2SB0938, 2SB0938A (2SB938, 2SB938A)

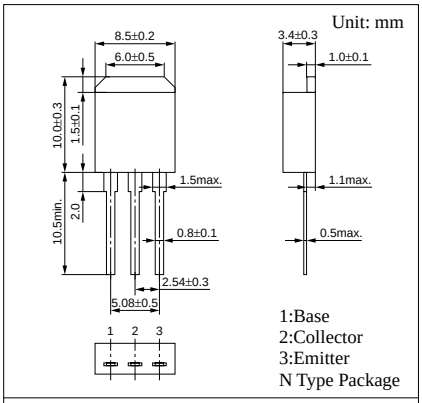
Silicon PNP epitaxial planar type Darlington

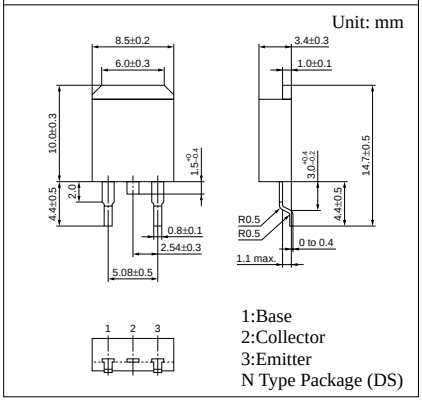
For power amplification and switching

Complementary to 2SD1261 and 2SD1261A

Features

- High foward current transfer ratio h_{FE}
- High-speed switching
- N type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.





Absolute Maximum Ratings (T_C=25˚C)

Parameter		Symbol	Ratings	Unit
Collector to base voltage	2SB0938	V_{CBO}	–60	V
	2SB0938A		–80	
Collector to emitter voltage	2SB0938	V_{CEO}	–60	V
	2SB0938A		–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	40	W
	Ta=25°C		1.3	
Junction temperature		T_j	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

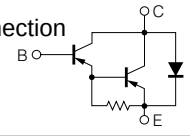
Electrical Characteristics (T_C=25˚C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SB0938	I_{CBO}	V_{CB} = –60V, I_E = 0			–200	μA
	2SB0938A		V_{CB} = –80V, I_E = 0			–200	
Collector cutoff current	2SB0938	I_{CEO}	V_{CE} = –30V, I_B = 0			–500	μA
	2SB0938A		V_{CE} = –40V, I_B = 0			–500	
Emitter cutoff current		I_{EBO}	V_{EB} = –5V, I_C = 0			–2	mA
Collector to emitter voltage	2SB0938	V_{CEO}	I_C = –30mA, I_B = 0	–60			V
	2SB0938A			–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		15		MHz
Turn-on time		t_{on}	I_C = –3A, I_{B1} = –12mA, I_{B2} = 12mA		0.3		μs
Storage time		t_{stg}			2		μs
Fall time		t_f			0.5		μs

*h_{FE2} Rank classification

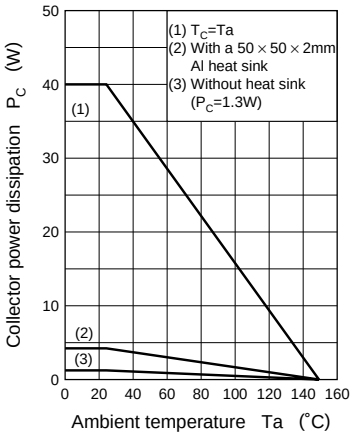
Rank	Q	P
h_{FE2}	2000 to 5000	4000 to 10000

Internal Connection

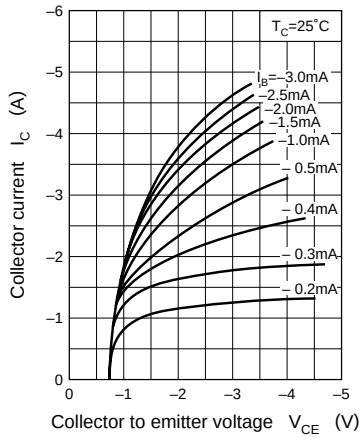


Note) The part numbers in the parenthesis show conventional part number.

