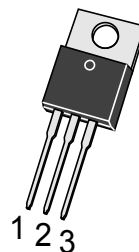


Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -65°C to +150°C
- Storage Temperature Range: -65°C to +150°C
- Thermal Resistance: 3.125°C/W Junction to Case
- Thermal Resistance: 62.5°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	3	A
Peak Collector Current	I_{CM}	5	A
Base Current	I_B	1	A
Power Dissipation @ $T_C=25^\circ\text{C}$	P_D	40	W
Power Dissipation @ $T_A=25^\circ\text{C}$	P_D	2	W

TO-220AB



1.BASE
2.COLLECTOR
3.EMITTER

Electrical Characteristics @ $T_A=25^\circ\text{C}$ Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	100			V	$I_C=30\text{mA}$, $I_B=0$
Collector Cutoff Current	I_{CES}			200	μA	$V_{CE}=100\text{V}$, $V_{EB}=0$
Collector Cutoff Current	I_{CEO}			300	μA	$V_{CE}=60\text{V}$, $I_B=0$
Emitter Cutoff Current	I_{EBO}			1	mA	$V_{EB}=5\text{V}$, $I_C=0$
DC Current Gain	$h_{FE(1)}$	25				$V_{CE}=4\text{V}$, $I_C=1\text{A}$
	$h_{FE(2)}$	10		50		$V_{CE}=4\text{V}$, $I_C=3\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			1.2	V	$I_C=3\text{A}$, $I_B=0.375\text{A}$
Base-Emitter Voltage	V_{BE}			1.8	V	$V_{CE}=4\text{V}$, $I_C=3\text{A}$
Transition Frequency	f_T	3			MHz	$V_{CE}=10\text{V}$, $I_C=500\text{mA}$



