

**NPN Silicon Epitaxial Planar Transistor**

for amplifier applications

On special request, these transistors can be manufactured in different pin configurations.



1. Emitter 2. Base 3. Collector

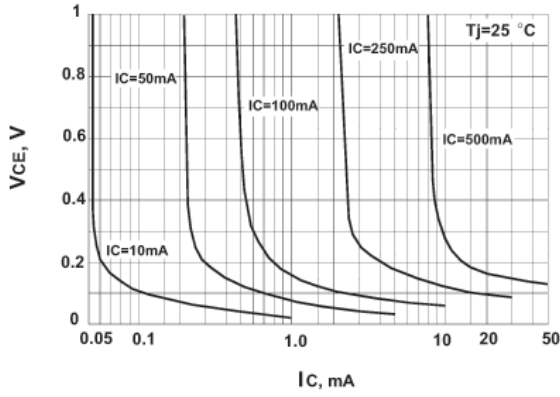
TO-92 Plastic Package  
Weight approx. 0.19g

**Absolute Maximum Ratings\* ( $T_a = 25^\circ\text{C}$ )**

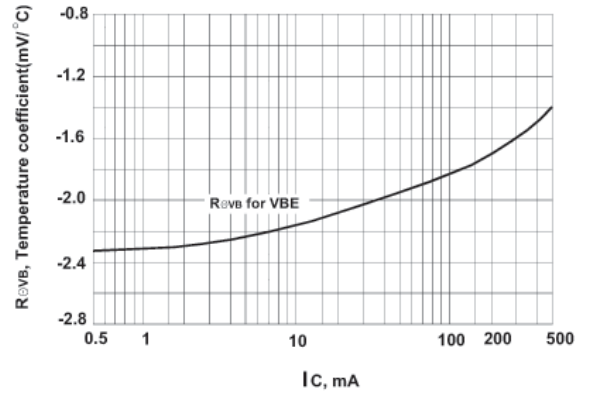
	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$		V
MPSA05		60	
MPSA06		80	
Collector Emitter Voltage	$V_{CEO}$		V
MPSA05		60	
MPSA06		80	
Emitter Base Voltage	$V_{EBO}$	4	V
Collector Current	$I_C$	500	mA
Total Device Dissipation at $T_a=25^\circ\text{C}$	$P_{tot}$	625	mW
Derate above $25^\circ\text{C}$		5	mW/ $^\circ\text{C}$
Total Device Dissipation at $T_c=25^\circ\text{C}$	$P_{tot}$	1.5	W
Derate above $25^\circ\text{C}$		12	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient(Note1)	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_s$	-55 to +150	$^\circ\text{C}$

1.  $R_{\theta JA}$  is measured with the device soldered into a typical printed circuit board.

