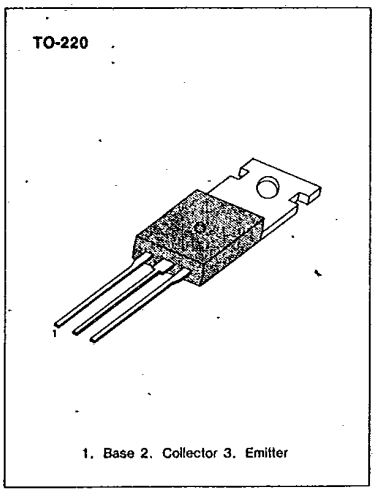
KSB834 PNP SILICON EPITAXIAL TRANSISTOR

T-33-19

LOW FREQUENCY POWER AMPLIFIER

- Complement to KSD880



ABSOLUTE MAXIMUM RATINGS (T_a=25°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	I_C	−3	A
Base Current	I_B	−0.5	A
Collector Dissipation (T_a=25°C)	P_C	1.5	W
Collector Dissipation (T_c=25°C)	P_C	30	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

3

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	V_{CB}=−60V, I_E=0			−100	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−7V, I_C=0			−100	μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=−50mA, I_B=0	−60			V
DC Current Gain	h_{FE1}	V_{CE}=−5V, I_C=−0.5A	60		200	
	h_{FE2}	V_{CE}=−5V, I_C=−3A	20			
Collector Emitter Saturation Voltage	V_{CE} (sat)	I_C=−3A, I_B=−0.3A		−0.5	−1	V
Base Emitter On Voltage	V_{BE} (on)	V_{CE}=−5V, I_C=−0.5A		−0.7	−1	V
Current Gain Bandwidth Product	f_T	V_{CE}=−5V, I_C=−0.5A		9		MHz
Collector Output Capacitance	Cob	V_{CB}=−10V, I_E=0 f=1MHz		150		pF
Turn on Time	ton			0.4		μs
Storage Time	ts	$-I_{B1}=I_{B2}$=0.2A		1.7		μs
Fall Time	tf	V_{CC}=−30V		0.5		μs

h_{FE}(1) CLASSIFICATION

Classification	O	Y
h_{FE}(1)	60-120	100-200

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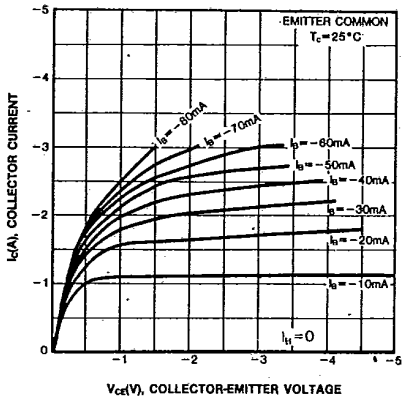
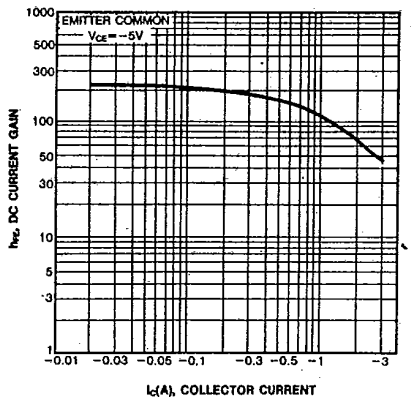
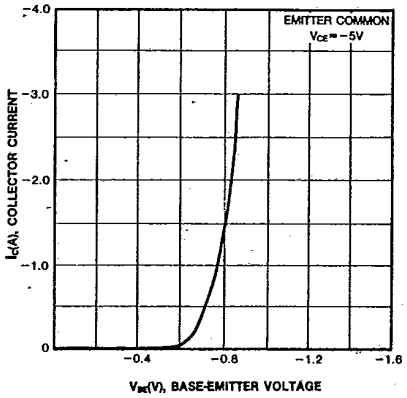
STATIC CHARACTERISTIC



