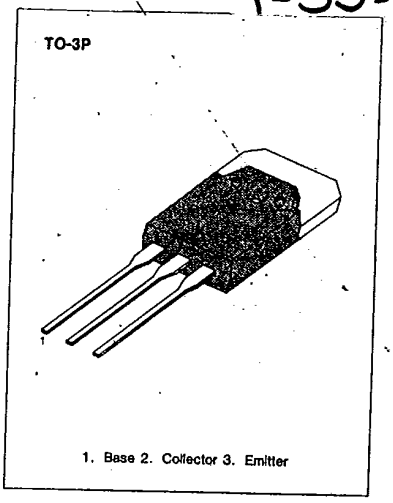
KSC5030

NPN SILICON TRANSISTOR

T-33-13

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA



1. Base 2. Collector 3. Emitter

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	1100	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	6	A
Collector Current (Pulse)	I_C	20	A
Base Current	I_B	3	A
Collector Dissipation	P_C	100	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	1100			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BE}=∞	800			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emifter Sustaining Voltage	$V_{CEX(sus)}$	I_C=3A, I_{B1}=−I_{B2}=0.6A L=1mH, Clamped	800			V
Collector Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.4A	10		40	
	$h_{FE}2$	V_{CE}=5V, I_C=2A	8			
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=3A, I_B=0.6A			2	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=3A, I_B=0.6A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		120		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.4A		15		MHz
Trun On Time	t_{on}	V_{CC}=400V			0.5	μS
Storage Time	t_S	$5I_{B1}$=−$2.5I_{B2}$=I_C=4A			3	μS
Fall Time	t_f	RL=100Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	N	R	O
h_{FE} 1	10-20	15-30	20-40

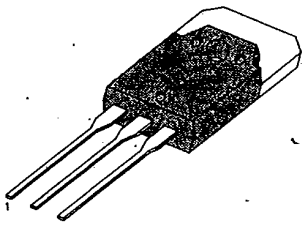
KSC5031 NPN SILICON TRANSISTOR

T-33-13

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA

TO-3P



1. Base 2. Collector 3. Emitter

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	1100	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	8	A
Collector Current (Pulse)	I_C	25	A
Base Current	I_B	4	A
Collector Dissipation	P_C	140	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	1100			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BL}=∞	800			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emitter Sustaining Voltage	V_{CEX}(sus)	I_C=4A, $2I_{B1}$=−I_{B2}=0.8A L=1mH, Clamped	800			V
Collector Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.6A	10		40	
	$h_{FE}2$	V_{CE}=5V, I_C=3A	8			
Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=4A, I_B=0.8A			2	V
Base Emitter Saturation Voltage	V_{BE}(sat)	I_C=4A, I_B=0.8A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		155		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.6A		15		MHz
Trun On Time	t_{on}	V_{CC}=400V			0.5	μS
Storage Time	t_s	$5I_{B1}$=−$2.5I_{B2}$=I_C=6A			3	μS
Fall Time	t_f	RL=66.7Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	N	R	O
h_{FE} 1	10-20	15-30	20-40

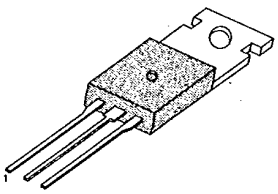
KSD73 NPN EPITAXIAL SILICON TRANSISTOR

T-33-09

LOW FREQUENCY HIGH POWER AMPLIFIER

- Collector-Base Voltage V_{CBO}=100V
- Collector Current I_C=5A
- Collector Dissipation P_C=30W (T_C=25°C)

TO-220



1. Base 2. Collector 3. Emitter

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	5	A
Collector Dissipation (T_C=25°C)	P_C	30	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	100			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=20mA, I_B=0	60			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=−1mA, I_C=0	5			V
Collector Cutoff Current	I_{CBO}	V_{CB}=100V, I_E=0			5	mA
DC Current Gain	h_{FE}	V_{CE}=10V, I_C=1.0A	70		240	
Collector-Emitter Saturation Voltage	V_{CE} (sat)	I_C=5A, I_B=0.5A			2.0	V
Base-Emitter Saturation Voltage	V_{BE} (sat)	I_C=5A, I_B=0.5A			1.5	V
Current-Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.3A		20		MHz
Base-Emitter On Voltage	V_{BE} (on)	V_{CE}=10V, I_C=1.0A		0.75		V

