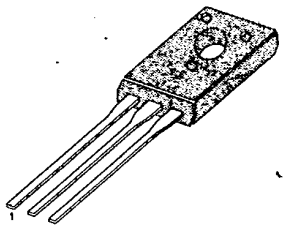
KSC2690/2690A NPN EPITAXIAL SILICON TRANSISTOR

T-33-09

AUDIO FREQUENCY, HIGH FREQUENCY POWER AMPLIFIER

- Complement to KSA1220/KSA1220A

TO-126



1. Emitter 2. Collector 3. Base

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ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic		Symbol	Rating	Unit
Collector-Base Voltage	: KSC2690	V_{CBO}	120	V
	: KSC2690A		160	V
Collector-Emitter Voltage	: KSC2690	V_{CEO}	120	V
	: KSC2690A		160	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current (DC)		I_C	1.2	A
* Collector Current (Pulse)		I_C	2.5	A
Base Current (DC)		I_B	0.3	A
Collector Dissipation (T_a=25°C)		P_C	1.2	W
Collector Dissipation (T_c=25°C)		P_C	20	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}=120V, I_E=0			1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=3V, I_C=0			1	μA
* DC Current Gain	h_{FE1}	V_{CE}=5V, I_C=5mA	35	105		
	h_{FE2}	V_{CE}=5V, I_C=0.3A	60	140	320	
* Collector Emitter Saturation Voltage	V_{CE} (sat)	I_C=1A, I_B=0.2A		0.4	0.7	V
* Base Emitter Saturation Voltage	V_{BE} (sat)	I_C=1A, I_B=0.2A		1	1.3	V
Current Gain Bandwidth Product	f_T	V_{CE}=5V, I_C=0.2A		155		MHz
Output Capacitance	Cob	V_{CB}=10V, I_E=0, f=1MHz		19		pF

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

h_{FE} (2) CLASSIFICATION

Classification	R	O	Y
h_{FE}(2)	60-120	100-200	160-320

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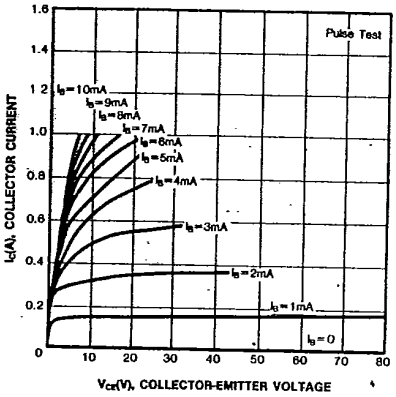
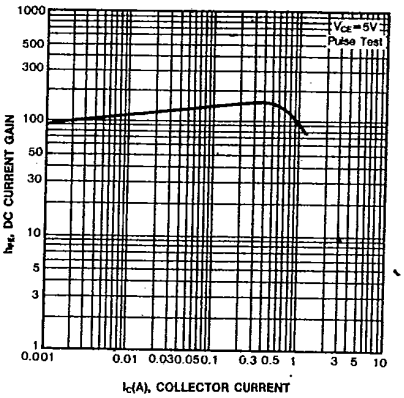
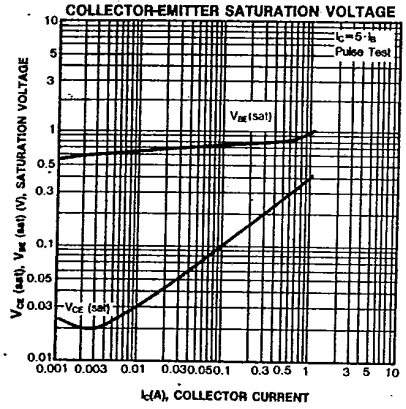
STATIC CHARACTERISTIC



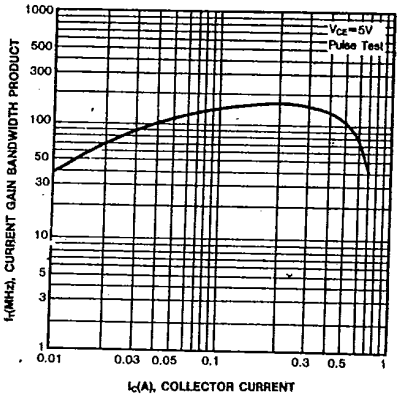
DC CURRENT GAIN



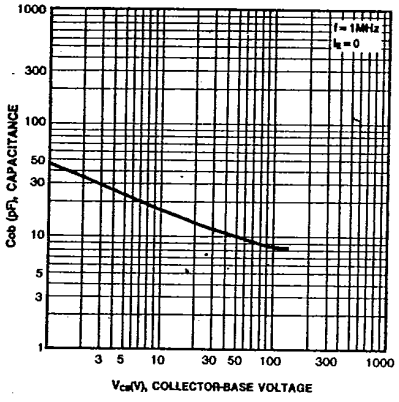
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



