

2SD1750, 2SD1750A

Silicon NPN Triple-Diffused Planar Darlington Type

Medium speed Power Switching

Complementary Pair with 2SB1180, 2SB1180A

Features

- High DC current gain (h_{FE})
- High speed switching
- "I Type" package configuration with a cooling fin for direct soldering on PC board of a small-size electronic equipment

Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)

Item	Symbol	Value	Unit
Collector-base voltage	V_{CB0}	60	V
		80	
Collector-emitter voltage	V_{CE0}	60	V
		80	
Emitter-base voltage	V_{EB0}	7	V
Peak collector current	I_{CP}	12	A
Collector current	I_C	8	A
Collector power dissipation	$T_c=25^\circ\text{C}$	15	W
	$T_a=25^\circ\text{C}$	1.3	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$

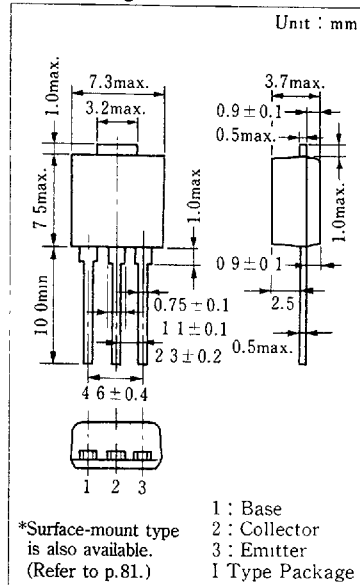
Electrical Characteristics ($T_c=25^\circ\text{C}$)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	$V_{CB}=60\text{ V}, I_E=0$			100	μA
		$V_{CB}=80\text{ V}, I_E=0$			100	
Emitter cutoff current	I_{EBO}	$V_{FB}=7\text{ V}, I_C=0$			2	mA
Collector-emitter voltage	V_{CE0}	$I_C=30\text{ mA}, I_B=0$	60			V
			80			
DC current gain	h_{FE1}^*	$V_{CE}=3\text{ V}, I_C=4\text{ A}$	1000		10000	
	h_{FE2}^*	$V_{CE}=3\text{ V}, I_C=8\text{ A}$	500			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=4\text{ A}, I_B=8\text{ mA}$			1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=4\text{ A}, I_B=8\text{ mA}$			2	V
Transition frequency	f_T	$V_{CE}=10\text{ V}, I_C=0.5\text{ A}, f=1\text{ MHz}$		20		MHz
Turn-on time	t_{on}	$I_C=4\text{ A}, I_{B1}=8\text{ mA}, I_{B2}=-8\text{ mA}$		0.5		μs
Storage time	t_{stg}			4		μs
Fall time	t_f			1		μs

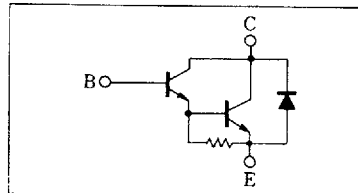
* h_{FE1} Classifications

Class	R	Q	P
h_{FE1}	1000~2500	2000~5000	4000~10000

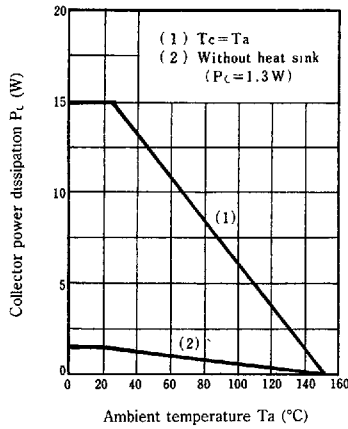
Package Dimensions



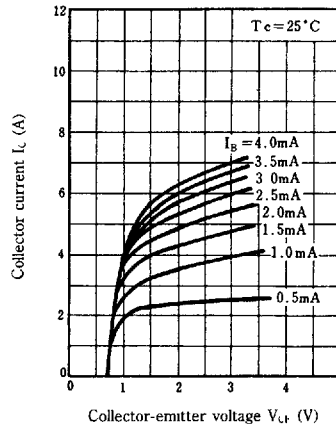
Inner Circuit



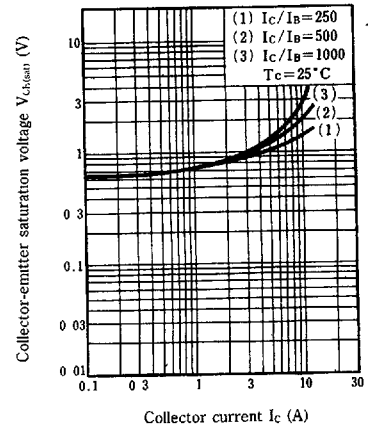
$P_C - T_a$



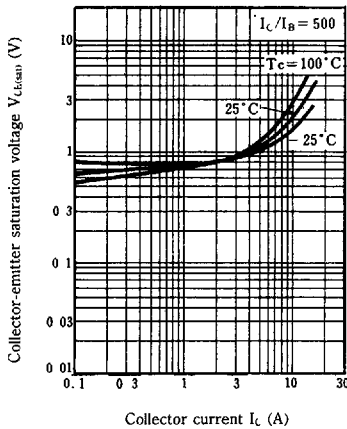
$I_C - V_{CE}$



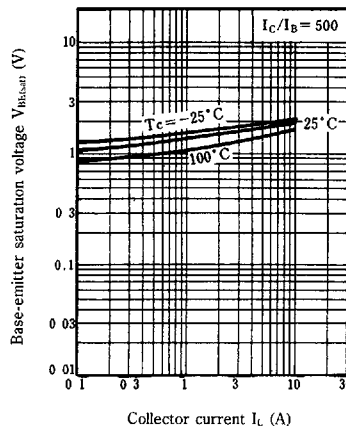
$V_{CE(sat)} - I_C$



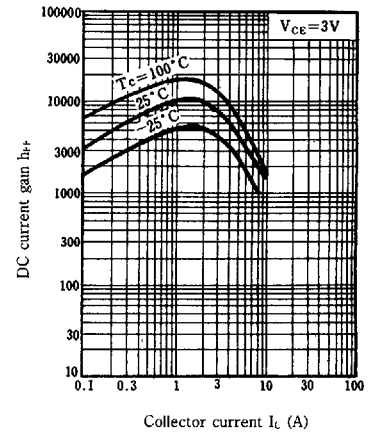
$V_{CE(sat)} - I_C$



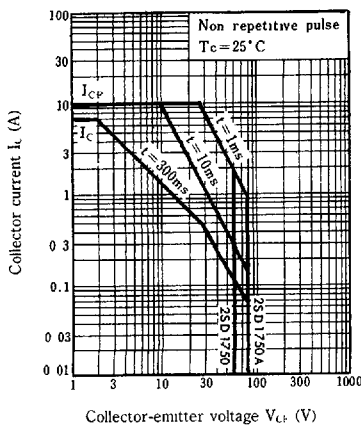
$V_{BE(sat)} - I_C$



$h_{FE} - I_C$



Area of safe operation (ASO)



$R_{th(t)} - t$

