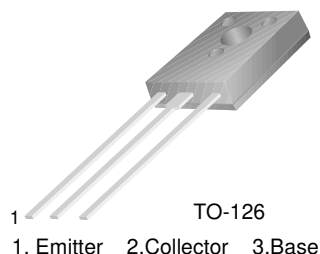


# KSD985/986

## Low Frequency Power Amplifier

- Low Speed Switching Industrial Use

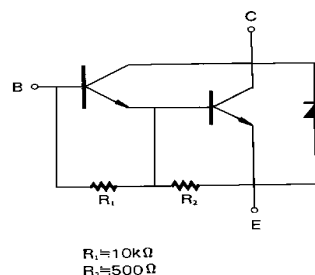


## NPN Epitaxial Silicon Darlington Transistor

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	150	V
$V_{CEO}$	Collector-Emitter Voltage	: KSD985 : KSD986	60 80 V V
$V_{EBO}$	Emitter-Base Voltage	8.0	V
$I_C$	Collector Current (DC)	1.5	A
$I_{CP}$	*Collector Current (Pulse)	3.0	A
$I_B$	Base Current	0.15	A
$P_C$	Collector Dissipation ( $T_a=25^\circ\text{C}$ )	1.0	W
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	10	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

\*  $PW \leq 300\mu\text{s}$ , Duty Cycle 10%



### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 60\text{V}, I_E = 0$			10	$\mu\text{A}$
$I_{CER}$	Collector Cut-off Current	$V_{CE} = 60\text{V}, R_{BE} = 51\Omega$ @ $T_C = 125^\circ\text{C}$			1.0	mA
$I_{CEX1}$ $I_{CEX2}$	Collector Cut-off Current	$V_{CE} = 60\text{V}, V_{BE}(\text{off}) = -1.5\text{A}$ $V_{CE} = 60\text{V}, V_{BE}(\text{off}) = -1.5\text{A}$ @ $T_C = 125^\circ\text{C}$			10 1.0	$\mu\text{A}$ mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			1.0	mA
$h_{FE1}$ $h_{FE2}$	*DC Current Gain	$V_{CE} = 2\text{V}, I_C = 0.5\text{A}$ $V_{CE} = 2\text{V}, I_C = 1\text{A}$	1000 2000		30000	
$V_{CE}(\text{sat})$	*Collector-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 1\text{mA}$			1.5	V
$V_{BE}(\text{sat})$	*Base-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 1\text{mA}$			2.0	V
$t_{ON}$	Turn ON Time	$V_{CC} = 50\text{V}, I_C = 1\text{A}$		0.5		$\mu\text{s}$
$t_{STG}$	Storage Time	$I_{B1} = - I_{B2} = 1\text{mA}$		1.0		$\mu\text{s}$
$t_F$	Fall Time	$R_L = 50\Omega$		1.0		$\mu\text{s}$

\* Pulse Test:  $PW \leq 350\mu\text{s}$ , Duty Cycle  $\leq 2\%$

### $h_{FE}$ Classification

Classification	R	O	Y
$h_{FE2}$	2000 ~ 5000	4000 ~ 10000	8000 ~ 30000

# Typical Characteristics

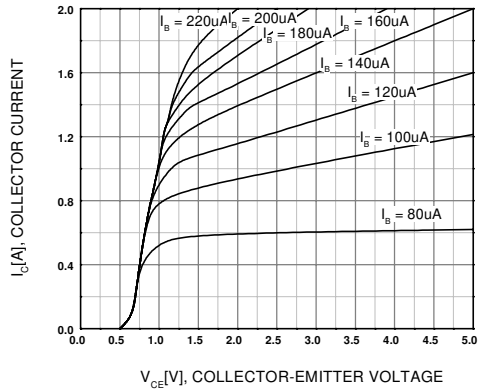


Figure 1. Static Characteristic

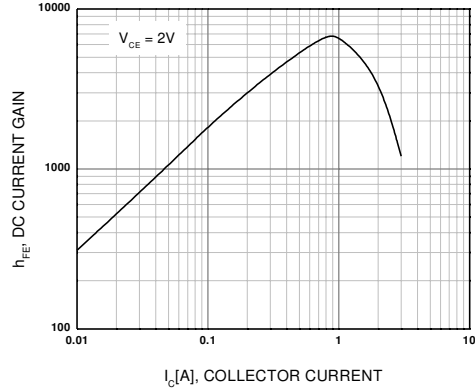


Figure 2. DC current Gain

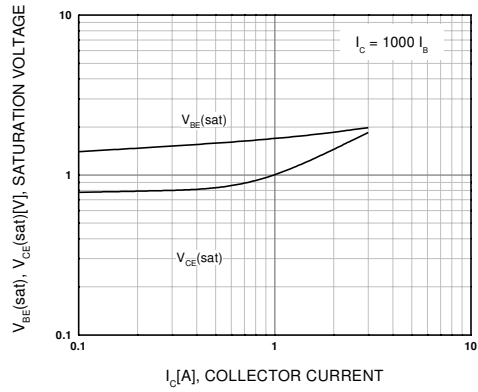


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

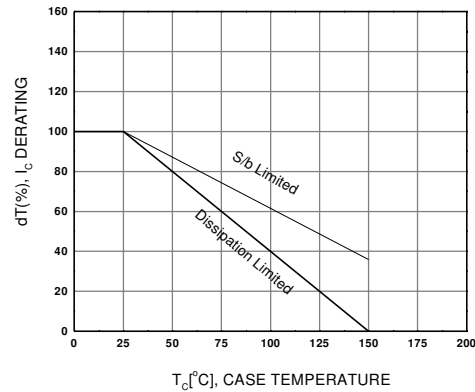


Figure 4. Derating Curve Of Safe Operating Areas

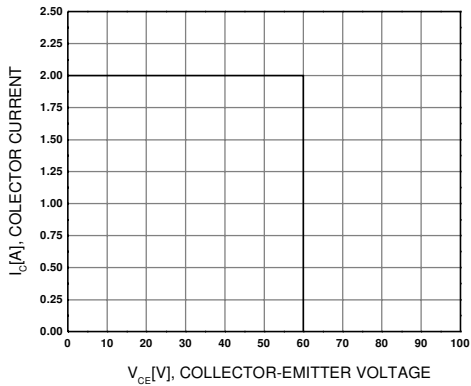


Figure 5. Reverse Bias Safe Operating Areas

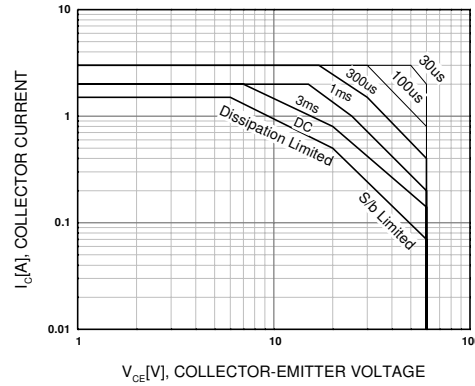
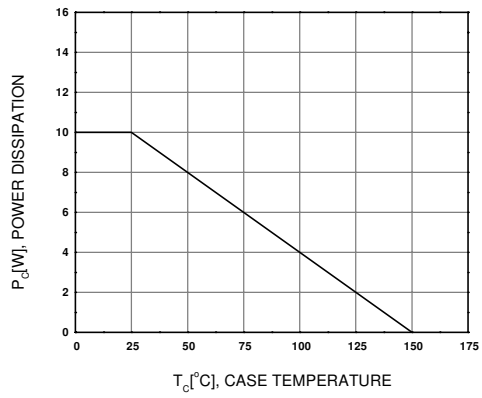