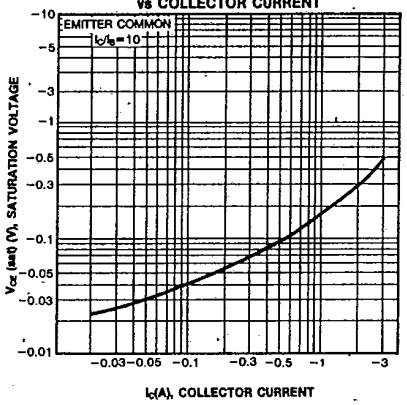
DC CURRENT GAIN



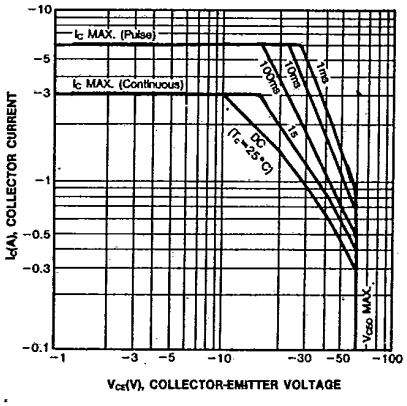
BASE-EMITTER ON VOLTAGE



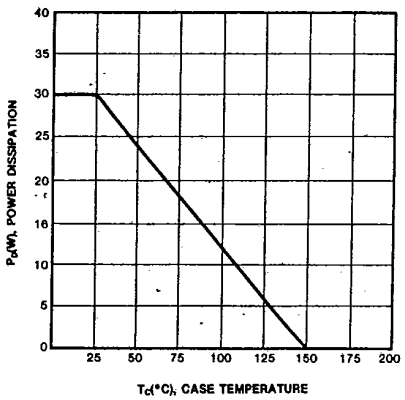
COLLECTOR-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT



SAFE OPERATING AREA



POWER DERATING



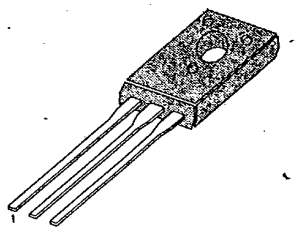
KSB1149 PNP SILICON DARLINGTON TRANSISTOR

T-33-31

HIGH DC CURRENT GAIN
LOW COLLECTOR SATURATION VOLTAGE
BUILT-IN A DAMPER DIODE AT E-C

HIGH POWER DISSIPATION: PT=1.3W (T_a=25°C)

TO-126



1. Emitter 2. Collector 3. Base

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	−100	V
Collector-Emitter Voltage	V_{CEO}	−100	V
Emitter-Base Voltage	V_{EBO}	−8	V
Collector Current (DC)	I_C	−3	A
*Collector Current (Pulse)	I_C	−5	A
Collector Dissipation (T_a=25°C)	P_C	1.3	W
Collector Dissipation (T_C=25°C)	P_C	15	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

* PW≤10ms, Duty Cycle≤50%

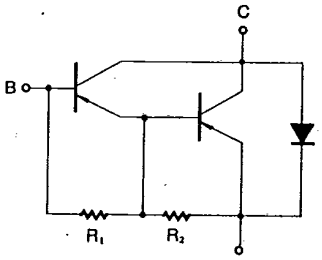
ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	V_{CB}=−100V, I_E=0			−1.0	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−5V, I_C=0			−2	mA
*DC Current Gain	h_{FE1}	V_{CE}=−2V, I_C=−1.5A	2000		15000	
	h_{FE2}	V_{CE}=−2V, I_C=−3A	1000			
*Collector-Emitter Saturation Voltage	V_{CE}(sat)	I_C=−1.5A, I_B=−1.5mA		−0.9	−1.2	V
*Base-Emitter Saturation Voltage	V_{BE}(sat)	I_C=−1.5A, I_B=−1.5mA		−1.5	−2	V
Turn On Time	ton	I_C=−1.5A		0.5		μS
Storage Time	tstg	I_{B1}=−I_{B2}=−1.5mA		2		μS
Fall Time	tf	RL=27Ω, V_{CC}=−40V		1		μS

