

2SC3870

Silicon NPN triple diffusion planar type

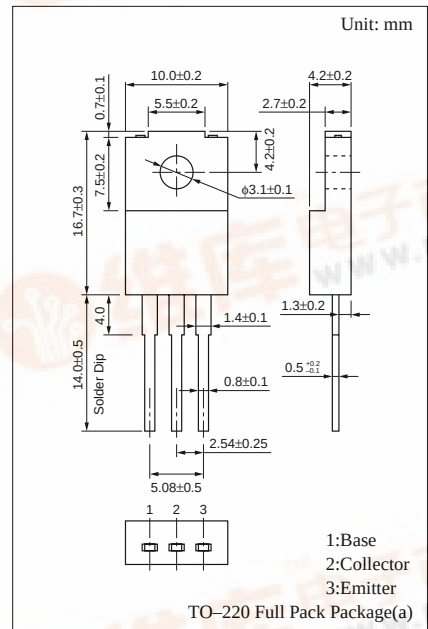
For high breakdown voltage high-speed switching

Features

- High-speed switching
- High collector to base voltage V_{CBO}
- Wide area of safe operation (ASO)
- Full-pack package which can be installed to the heat sink with one screw

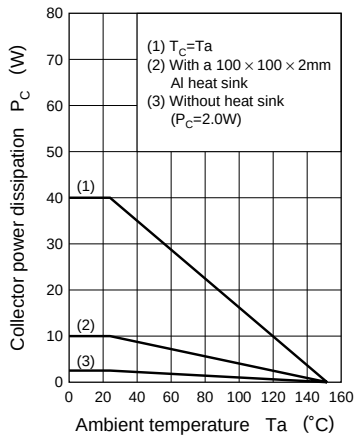
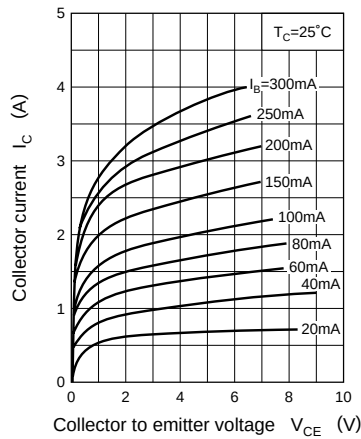
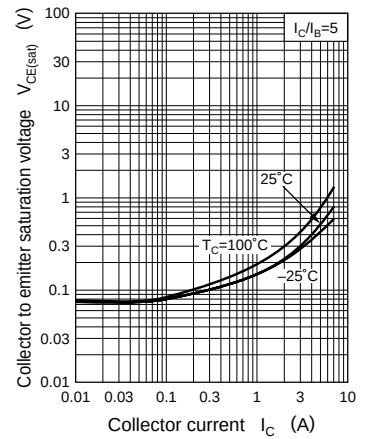
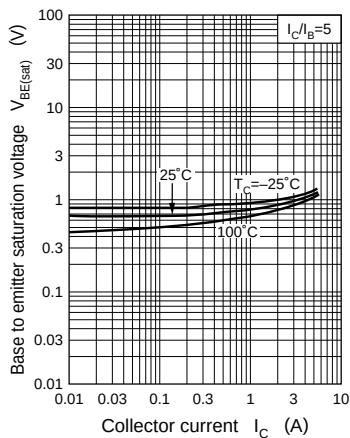
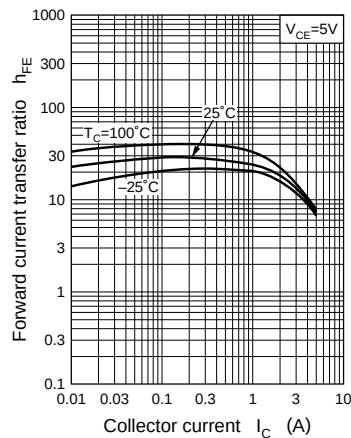
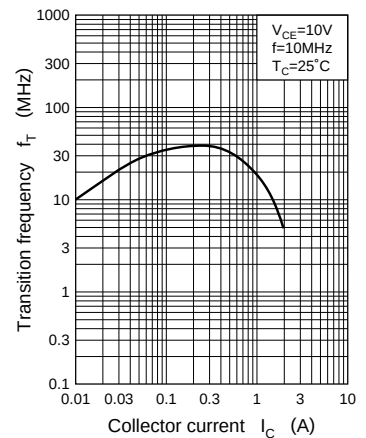
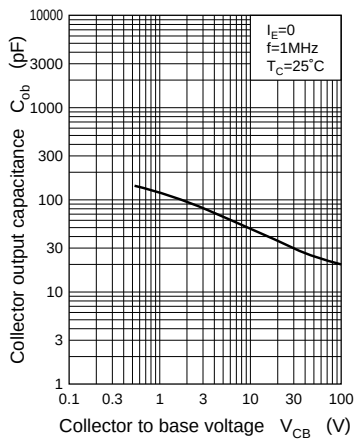
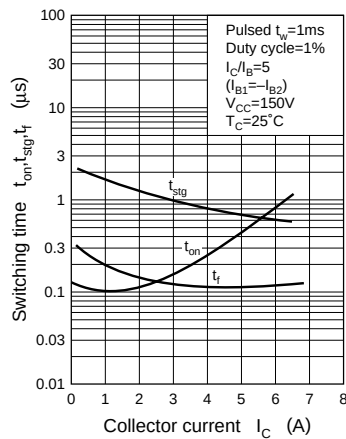
Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	500	V
Collector to emitter voltage	V_{CES}	500	V
	V_{CEO}	400	V
Emitter to base voltage	V_{EBO}	7	V
Peak collector current	I_{CP}	15	A
Collector current	I_C	7	A
Base current	I_B	3	A
Collector power dissipation	P_C	40	W
		2	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

