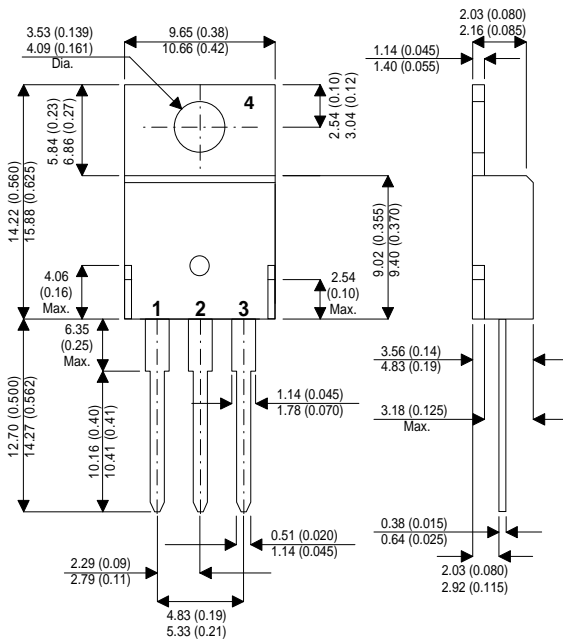


**MECHANICAL DATA**  
Dimensions in mm

**COMPLEMENTARY  
SILICON  
POWER TRANSISTORS**



**TO-220AB**

**For use as high frequency  
drivers in audio amplifiers.**

Pin 1 – Base      Pin 2 – Collector      Pin 3 – Emitter  
Back Metal is Collector.

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

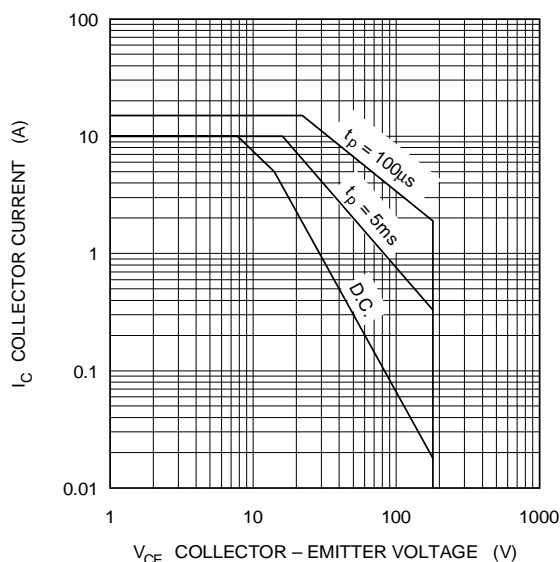
$V_{CBO}$	Collector – Base Voltage	240V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	160V
$V_{EBO}$	Emitter – Base Voltage	5V
$I_C$	Collector Current	8A
$I_{C(PK)}$	Peak Collector Current	16A
$I_B$	Base Current	2A
$P_D$	Total Dissipation at $T_C = 25^{\circ}C$	60W
	Derate above $25^{\circ}C$	$0.48^{\circ}C/W$
$P_D$	Total Dissipation at $T_A = 25^{\circ}C$	2W
	Derate above $25^{\circ}C$	$0.016^{\circ}C/W$
$T_{stg}$	Operating and Storage Temperature Range	$-65$ to $150^{\circ}C$

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise stated)

