2SC3509

Silicon NPN Triple-Diffused Planar Darlington Type

High Breakdown Voltage, High Speed Switching

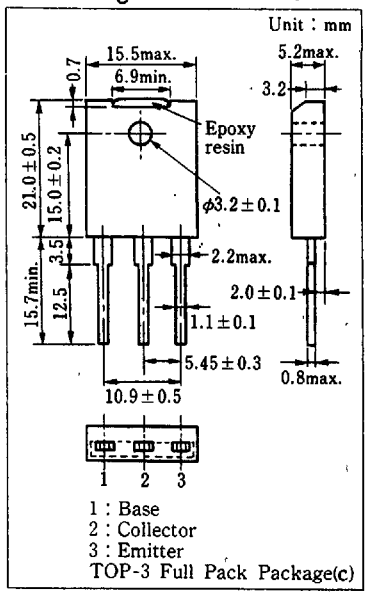
■ Features

- High speed switching
- High collector-base voltage (V_{CBO})
- Good linearity of DC current gain (h_{FE})
- "Full Pack" package for simplified mounting on a heat sink with one screw

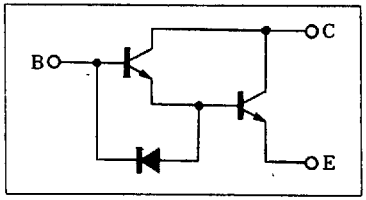
■ Absolute Maximum Ratings (Tc=25°C)

Item		Symbol	Value	Unit
Collector-base voltage		V_{CBO}	900	V
Collector-emitter voltage		V_{CEO}	800	V
Emitter-base voltage		V_{EBO}	7	V
Peak collector current		I_{CP}	20	A
Collector current		I_C	10	A
Base current		I_{BP}	8	A
		I_B	4	A
Collector power dissipation	Tc=25 ℃	P_C	100	W
	Ta=25 ℃		3	
Junction temperature		T_j	150	℃
Storage temperature		T_{stg}	−55～+150	℃

■ Package Dimensions



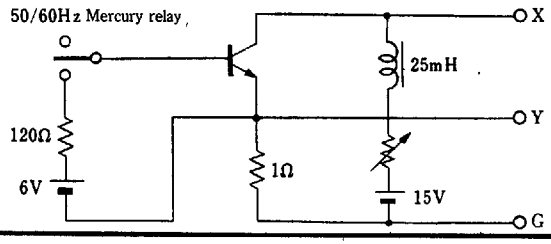
■ Inner Circuit



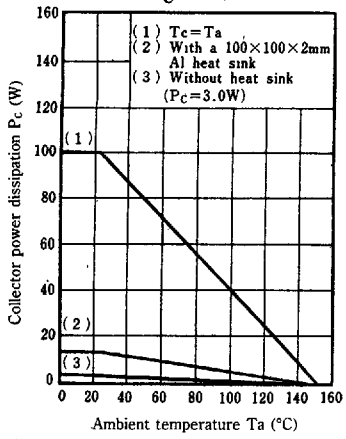
■ Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	V_{CB}=900V, I_E=0			100	μA
Emitter cutoff current	I_{EBO}	V_{EB}=7 V, I_C=0			1	mA
Collector-emitter voltage	$V_{CEO(sus)}$*	I_C=0.5 A, L=50 mH	800			V
DC current gain	h_{FE}	V_{CE}=2 V, I_C=5 A	7			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=5 A, I_B=1 A			1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=5 A, I_B=1 A			2.5	V
Transition frequency	f_T	V_{CE}=10V, I_C=0.5A, f=1MHz		15		MHz
Turn-on time	t_{on}	I_C=5A I_{B1}=1A, I_{B2}≒−1A V_{CC}=250V			0.5	μs
Storage time	t_{stg}				3	μs
Collector current fall time	t_f				0.7	μs

