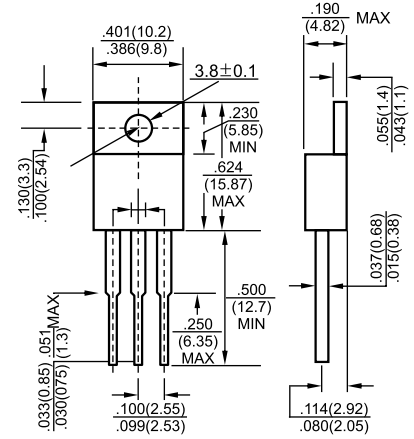


1. BASE
2. COLLECTOR
3. EMITTER

TO-220



Dimensions in inches and (millimeters)

Features

- ✧ Wide ASO (Adoption of MBIT process).
- ✧ Low saturation voltage.
- ✧ High reliability.
- ✧ High breakdown voltage.

MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector- Base Voltage	-60	V
V_{CEO}	Collector-Emitter Voltage	-60	V
V_{EBO}	Emitter-Base Voltage	-6	V
I_C	Collector Current -Continuous	-3	A
P_C	Collector Power Dissipation	2	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55-150	$^\circ\text{C}$

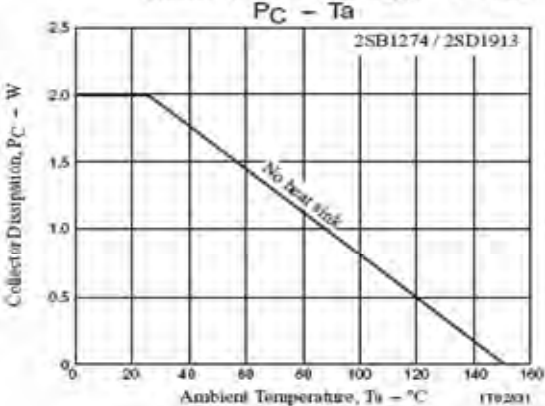
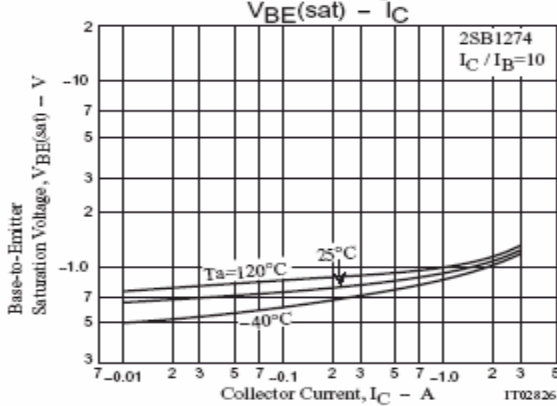
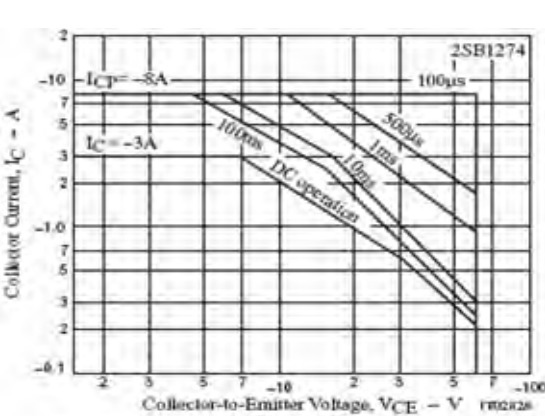
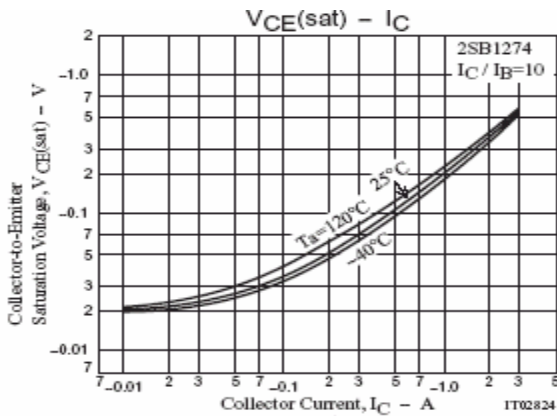
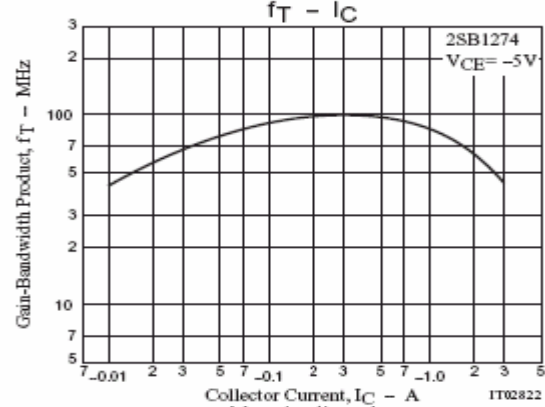
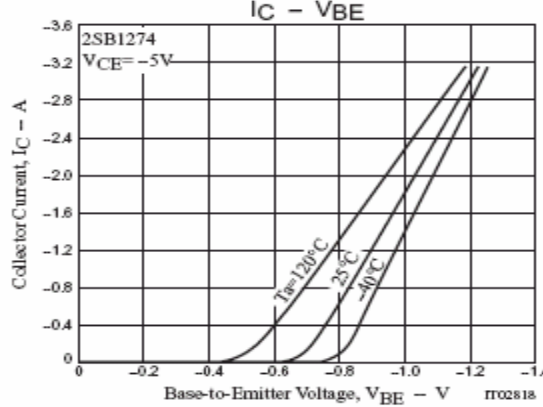
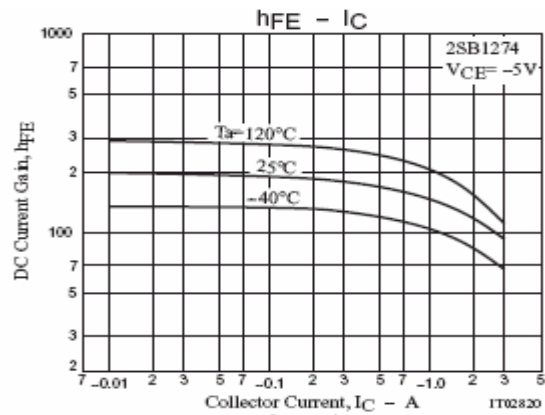
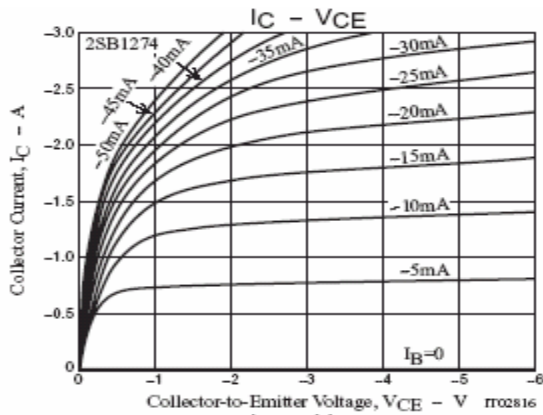