Curve Characteristics

Fig. 1 - DC Current Gain Curve

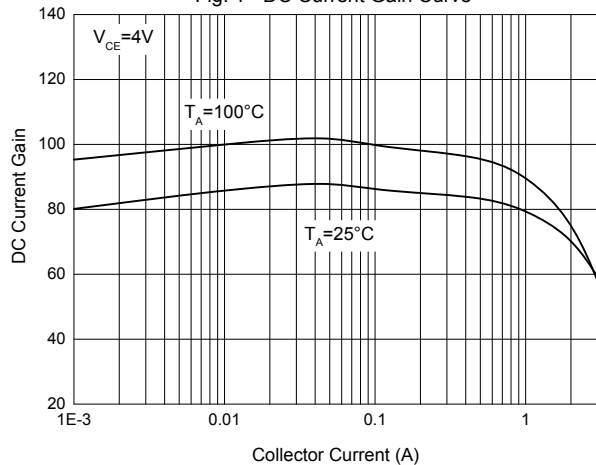


Fig. 2 - Collector-emitter Saturation Voltage Curve

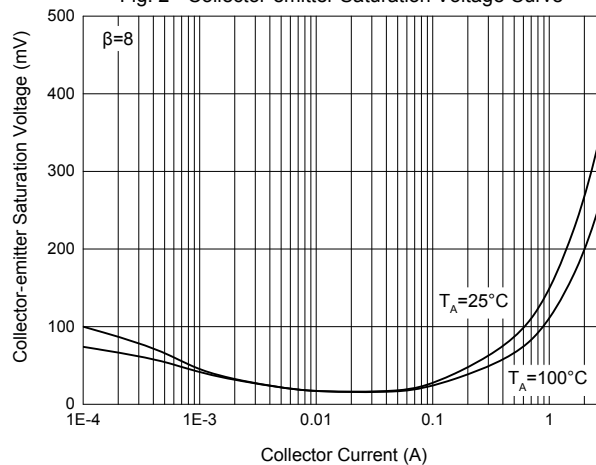


Fig. 3 - Base-emitter Voltage Curve

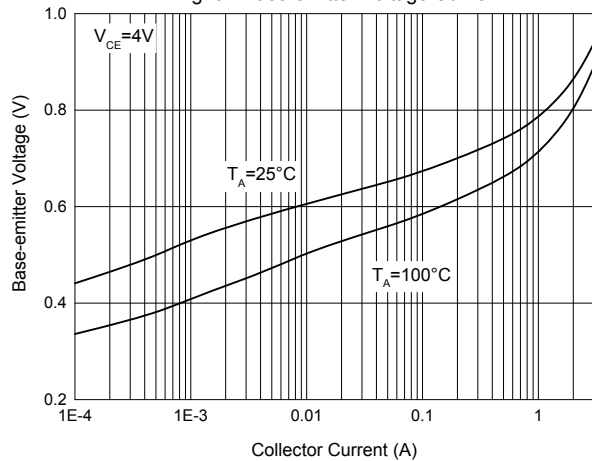
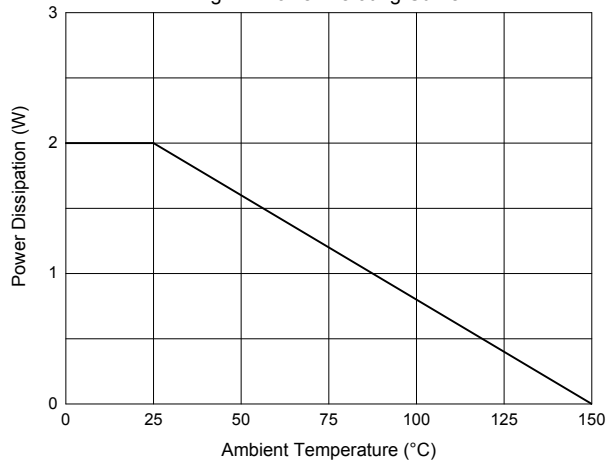
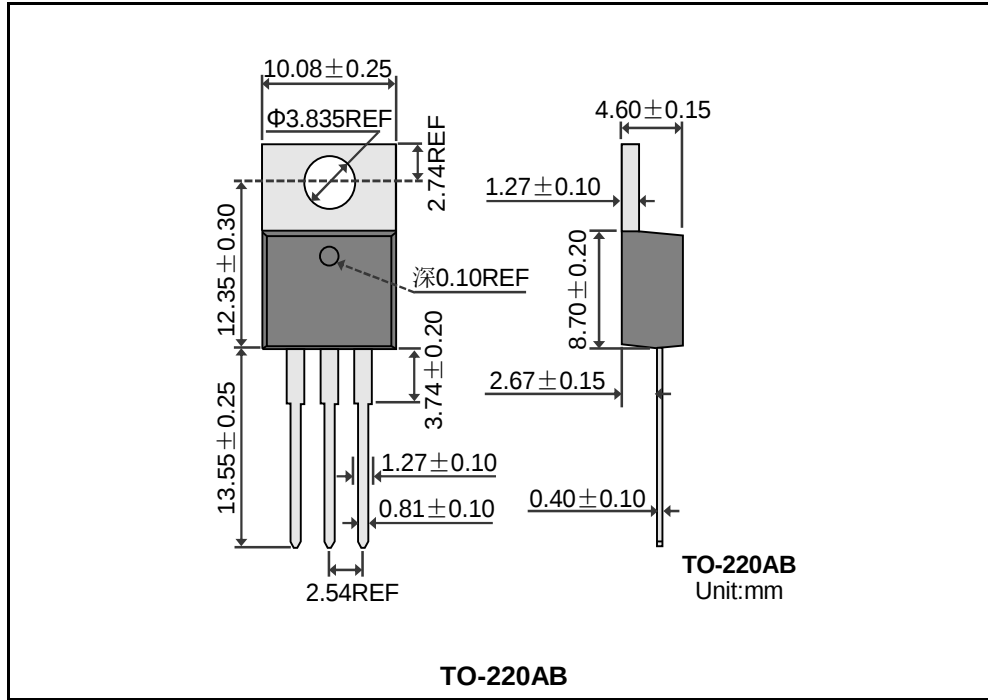


Fig. 4 - Power Derating Curve



Package Outline Dimensions



Marking Information



“MHCHXM”= Product Logo
“Marking Code”= The Following
“XXXX”= Date Code Marking

Package	Pb-Free	
	Marking Code	Part Number
TO-220AB	TIP31C	TIP31C

Packing Information

Packaging	Package	Part Number	Quantity	Size
Tube	TO-220AB	Tube	50 pieces	530*33*7mm
		Inner Box	1000 pieces	558*150*40mm
		Outer Box	5000 pieces	570*235*170mm