* Pulse test: PW ≤ 350μs, duty cycle ≤ 2% Pulsed

h_{FE}(1) CLASSIFICATION

Classification	O	Y	G
h_{FE}1	2000-5000	4000-12000	6000-20000



R1≒8 kΩ
R2≒0.6 kΩ

KSB1149 PNP SILICON DARLINGTON TRANSISTOR

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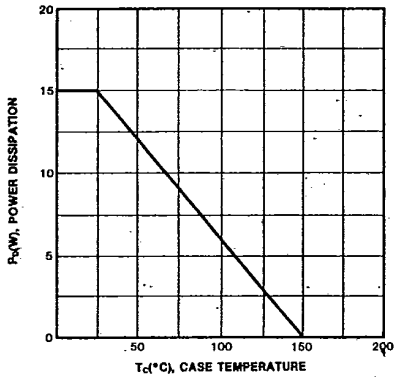
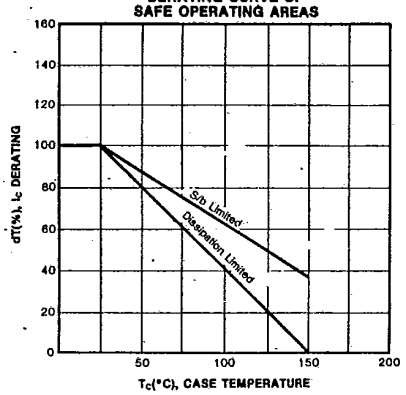
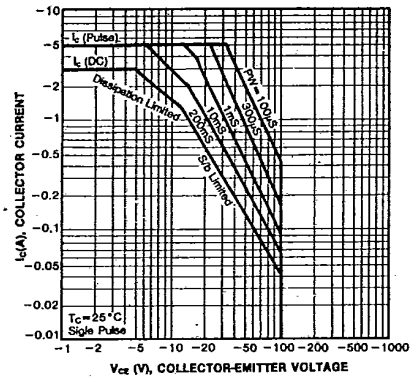
POWER DERATING



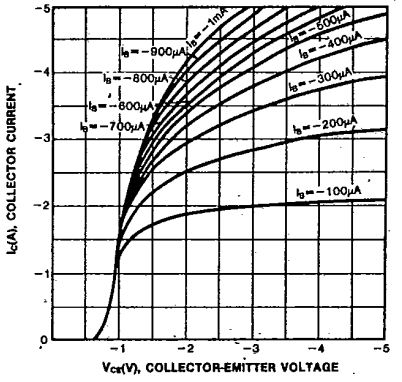
DERATING CURVE OF SAFE OPERATING AREAS



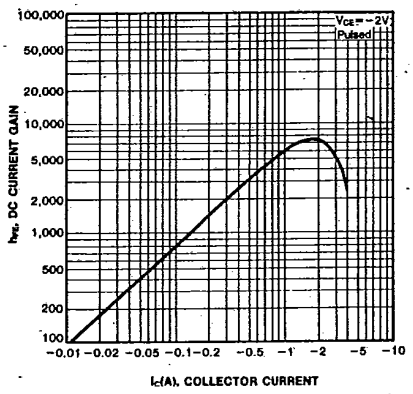
FORWARD BIAS SAFE OPERATING AREA



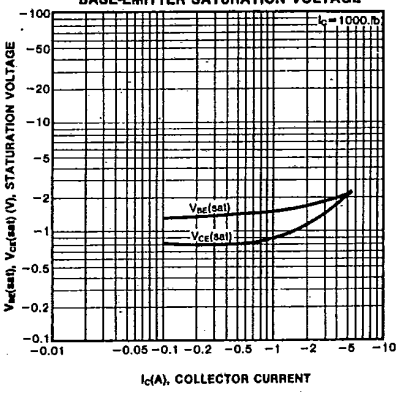
STATIC CHARACTERISTIC



DC CURRENT GAIN



COLLCETOR-EMITTER SATURATION VOLTAGE BASE-EMITTER SATURATION VOLTAGE

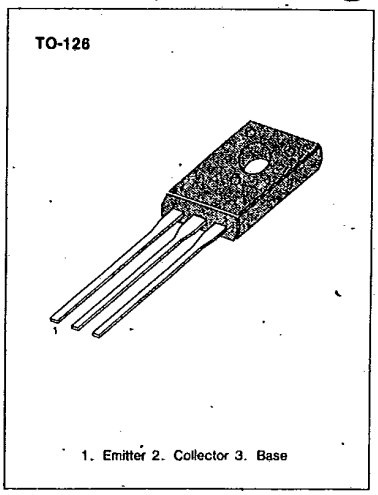


KSB1150 PNP SILICON DARLINGTON TRANSISTOR

T-33-31

HIGH DC CURRENT GAIN
LOW COLLECTOR SATURATION VOLTAGE
BUILT-IN A ZENER DIODE AT B-C AND A DAMPER DIODE AT E-C

HIGH POWER DISSIPATION: PT=1.3W (T_a=25°C)



ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	−60±10	V
Collector-Emitter Voltage	V_{CEO}	−60±10	V
Emitter-Base Voltage	V_{EBO}	−8	V
Collector Current (DC)	I_C	−3	A
*Collector Current (Pulse)	I_C	−5	A
Collector Dissipation (T_a=25°C)	P_C	1.3	W
Collector Dissipation (T_C=25°C)	P_C	15	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

