE(sat)}$	$I_C = 3$ A, $I_B = 12$ mA			2	V
			$I_C = 5$ A, $I_B = 20$ mA			4	
Transition frequency		f_T	$V_{CE} = 10$ V, $I_C = 0.5$ A, f = 1 MHz		20		MHz
Turn-on time		t_{on}	$I_C = 3$ A, $I_{B1} = 12$ mA, $I_{B2} = −12$ mA,		0.5		µs
Storage time		t_{stg}	$V_{CC} = 50$ V		4		µs
Fall time		t_f			1		µs

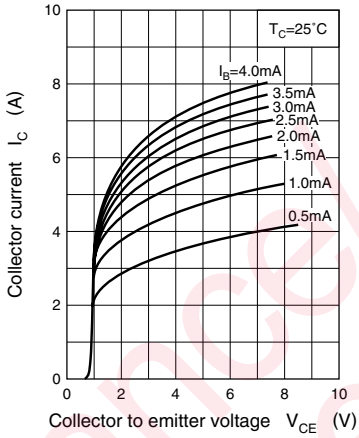
Note) *: Rank classification

Rank	Q	R
h_{FE2}	2 000 to 5 000	4 000 to 10 000

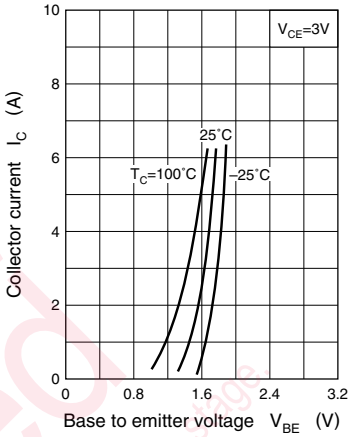
P_C — T_a



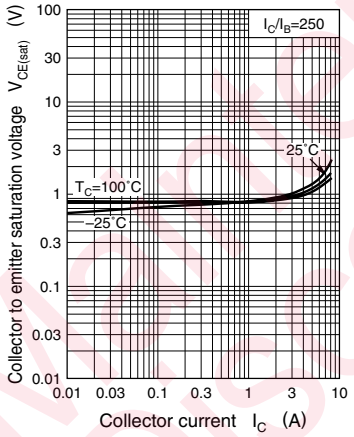
I_C — V_{CE}



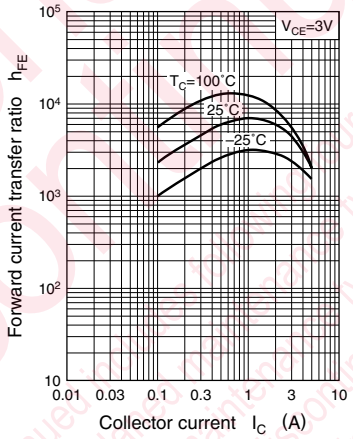
I_C — V_{BE}



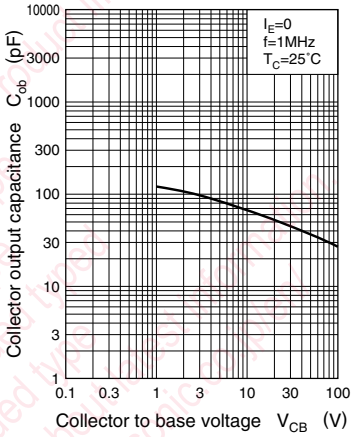
$V_{CE(sat)}$ — I_C



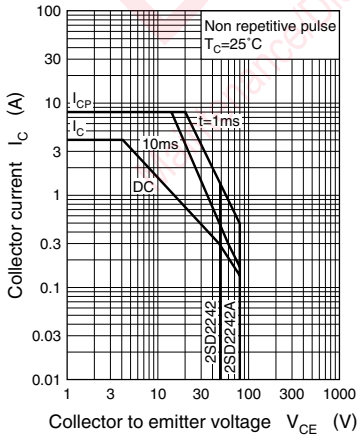
h_{FE} — I_C



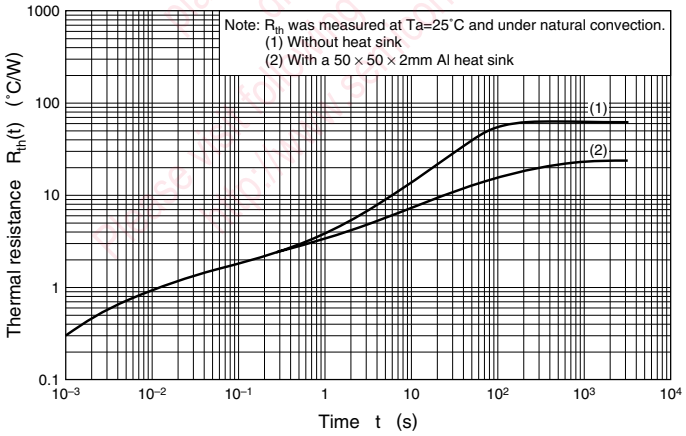
C_{ob} — V_{CB}



Area of safe operation (ASO)



$R_{th(t)}$ — t



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