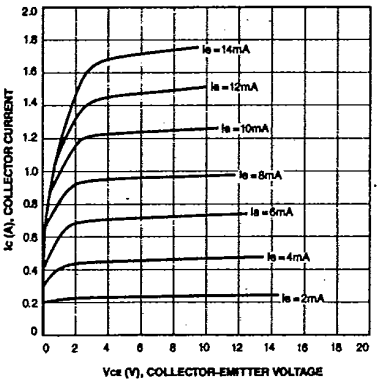
h_{FE} CLASSIFICATION

Classification	O	Y
h_{FE}	70-140	120-240

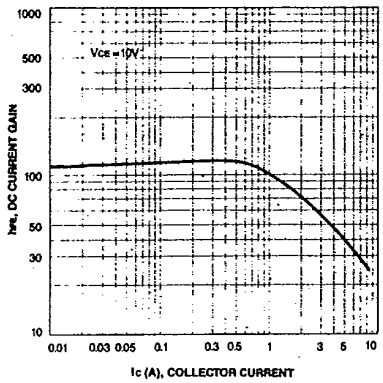
KSD73 NPN EPITAXIAL SILICON TRANSISTOR

T-33-09

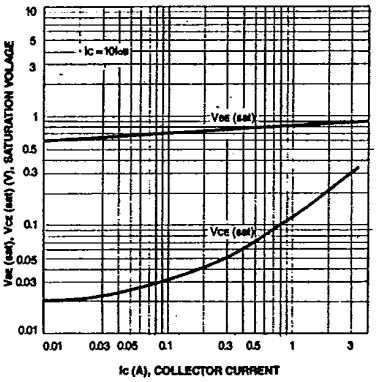
STATIC CHARACTERISTIC



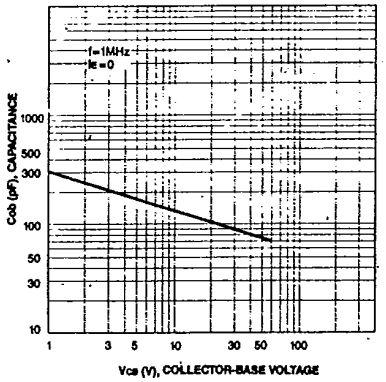
DC CURRENT GAIN



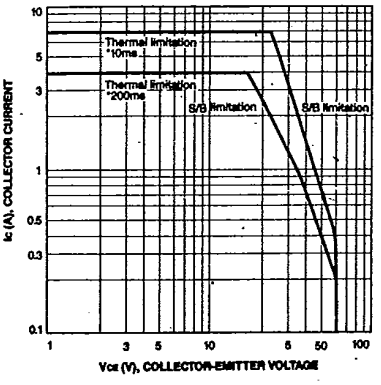
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



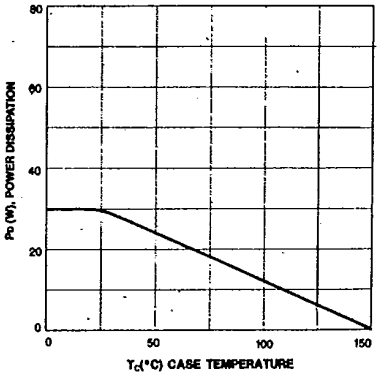
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



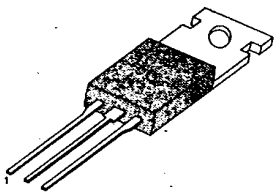
KSD288 NPN EPITAXIAL SILICON TRANSISTOR

T-33-09

POWER REGULATOR
LOW FREQUENCY POWER AMPLIFIER

- Complement to KSA614
- Collector-Base Voltage V_{CBO}=80V
- Collector Dissipation P_C=25W (T_C=25°C)

TO-220



1. Base 2. Collector 3. Emitter

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	55	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	8	A
Collector Dissipation (T_C=25°C)	P_C	25	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~+150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=500μA, I_E=0	80			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA, I_B=0	55			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=−500μA, I_C=0	5			V
Collector Cut-off Current	I_{CBO}	V_{CB}=50V, I_E=0			50	μA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=0.5A	40		240	
Collector-Emitter Saturation Voltage	V_{CE} (sat)	I_C=1A, I_B=0.1A			1	V

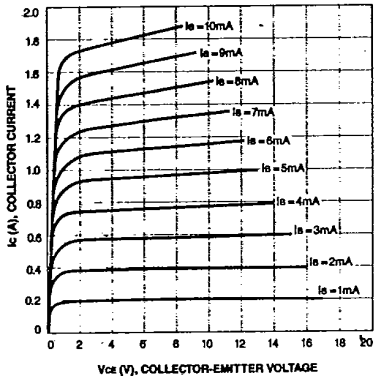
h_{FE} CLASSIFICATION

Classification	R	O	Y
h_{FE}	40-80	70-140	120-240

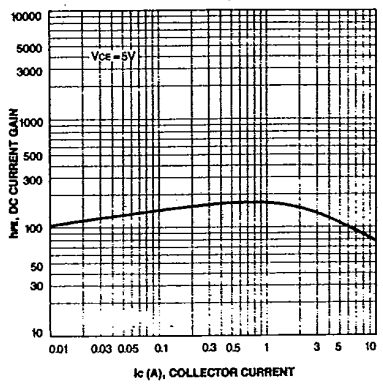
KSD288 NPN EPITAXIAL SILICON TRANSISTOR

T-33-09

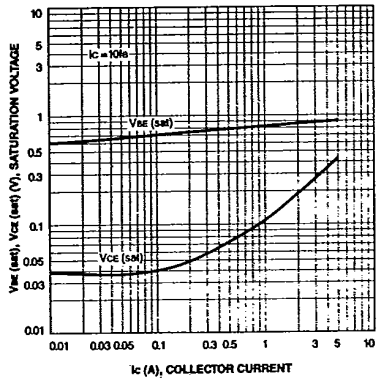
STATIC CHARACTERISTIC



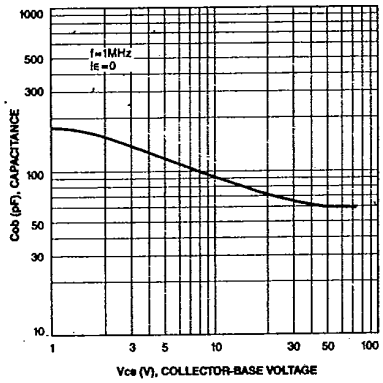
DC CURRENT GAIN



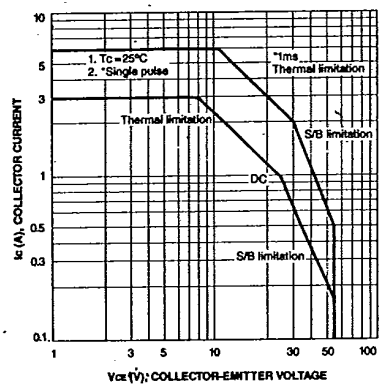
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING