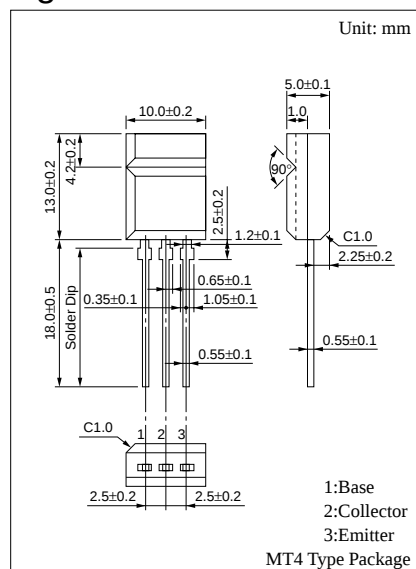


Silicon NPN triple diffusion planar type Darlington

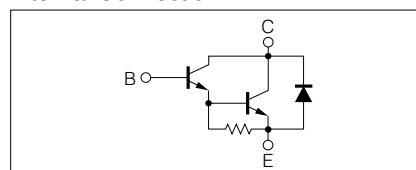
■ Features

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

Parameter		Symbol	Ratings	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	$T_C=25^{\circ}\text{C}$	P_C	15	W
	$T_a=25^{\circ}\text{C}$		2	
Junction temperature		T_j	150	$^{\circ}\text{C}$
Storage temperature		T_{stg}	-55 to +150	$^{\circ}\text{C}$



Internal Connection

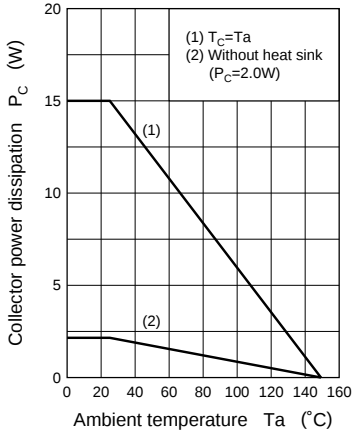


Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SD2242	I_{CBO}	$V_{CB} = 60V, I_E = 0$			200	μA
	2SD2242A		$V_{CB} = 80V, I_E = 0$			200	
Collector cutoff current	2SD2242	I_{CEO}	$V_{CE} = 30V, I_B = 0$			500	μA
	2SD2242A		$V_{CE} = 40V, I_B = 0$			500	
Emitter cutoff current		I_{EBO}	$V_{EB} = 5V, I_C = 0$			2	mA
Collector to emitter voltage	2SD2242	V_{CEO}	$I_C = 30mA, I_B = 0$	60			V
	2SD2242A			80			
Forward current transfer ratio		h_{FE1}	$V_{CE} = 3V, I_C = 0.5A$	1000			
		h_{FE2}^*	$V_{CE} = 3V, I_C = 3A$	2000		10000	
Base to emitter voltage		V_{BE}	$V_{CE} = 3V, I_C = 3A$			2.5	V
Collector to emitter saturation voltage		$V_{CE(sat)}$	$I_C = 3A, I_B = 12mA$			2	V
			$I_C = 5A, I_B = 20mA$			4	
Transition frequency		f_T	$V_{CE} = 10V, I_C = 0.5A, f = 1MHz$		20		MHz
Turn-on time		t_{on}	$I_C = 3A, I_{B1} = 12mA, I_{B2} = -12mA, V_{CC} = 50V$		0.5		μs
Storage time		t_{stg}			4		μs
Fall time		t_f			1		μs

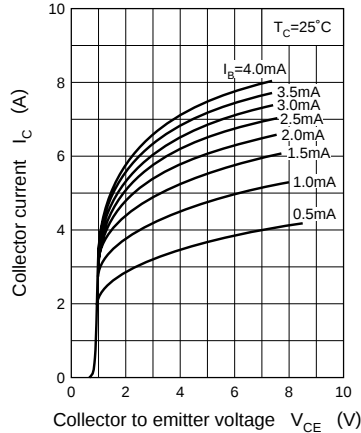
*h_{FE2} Rank classification

Rank	Q	P
h _{FE2}	2000 to 5000	4000 to 10000

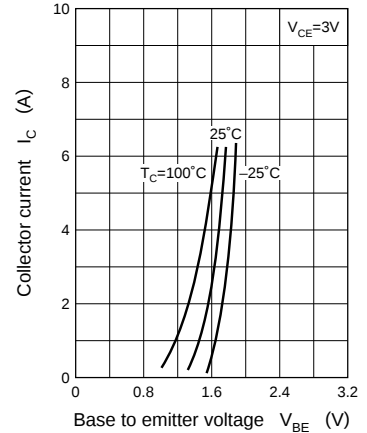
$P_C - T_a$



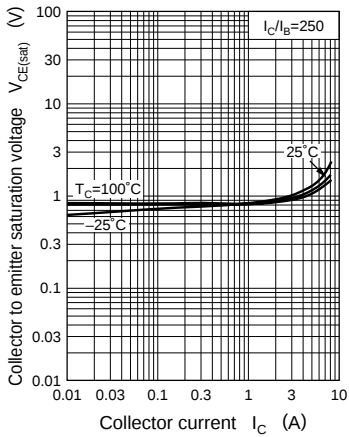
$I_C - V_{CE}$



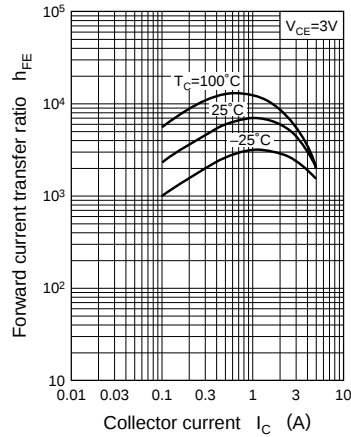
$I_C - V_{BE}$



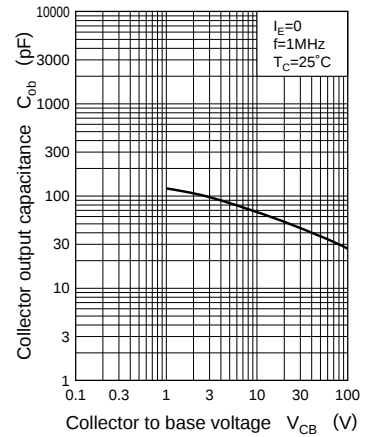
$V_{CE(sat)} - I_C$



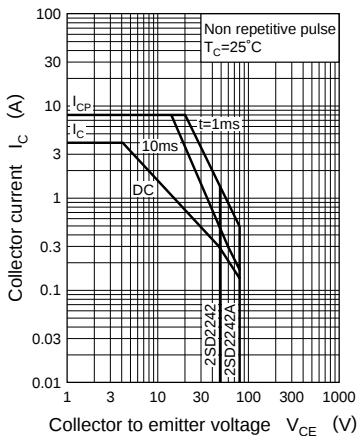
$h_{FE} - I_C$



$C_{ob} - V_{CB}$



Area of safe operation (ASO)



$R_{th(t)} - t$