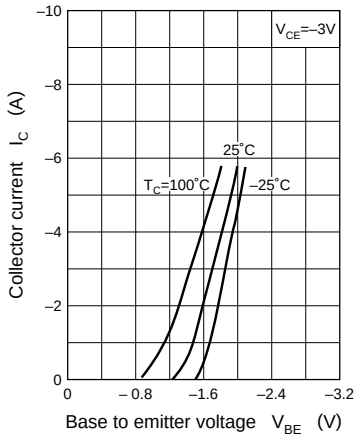
P_C — Ta



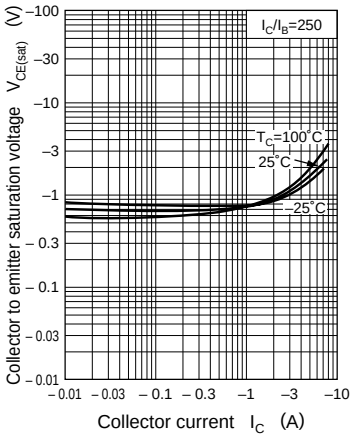
I_C — V_{CE}



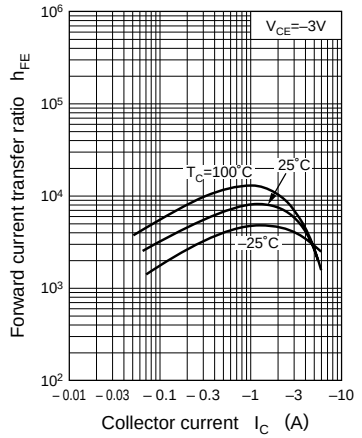
I_C — V_{BE}



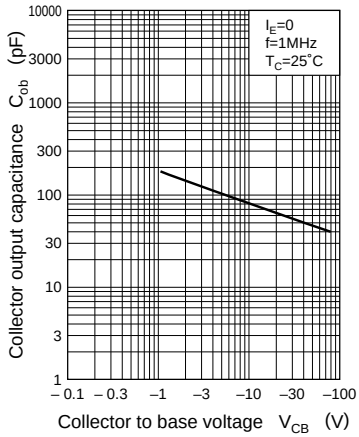
$V_{CE(sat)}$ — I_C



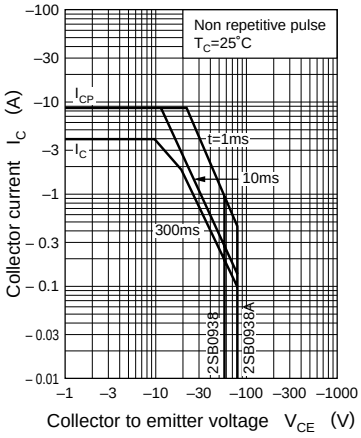
h_{FE} — I_C



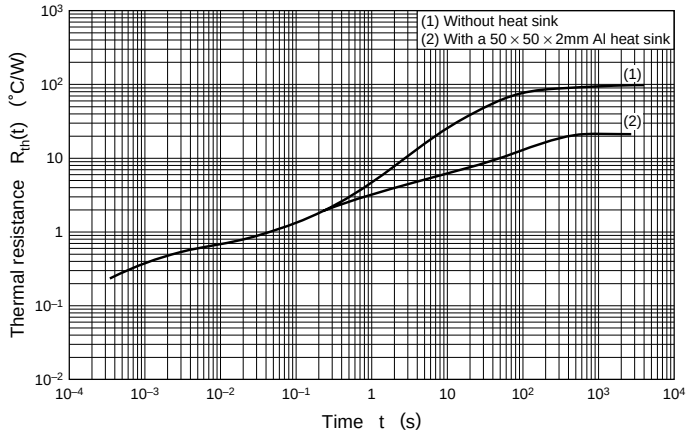
C_{ob} — V_{CB}



Area of safe operation (ASO)



$R_{th(t)}$ — t



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