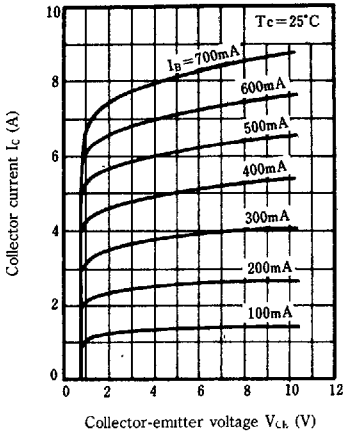
* $V_{CEO\ (sus)}$ Test method



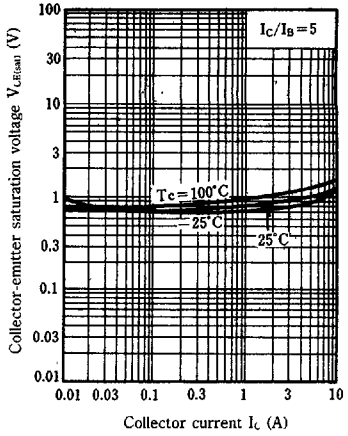
$P_C - Ta$



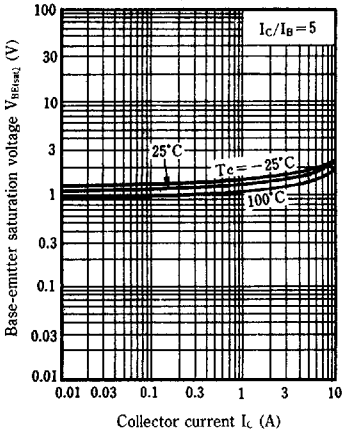
$I_C - V_{CE}$



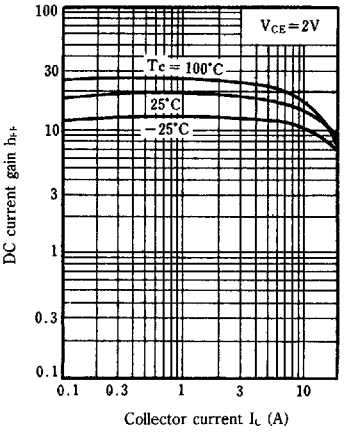
$V_{CE(sat)} - I_C$



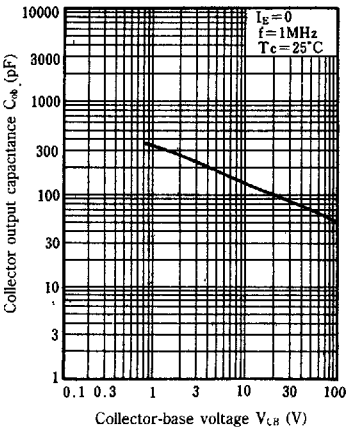
$V_{BE(sat)} - I_C$



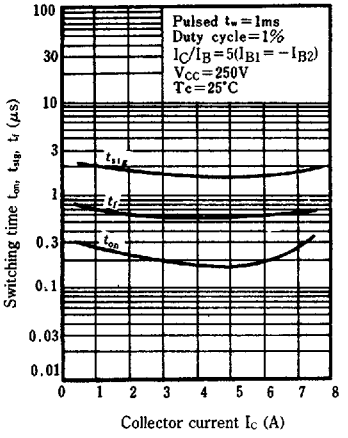
$h_{FE} - I_C$



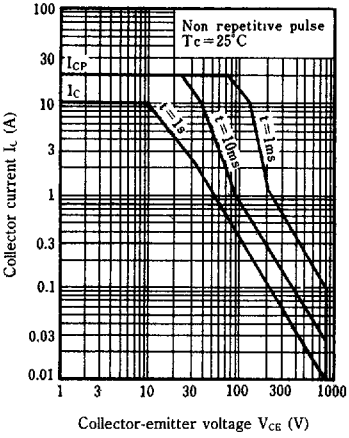
$C_{ob} - V_{CB}$



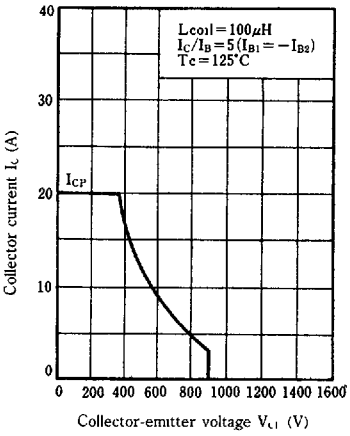
$t_{on}, t_{stg}, t_f - I_C$



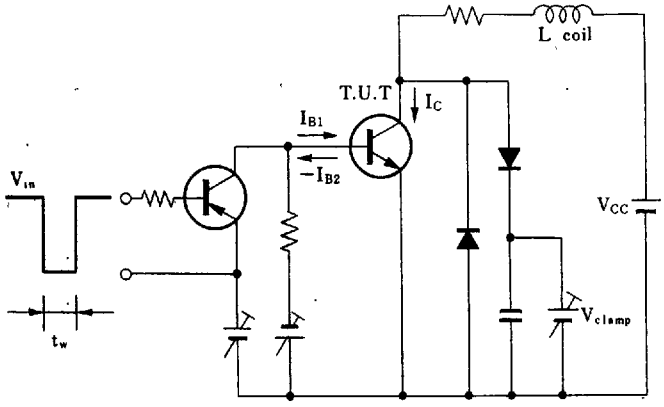
Safety operation area-forward bias (ASO)



Safety operation area-reverse bias (ASC



Measurement circuit of reverse bias ASO



$R_{th(t)}-t$