



## KSD985/986

### Low Frequency Power Amplifier

- Low Speed Switching Industrial Use



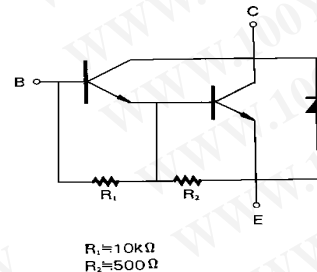
TO-126  
 1. Emitter 2. Collector 3. Base

### NPN Epitaxial Silicon Darlington Transistor

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

Symbol	Parameter	Value	Units
$V_{CB0}$	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

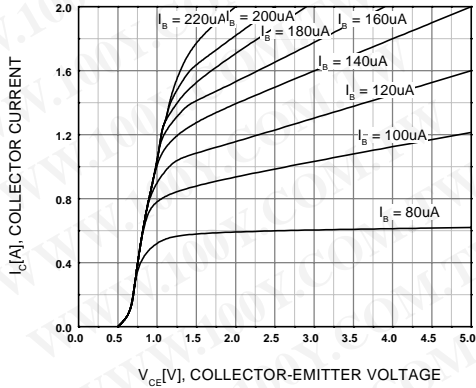


Figure 1. Static Characteristic

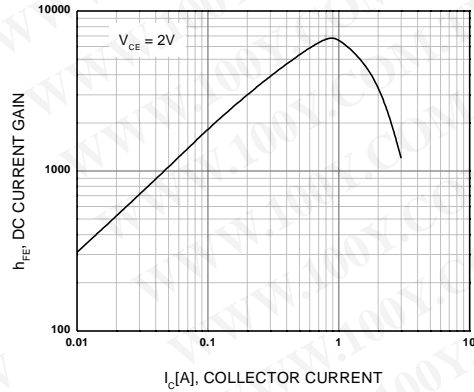


Figure 2. DC current Gain

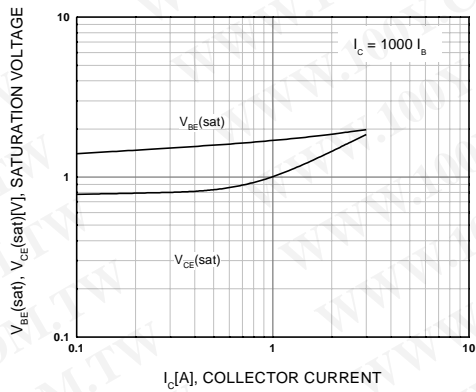


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

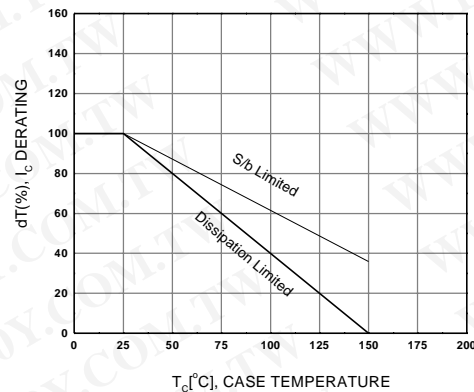


Figure 4. Derating Curve Of Safe Operating Areas

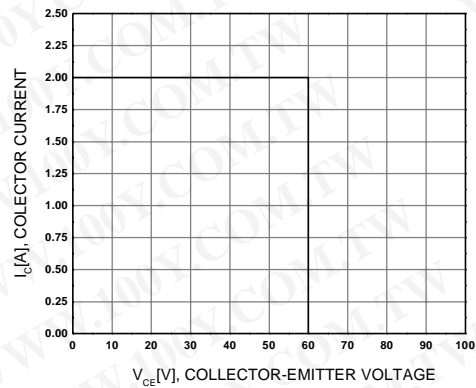


Figure 5. Reverse Bias Safe Operating Areas

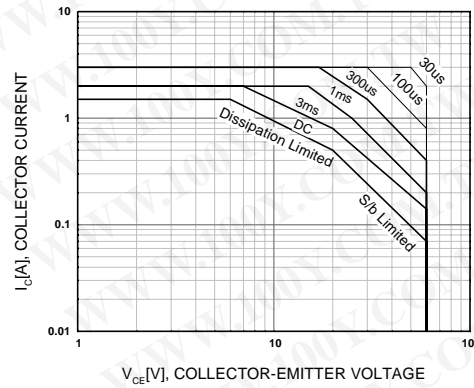


Figure 6. Safe Operating Area

### Typical Characteristics (Continued)

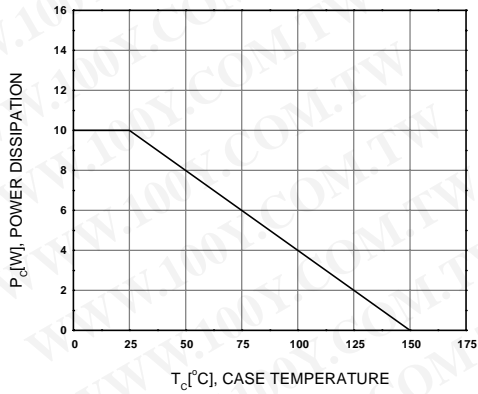
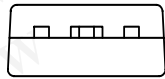
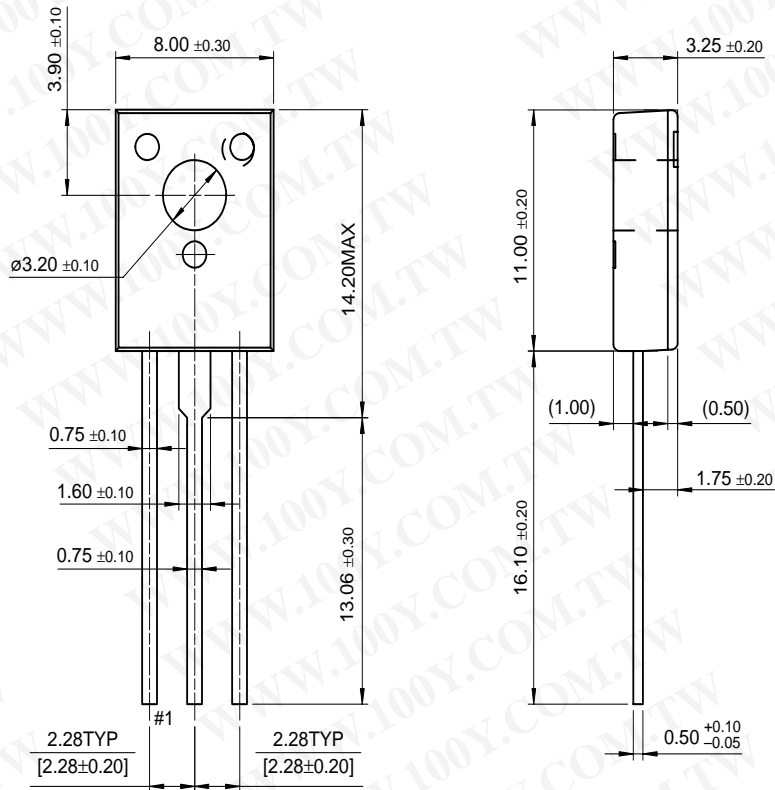


Figure 7. Power Derating

# Package Dimensions

## TO-126

KSD985/986



Dimensions in Millimeters

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