* PW≤10ms, Duty Cycle≤50%

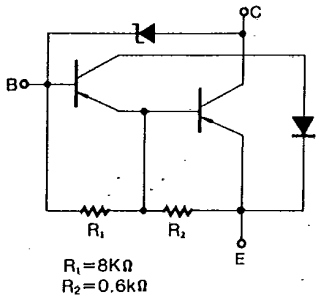
ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Voltage	V_{CBO}	I_C=−1mA, I_E=0	−50	−60	−70	V
Collector-Emitter Voltage	V_{CEO}	I_C=−10mA, R_{BE}=∞	−50	−60	−70	V
Collector Cutoff Current	I_{CBO}	V_{CB}=−40V, I_E=0			−10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−5V, I_C=0			−2	mA
*DC Current Gain	$h_{FE}1$	V_{CE}=−2V, I_C=−1.5A	2000		15000	
	$h_{FE}2$	V_{CE}=−2V, I_C=−3A	1000			
*Collector-Emitter Saturation Voltage	V_{CE}(sat)	I_C=−1.5A, I_B=−1.5mA		−0.9	−1.2	V
*Base-Emitter Saturation Voltage	V_{BE}(sat)	I_C=−1.5A, I_B=−1.5mA		−1.5	−2	V
Turn On Time	ton	I_C=1.5A		0.5		μS
Storage Time	tstg	I_B1=−I_B2=1.5mA		2		μS
Fall Time	tf	RL=27Ω, V_{CC}=40V		1		μS

* Pulse test: PW≤350μs, Duty Cycle≤2% Pulsed

h_{FE}(1) CLASSIFICATION

Classification	O	Y	G
$h_{FE}1$	2000-5000	4000-12000	6000-20000



R_1=8KΩ
R_2=0.6kΩ

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KSB1150 PNP SILICON DARLINGTON TRANSISTOR

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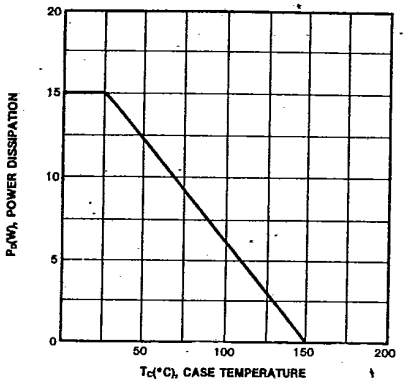
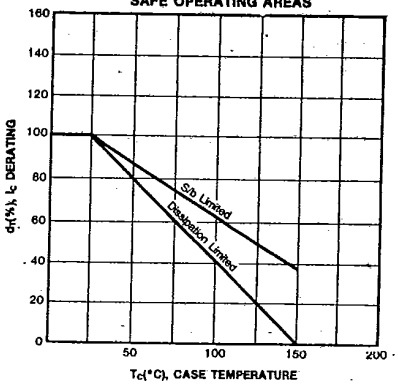
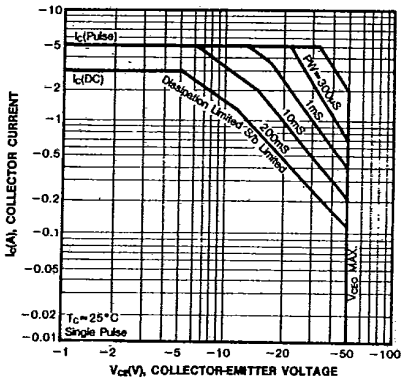
POWER DERATING



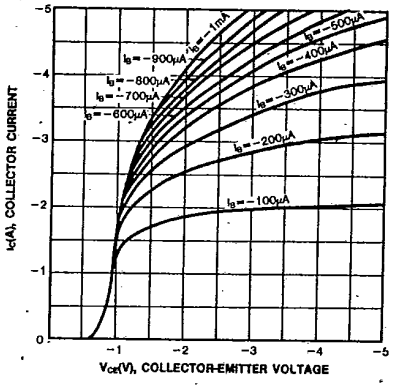
DERATING CURVE OF SAFE OPERATING AREAS



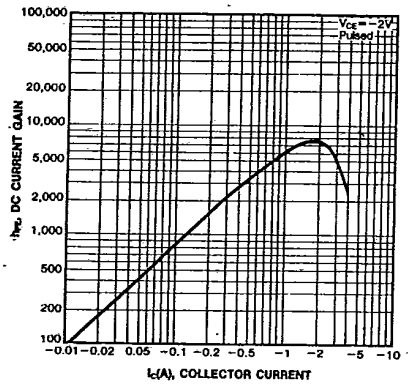
FORWARD BIAS SAFE OPERATING AREA



STATIC CHARACTERISTIC



DC CURRENT GAIN



COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE