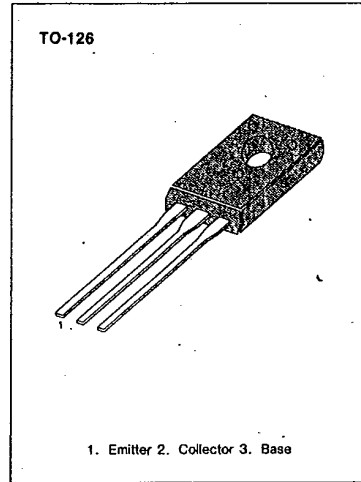


**NPN EPITAXIAL SILICON  
DARLINGTON TRANSISTOR**

**KSD986**  
SAMSUNG SEMICONDUCTOR INC

T-33-29

**LOW FREQUENCY POWER AMPLIFIER  
LOW SPEED SWITCHING  
INDUSTRIAL USE**



**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C)**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V <sub>CB0</sub>	150	V
Collector-Emitter Voltage	V <sub>CE0</sub>	80	V
Emitter-Base Voltage	V <sub>EBO</sub>	8.0	V
Collector Current (DC)	I <sub>C</sub>	±1.5	A
*Collector Current (Pulse)	I <sub>C</sub>	±3.0	A
Base Current (DC)	I <sub>B</sub>	0.15	A
Collector Dissipation (T <sub>a</sub> =25°C)	P <sub>C</sub>	1.0	W
Collector Dissipation (T <sub>c</sub> =25°C)	P <sub>C</sub>	10	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

\* PW≤300μs, Duty Cycle ≤10%

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C)**

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =80V, I <sub>E</sub> =0			10	μA
Collector Cutoff Current	I <sub>CER</sub>	V <sub>CE</sub> =80V, R <sub>BE</sub> =51Ω T <sub>a</sub> =125°C			1.0	mA
Collector Cutoff Current	I <sub>CEX1</sub>	V <sub>CE</sub> =80V, V <sub>BE</sub> (off)=-1.5V			10	μA
Collector Cutoff Current	I <sub>CEX2</sub>	V <sub>CE</sub> =80V, V <sub>BE</sub> (off)=-1.5V T <sub>a</sub> =125°C			1.0	mA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0			1.0	mA
*DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =0.5A	1000			
	h <sub>FE2</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =1A	2000		30000	
*Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =1mA			1.5	V
*Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =1mA			2.0	V
Turn On Time	t <sub>on</sub>	I <sub>C</sub> =1A, R <sub>L</sub> =50Ω		0.5		μs
Storage Time	t <sub>s</sub>	I <sub>B1</sub> =-I <sub>B2</sub> =1mA		1.0		μs
Fall time	t <sub>f</sub>	V <sub>CC</sub> ≈50V		1.0		μs

\*Pulse Test: PW≤350μs, Duty Cycle≤2%

**h<sub>FE</sub>(2) CLASSIFICATION**

Classification	R	O	Y
h <sub>FE</sub> (2)	2000-5000	4000-10000	8000-30000

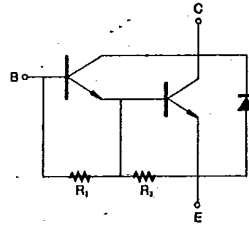
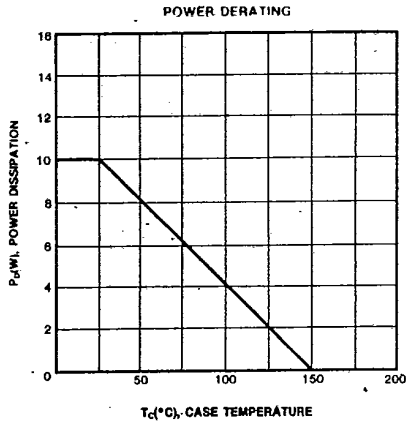


# NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

**KSD986**

SAMSUNG SEMICONDUCTOR INC

T-33-29



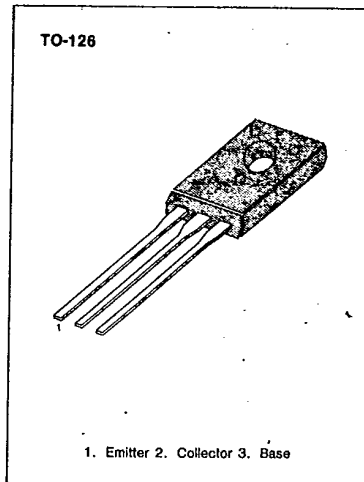
R<sub>1</sub>=10kΩ  
R<sub>2</sub>=500Ω

**KSD1691****NPN EPITAXIAL SILICON TRANSISTOR**

T-33-09

**LOW COLLECTOR SATURATION VOLTAGE  
LARGE CURRENT**HIGH POWER DISSIPATION :  $P_T = 1.3W$  ( $T_a = 25^\circ C$ )  
Complementary to KSB1151**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	60	V
Emitter-Base Voltage	$V_{EBO}$	7	V
Collector Current (DC)	$I_C$	5	A
*Collector Current (Pulse)	$I_C$	8	A
Base Current (DC)	$I_B$	1	A
Collector Dissipation ( $T_a = 25^\circ C$ )	$P_C$	1.3	W
Collector Dissipation ( $T_c = 25^\circ C$ )	$P_C$	20	W
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55~150	$^\circ C$