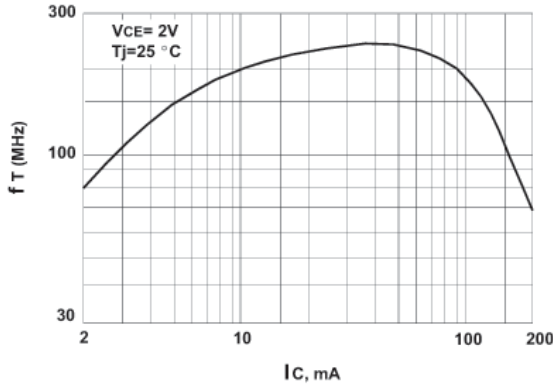
Collector saturation region



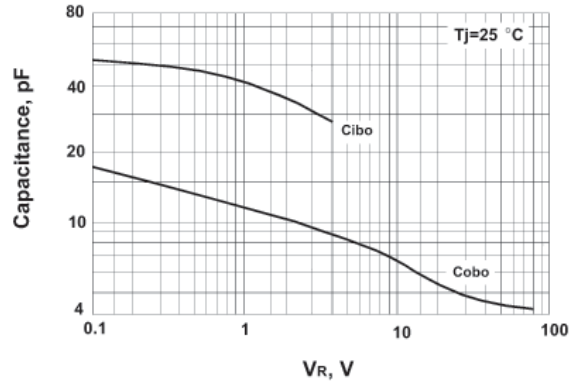
Base emitter temperature coefficient



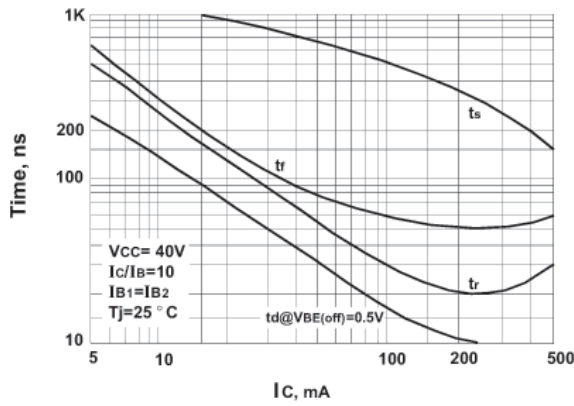
**Current gain - bandwidth product**



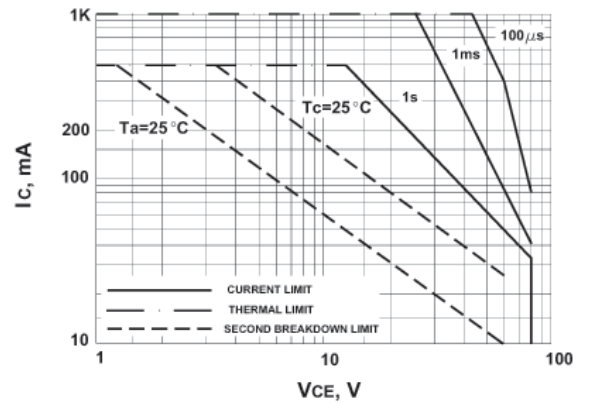
**Capacitance**



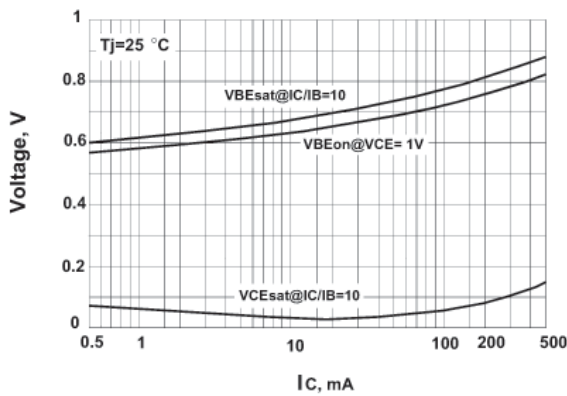
**Switching Time**



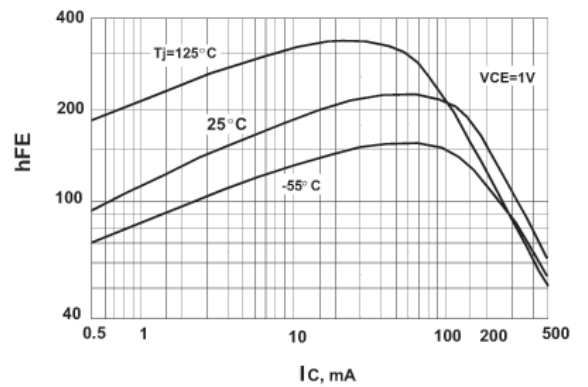
**Active- region safe operating area**



**"ON" voltages**



**DC current gain**



**Characteristics at  $T_{amb}=25\text{ }^{\circ}\text{C}$** 

	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at $I_C=10\text{mA}$ , $V_{CE}=1\text{V}$	$h_{FE}$	100	-	-	-
at $I_C=100\text{mA}$ , $V_{CE}=1\text{V}$	$h_{FE}$	100	-	-	-
Collector Cutoff Current	$I_{CBO}$				
at $V_{CB}=60\text{V}$ MPSA05		-	-	0.1	$\mu\text{A}$
at $V_{CB}=80\text{V}$ MPSA06		-	-	0.1	$\mu\text{A}$
Collector Cutoff Current					
at $V_{CE}=60\text{V}$	$I_{CES}$	-	-	0.1	$\mu\text{A}$
Collector Emitter Breakdown Voltage <sup>1)</sup>	$V_{(BR)CEO}$				
at $I_C=1\text{mA}$ MPSA05		60	-	-	V
MPSA06		80	-	-	V
Emitter Base Breakdown Voltage					
at $I_E=100\mu\text{A}$	$V_{(BR)EBO}$	4	-	-	V
Collector Saturation Voltage					
at $I_C=100\text{mA}$ , $I_B=10\text{mA}$	$V_{CE(sat)}$	-	-	0.25	V
Base On Voltage					
at $I_C=100\text{mA}$ , $V_{CE}=1\text{V}$	$V_{BE(on)}$	-	-	1.2	V
Current Gain – Bandwidth Product <sup>2)</sup>					
at $I_C=10\text{mA}$ , $V_{CE}=2\text{V}$ , $f=100\text{MHz}$	$f_T$	100	-	-	MHz

1) Pulse test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

2)  $f_T$  is defined as the frequency at which  $|h_{fe}|$  extrapolates to unity.