Figure 6. Safe Operating Area

## Typical Characteristics (Continued)

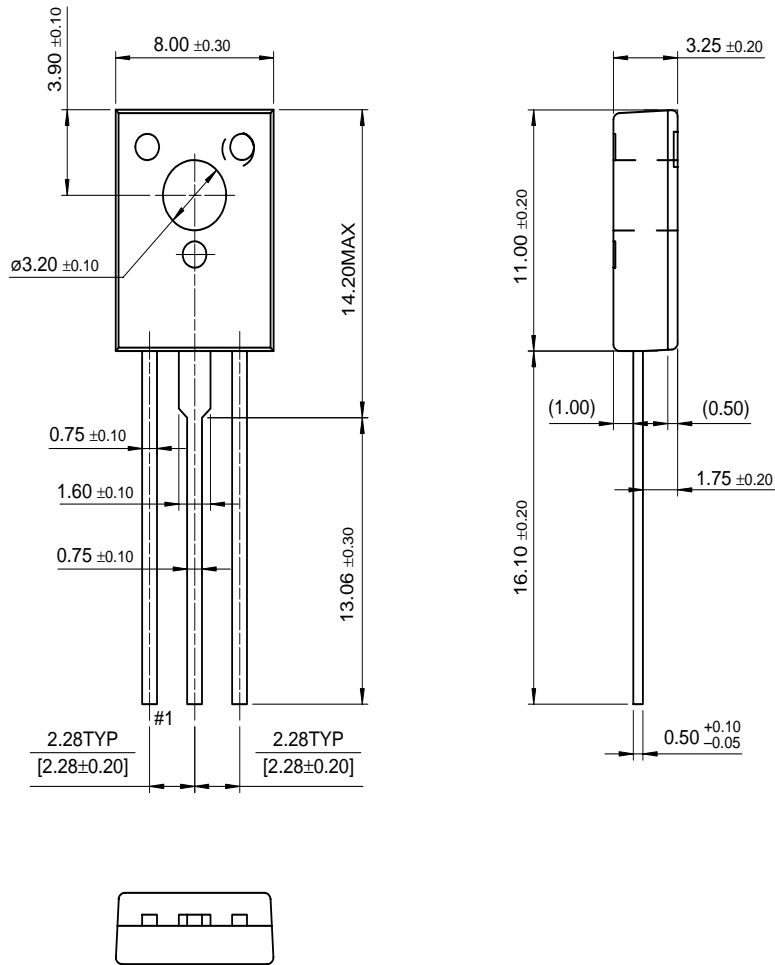


**Figure 7. Power Derating**

# Package Dimensions

KSD985/986

## TO-126



Dimensions in Millimeters

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## KSD986

NPN Epitaxial Silicon Darlington Transistor

### Contents

- [Features](#)
- [Applications](#)
- [Product status/pricing/packageing](#)
- [Order Samples](#)
- [Models](#)
- [Qualification Support](#)

### Features

- Low Speed Switching Industrial Use

[back to top](#)

### Applications

**Low Frequency Power Amplifier**

[back to top](#)

**Product status/pricing/packageing**

**BUY**

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### Datasheet

[Download this datasheet](#)



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### This page

[Print version](#)

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Product	Product status	Pb-free Status	Pricing*	Package type	Leads	Packing method	Package Marking Convention**
KSD986OS	Full Production	Full Production	\$0.194	<a href="#">TO-126</a>	3	BULK	Line 1: \$Y (Fairchild logo) &3 (3-Digit Date Code) Line 3: D986-O
KSD986YS	Full Production	Full Production	\$0.194	<a href="#">TO-126</a>	3	BULK	Line 1: \$Y (Fairchild logo) &3 (3-Digit Date Code) Line 3: D986-Y
KSD986YSTSSTU	Full Production	Full Production	\$0.194	<a href="#">TO-126</a>	3	RAIL	Line 1: \$Y (Fairchild logo) &3 (3-Digit Date Code)

\* Fairchild 1,000 piece Budgetary Pricing

\*\* A sample button will appear if the part is available through Fairchild's on-line samples program. If there is no sample button, please contact a [Fairchild distributor](#) to obtain samples



Indicates product with Pb-free second-level interconnect. For more information [click here](#).

Package marking information for product KSD986 is available. [Click here for more information](#).

[back to top](#)

### Models

Package & leads	Condition	Temperature range	Software version	Revision date
<b>PSPICE</b>				
TO-126-3	<a href="#">Electrical</a>	-25°C to 125°C	9.2	Jan 8, 2002

[back to top](#)

### Qualification Support

Click on a product for detailed qualification data

Product
<a href="#">KSD986OS</a>
<a href="#">KSD986YS</a>
<a href="#">KSD986YSTSSTU</a>

[back to top](#)

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