2SC3978, 2SC3978A

Silicon NPN triple diffusion planar type

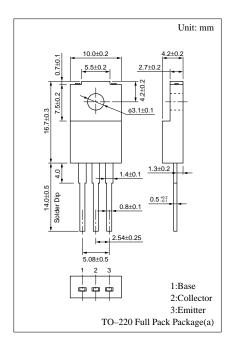
For high breakdown voltage high-speed switching

Features

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

Absolute Maximum Ratings (T_C=25°C)

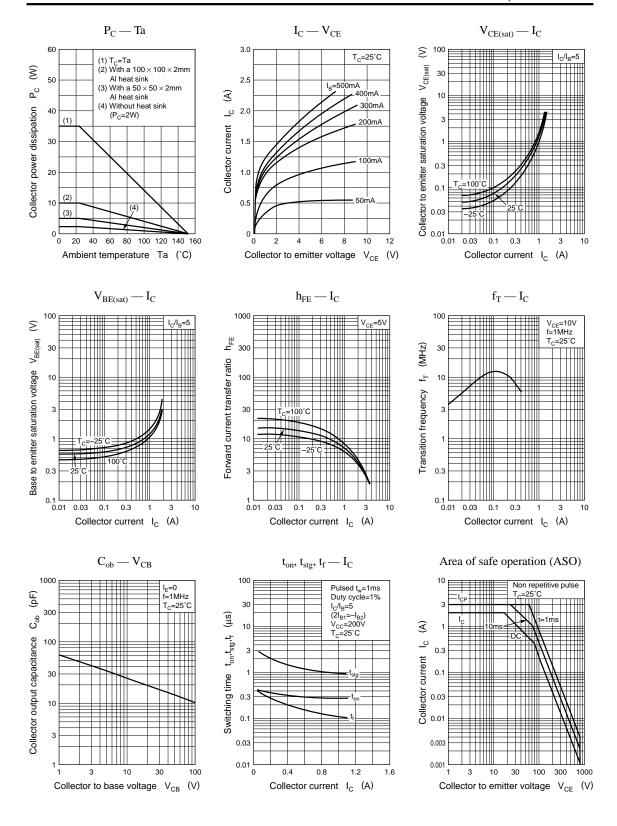
Parameter		Symbol	Ratings	Unit	
Collector to	2SC3978	V	900	V	
base voltage	2SC3978A	V_{CBO}	1000		
Collector to	2SC3978	37	900	V	
emitter voltage	2SC3978A	V_{CES}	1000		
Collector to emitter voltage		V_{CEO}	800	V	
Emitter to base voltage		V_{EBO}	7	V	
Peak collector current		I_{CP}	3	A	
Collector current		I_C	2	A	
Base current		I_B	0.5	A	
Collector power	T _C =25°C	D	35	W	
dissipation	Ta=25°C	P_{C}	2		
Junction temperature		T _j	150	°C	
Storage temperature		T_{stg}	-55 to +150	°C	



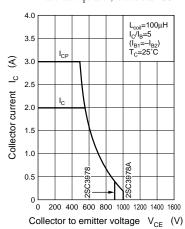
Electrical Characteristics (T_C=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit	
Collector cutoff	2SC3978	I _{CBO}	$V_{CB} = 900V, I_{E} = 0$			50		
current	2SC3978A		$V_{CB} = 1000V, I_E = 0$			50	μΑ	
Emitter cutoff current		I _{EBO}	$V_{\rm EB} = 7V, I_{\rm C} = 0$			50	μА	
Collector to emitter voltage		V _{CEO}	$I_C = 10 \text{mA}, I_B = 0$	800			V	
Forward current transfer ratio		h _{FE1}	$V_{CE} = 5V, I_{C} = 0.1A$	8				
		h _{FE2}	$V_{CE} = 5V, I_{C} = 0.5A$	6				
Collector to emitter saturation voltage		V _{CE(sat)}	$I_C = 0.5A, I_B = 0.1A$			1.5	V	
Base to emitter saturation voltage		V _{BE(sat)}	$I_C = 0.5A, I_B = 0.1A$			1.5	V	
Transition frequency		f_T	$V_{CE} = 10V, I_C = 0.1A, f = 1MHz$		15		MHz	
Turn-on time		t _{on}	$I_C = 0.5A, I_{B1} = 0.1A, I_{B2} = -0.2A,$			0.7	μs	
Storage time		t _{stg}				2.5	μs	
Fall time		$t_{\rm f}$	$V_{CC} = 250V$			0.3	μs	

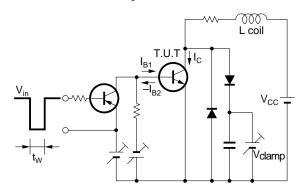
Panasonic 1



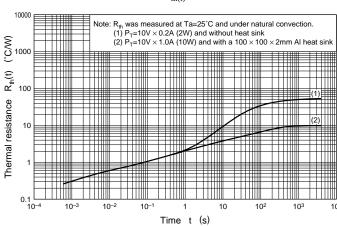
Area of safe operation, reverse bias ASO



Reverse bias ASO measuring circuit



 $R_{th(t)} -\!\!\!- t$



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