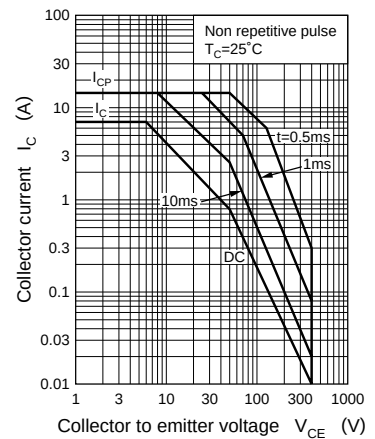


Electrical Characteristics ($T_C=25^\circ\text{C}$)

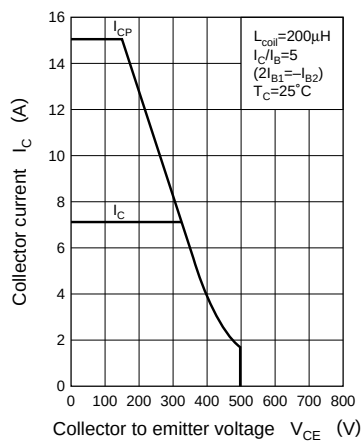
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 500V, I_E = 0$			100	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			100	μA
Collector to emitter voltage	V_{CEO}	$I_C = 10mA, I_B = 0$	400			V
Forward current transfer ratio	h_{FE1}	$V_{CE} = 5V, I_C = 0.1A$	15			
	h_{FE2}	$V_{CE} = 5V, I_C = 3A$	8			
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3A, I_B = 0.6A$			1	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 3A, I_B = 0.6A$			1.5	V
Transition frequency	f_T	$V_{CE} = 10V, I_C = 0.5A, f = 10MHz$		30		MHz
Turn-on time	t_{on}	$I_C = 3A, I_{B1} = 0.6A, I_{B2} = -1.2A, V_{CC} = 150V$			0.7	μs
Storage time	t_{stg}				2	μs
Fall time	t_f				0.3	μs

$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_C$  $C_{ob} - V_{CB}$  $t_{on}, t_{stg}, t_f - I_C$ 

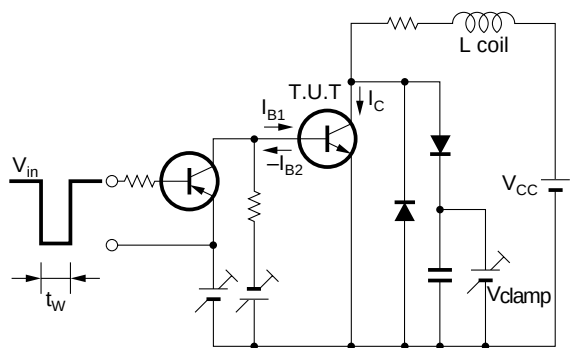
Area of safe operation (ASO)



Area of safe operation, reverse bias ASO



Reverse bias ASO measuring circuit



$R_{th(t)} - t$