ELECTRICAL CHARACTERISTICS ($T_{amb}=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -1\text{mA}$, $I_E = 0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -5\text{mA}$, $I_B = 0$	-60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -1\text{mA}$, $I_C = 0$	-6			V
Collector cut-off current	I_{CBO}	$V_{CB} = -40\text{V}$, $I_E = 0$			-0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -4\text{V}$, $I_C = 0$			-0.1	μA
DC current gain	$h_{FE(1)}$	$V_{CE} = -5\text{V}$, $I_C = -500\text{mA}$	70		280	
	$h_{FE(2)}$	$V_{CE} = -5\text{V}$, $I_C = -3\text{A}$	20			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -2\text{A}$, $I_B = -200\text{mA}$			-1	V
Base-emitter voltage	V_{BE}	$V_{CE} = -5\text{V}$, $I_C = -500\text{mA}$			-1	V
Transition frequency	f_T	$V_{CE} = -5\text{V}$, $I_C = -500\text{mA}$		100		MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$		60		pF

CLASSIFICATION OF $h_{FE(1)}$

Rank	Q	R	S
Range	70-140	100-200	140-280

Typical Characteristics



Package	Packing	Box Size L×W×H(mm)	Quantity(pcs/box)	Carton Size L×W×H(mm)	Quantity(pcs/carton)
TO-220	50pcs/Tube	560×150×50	1000	570×290×180	5000