

2SB1603, 2SB1603A

Silicon PNP epitaxial planar type

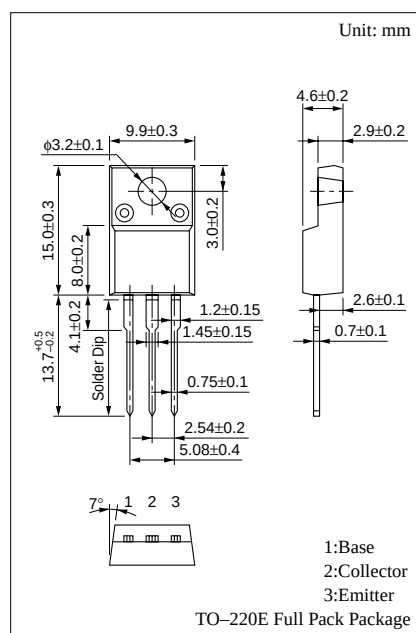
For low-voltage switching

■ Features

- Low collector to emitter saturation voltage $V_{CE(sat)}$
- High-speed switching
- Full-pack package with outstanding insulation, which can be installed to the heat sink with one screw

■ Absolute Maximum Ratings (T_C=25°C)

Parameter		Symbol	Ratings	Unit
Collector to base voltage	2SB1603	V_{CBO}	−40	V
	2SB1603A		−50	
Collector to emitter voltage	2SB1603	V_{CEO}	−20	V
	2SB1603A		−40	
Emitter to base voltage		V_{EBO}	−5	V
Peak collector current		I_{CP}	−8	A
Collector current		I_C	−4	A
Collector power dissipation	$T_C=25^{\circ}C$	P_C	25	W
	$T_a=25^{\circ}C$		2	
Junction temperature		T_j	150	$^{\circ}C$
Storage temperature		T_{stg}	−55 to +150	$^{\circ}C$



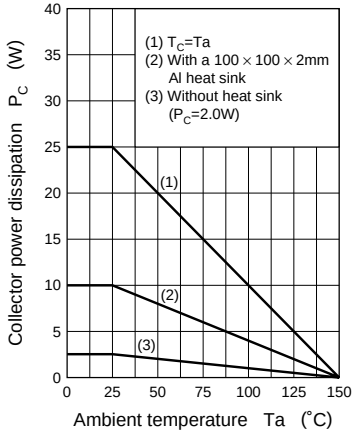
■ Electrical Characteristics (T_C=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current		I_{CBO}	$V_{CB} = -40V, I_E = 0$			-50	μA
Emitter cutoff current		I_{EBO}	$V_{EB} = -5V, I_C = 0$			-50	μA
Collector to emitter voltage	2SB1603	V_{CEO}	$I_C = -10mA, I_B = 0$	-20			V
	2SB1603A			-40			
Forward current transfer ratio		h_{FE1}	$V_{CE} = -2V, I_C = -0.1A$	45			
		h_{FE2}^*	$V_{CE} = -2V, I_C = -1A$	90		260	
Collector to emitter saturation voltage		$V_{CE(sat)}$	$I_C = -2A, I_B = -0.1A$			-0.5	V
Base to emitter saturation voltage		$V_{BE(sat)}$	$I_C = -2A, I_B = -0.1A$			-1.5	V
Transition frequency		f_T	$V_{CE} = -5V, I_C = -0.5A, f = 10MHz$		150		MHz
Turn-on time		t_{on}	$I_C = -2A, I_{B1} = -0.2A, I_{B2} = 0.2A$		0.3		μs
Storage time		t_{stg}			0.4		μs
Fall time		t_f			0.1		μs

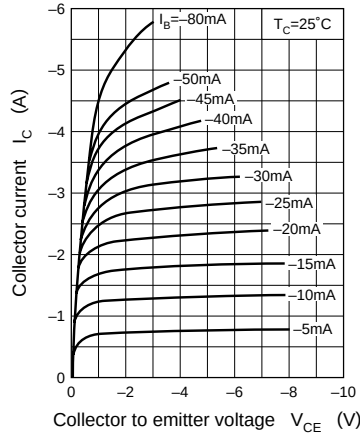
*h_{FE2} Rank classification

Rank	Q	P
h_{FE2}	90 to 180	130 to 260

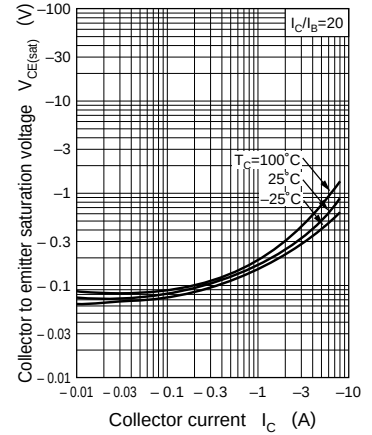
$P_C - T_a$



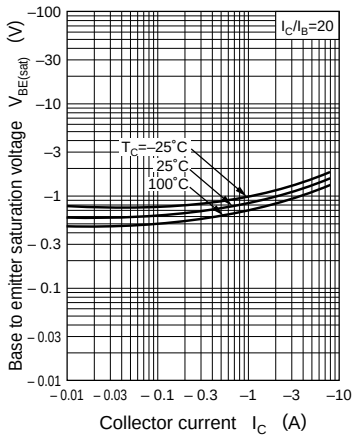
$I_C - V_{CE}$



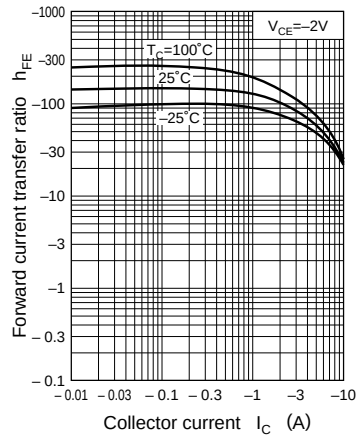
$V_{CE(\text{sat})} - I_C$



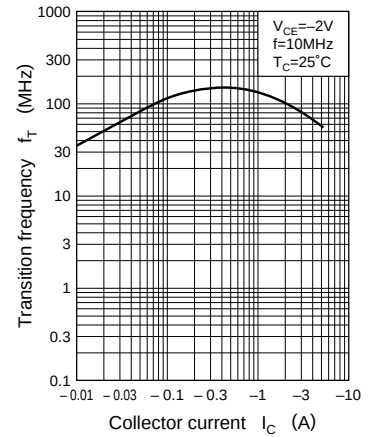
$V_{BE(\text{sat})} - I_C$



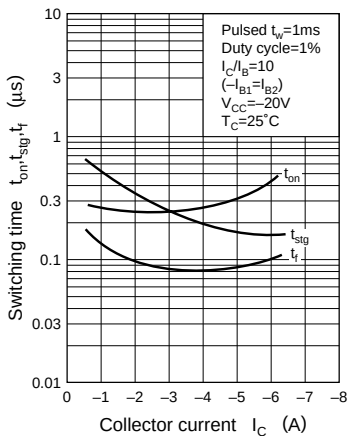
$h_{FE} - I_C$



$f_T - I_C$



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



Area of safe operation (ASO)