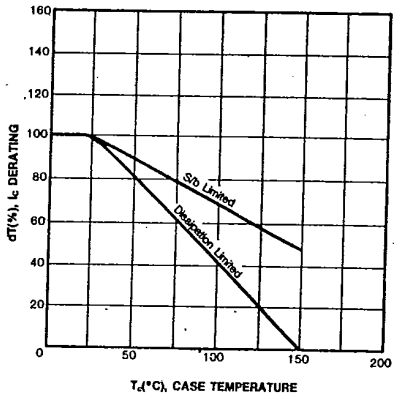
CURRENT GAIN-BANDWIDTH PRODUCT



COLLECTOR OUTPUT CAPACITANCE



DERATING CURVE OF SAFE OPERATING AREAS



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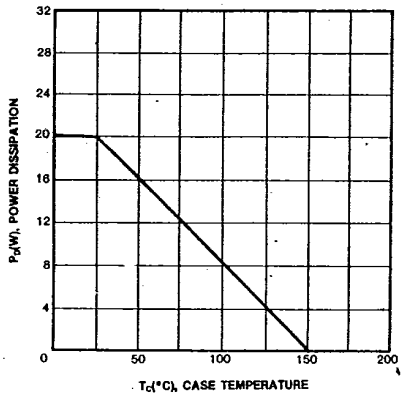
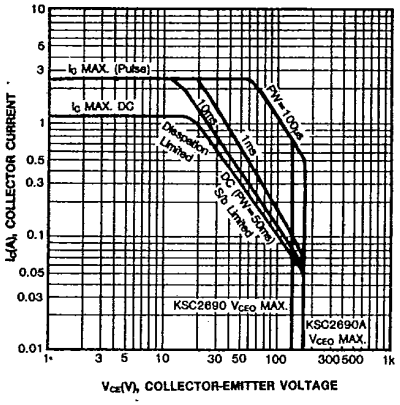
POWER DERATING



SAFE OPERATING AREA



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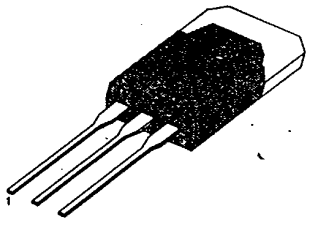
KSC2749 NPN EPITAXIAL SILICON TRANSISTOR

T-33-13

HIGH SPEED, HIGH CURRENT SWITCHING INDUSTRIAL USE



1. Base 2. Collector 3. Emitter

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	500	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	10	A
*Collector Current (Pulse)	I_C	20	A
Base Current (DC)	I_B	5	A
Collector Dissipation (T_c=25°C)	P_C	100	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

* PW≤300μs, Duty Cycle ≤10%

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	V_{CEO} (sus)	I_C=6A, I_{B1}=1.2A, L=100μH	400			V
Collector Emitter Sustaining Voltage	V_{CEX} (sus)1	I_C=6A, I_{B1}=−I_{B2}=1.2A T_a=125°C, L=180μH, Clamped	450			V
Collector Emitter Sustaining Voltage	V_{CEX} (sus)2	I_C=12A, I_{B1}=2.4A, −I_{B2}=1.2A T_a=125°C, L=180μH, Clamped	400			V
Collector Cutoff Current	I_{CBO}	V_{CB}=400V, I_E=0			100	μA
Collector Cutoff Current	I_{CER}	V_{CE}=400V, R_{BE}=50Ω, T_a=125°C			2	mA
Collector Cutoff Current	I_{CEX}1	V_{CE}=400V, V_{BE} (off)=−1.5V			100	μA
Collector Cutoff Current	I_{CEX}2	V_{CE}=400V, V_{BE} (off)=−1.5V T_a=125°C			1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
*DC Current Gain	h_{FE1}	V_{CE}=5V, I_C=1A	15	35	80	
	h_{FE2}	V_{CE}=5V, I_C=3A	10			
	h_{FE3}	V_{CE}=5V, I_C=6A	7			
*Collector-Emitter Saturation Voltage	V_{CE} (sat)	I_C=6A, I_B=1.2A			1	V
*Base-Emitter Saturation Voltage	V_{BE} (sat)	I_C=6A, I_B=1.2A			1.5	V
Turn On Time	ton	I_C=6A, RL=25Ω			1	μs
Storage Time	ts	I_{B1}=−I_{B2}=1.2A, V_{CC}≒150V			2.5	μs
Fall Time	tf				0.7	μs