3

\*  $PW \leq 10mS$ , duty cycle  $\leq 50\%$ **ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 50V, I_E = 0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 7V, I_C = 0$			10	$\mu A$
*DC Current Gain	$h_{FE1}$	$V_{CE} = 1V, I_C = 0.1A$	60			
	$h_{FE2}$	$V_{CE} = 1V, I_C = 2A$	100		400	
	$h_{FE3}$	$V_{CE} = 1V, I_C = 5A$	50			
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 2A, I_B = 0.2A$		0.1	0.3	V
*Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 2A, I_B = 0.2A$		0.9	1.2	V
Turn On Time	$t_{on}$	$I_C = 2A, I_{B1} = -I_{B2} = 0.2A$		0.2	1	$\mu S$
Storage Time	$t_{stg}$	$R_L = 5\Omega, V_{CC} = 10V$		1.1	2.5	$\mu S$
Fall Time	$t_f$			0.2	1	$\mu S$

\* Pulse test:  $PW < 350\mu s$ , duty cycle  $< 2\%$  Pulsed **$h_{FE}$  (2) CLASSIFICATION**

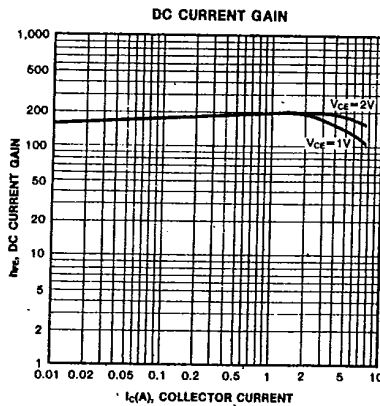
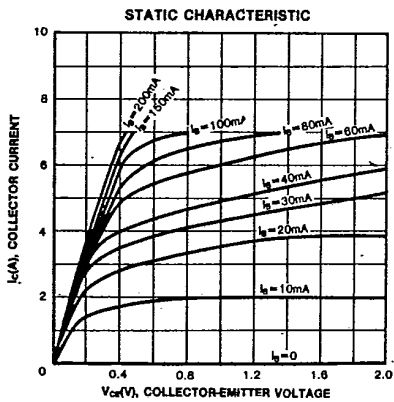
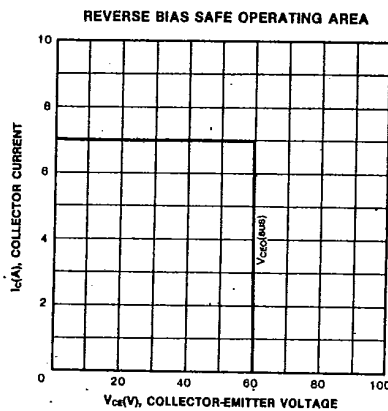
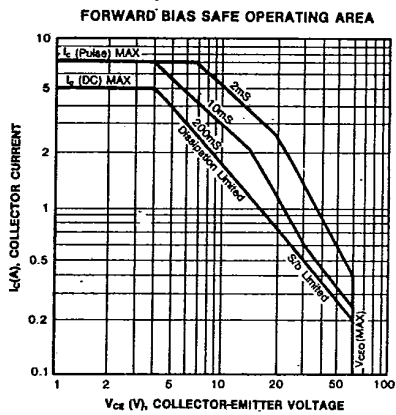
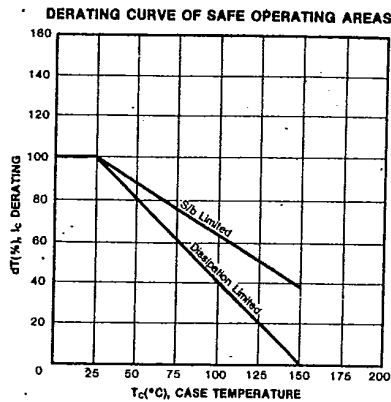
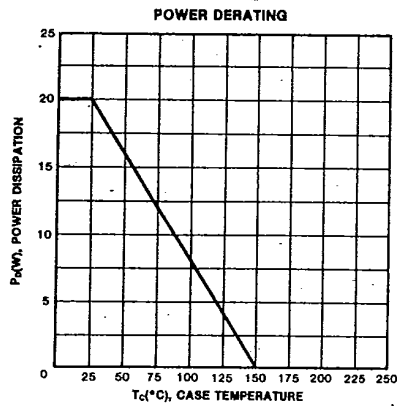
Classification	O	Y	G
$h_{FE} 2$	100-200	160-320	200-400



**KSD1691**

**NPN EPTAXIAL SILICON TRANSISTOR**

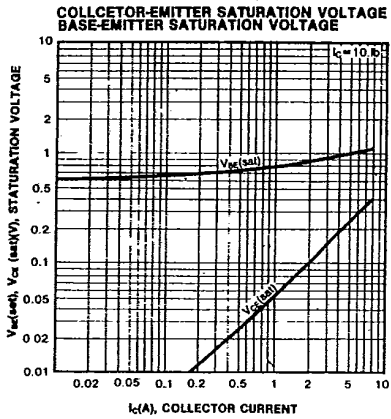
T-33-09



KSD1691

NPN EPITAXIAL SILICON TRANSISTOR

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3