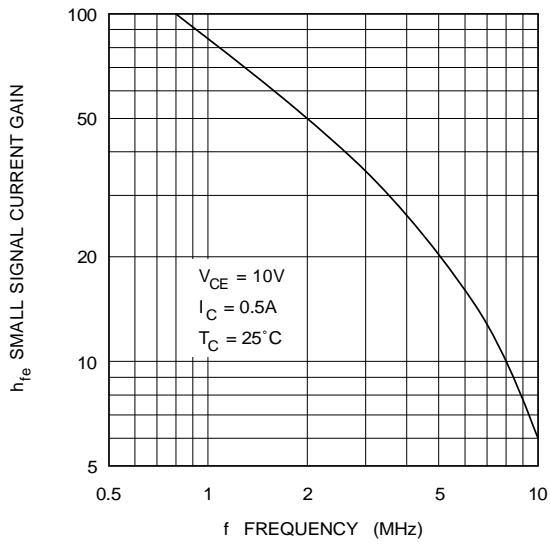
Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>					
$V_{CEO(sus)*}$ Collector – Emitter Sustaining Voltage	$I_C = 10\text{mA}$ $I_B = 0$	160			V
$I_{CEO}$ Collector – Emitter Cut-Off Current	$V_{CE} = 160\text{V}$ $I_B = 0$			0.1	mA
$I_{CBO}$ Collector – Base Cut-Off Current	$V_{CE} = 240\text{V}$ $I_E = 0$			10	$\mu\text{A}$
$I_{EBO}$ Emitter Cut-Off Current	$V_{BE} = 5\text{V}$ $I_C = 0$			10	
<b>ON CHARACTERISTICS</b>					
$h_{FE*}$ DC Current Gain	$I_C = 100\text{mA}$ $V_{CE} = 2\text{V}$	40			—
	$I_C = 2\text{A}$ $V_{CE} = 2\text{V}$	40			
	$I_C = 3\text{A}$ $V_{CE} = 2\text{V}$	40			
	$I_C = 4\text{A}$ $V_{CE} = 2\text{V}$	20			
Linearity* $h_{FE}$ vs $h_{FE}$ Ratio	$h_{FE}$ @ $I_C = 1$ to $3\text{A}$		2:1		—
$V_{CE(sat)*}$ Collector – Emitter Saturation Voltage	$I_C = 1\text{A}$ $I_B = 100\text{mA}$			0.4	V
	$I_C = 3\text{A}$ $I_B = 300\text{mA}$			0.5	
$V_{BE(on)*}$ Base – Emitter On Voltage	$I_C = 1\text{A}$ $V_{CE} = 2\text{V}$			1.0	V
	$I_C = 3\text{A}$ $V_{CE} = 2\text{V}$			1.0	
<b>DYNAMIC CHARACTERISTICS</b>					
$f_T$ Current Gain – Bandwidth Product $f_T =  h_{fe}  \cdot F_{test}$	$I_C = 500\text{mA}$ $V_{CE} = 10\text{V}$ $f_{test} = 10\text{MHz}$	30			MHz
<b>THERMAL CHARACTERISTICS</b>					
$R_{\theta JC}$ Thermal Resistance Junction – Case				2.5	$^\circ\text{C/W}$
$R_{\theta JA}$ Thermal Resistance Junction – Ambient				62.5	

\* Pulse test  $t_p = 300\mu\text{s}$ ,  $\delta \leq 2\%$ .

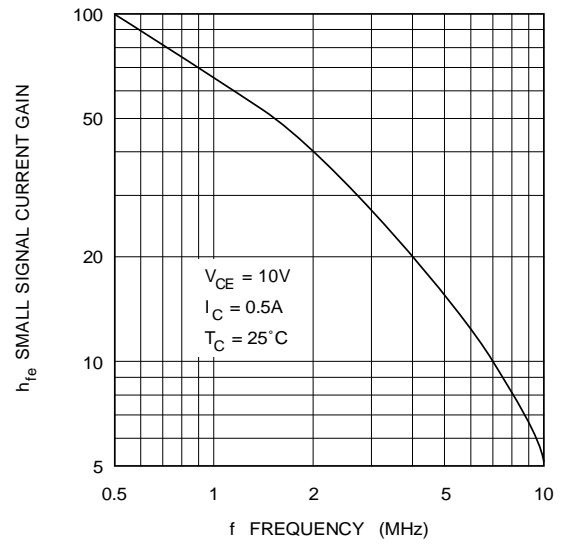
**FORWARD BIAS SAFE OPERATING AREA**



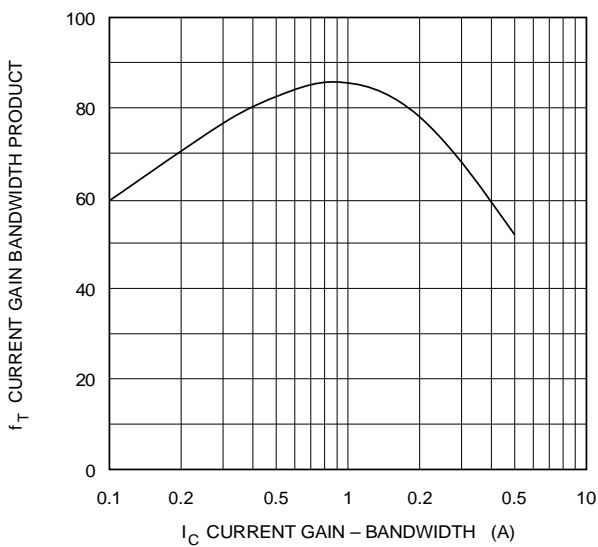
SMALL SIGNAL CURRENT GAIN – SM3177A



SMALL SIGNAL CURRENT GAIN – SM3178A



CURRENT GAIN BANDWIDTH PRODUCT  
SM3177A



CURRENT GAIN BANDWIDTH PRODUCT  
SM3178A