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

h_{FE} (1) CLASSIFICATION

Classification	N	R	O	Y
h_{FE}(1)	15-30	20-40	30-60	40-80

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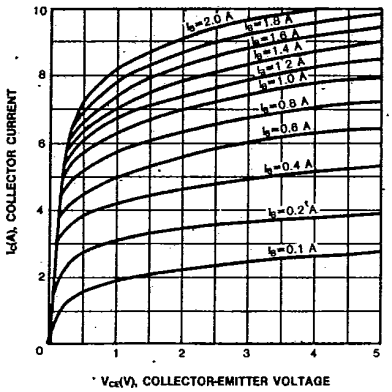
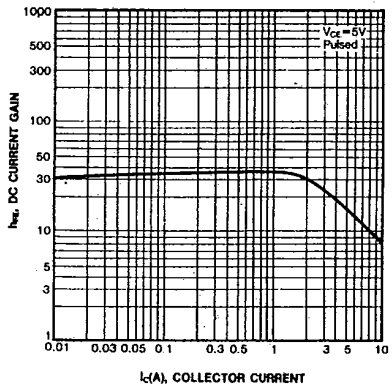
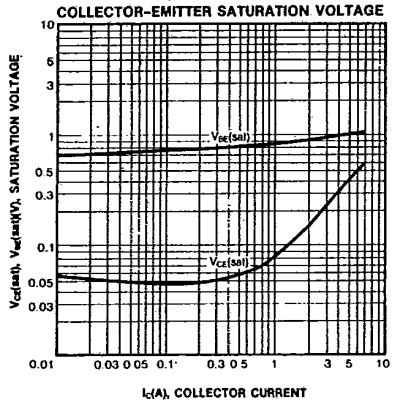
STATIC CHARACTERISTIC



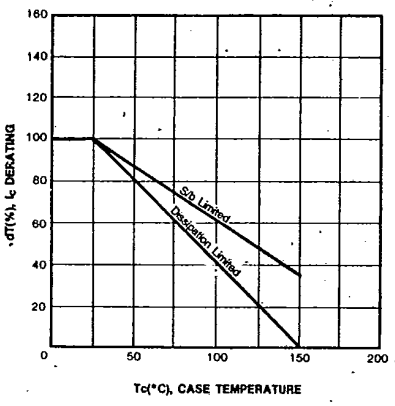
DC CURRENT GAIN



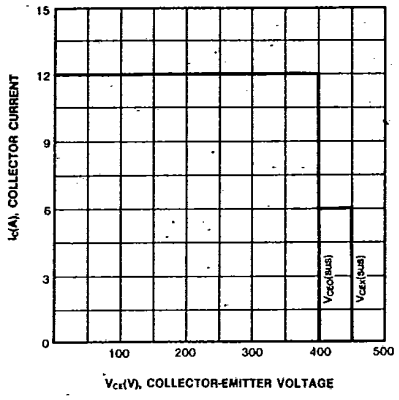
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



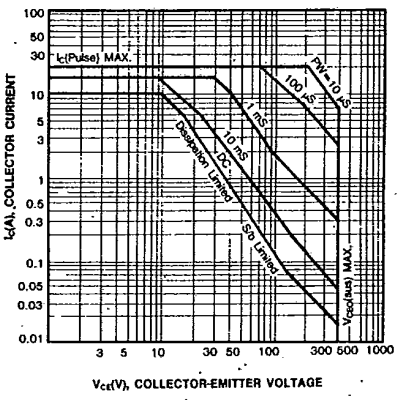
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREA



SAFE OPERATING AREA



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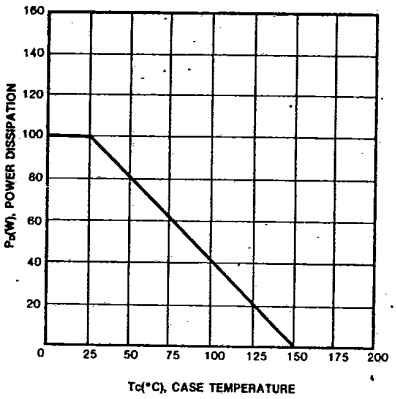
POWER DERATING



SWITCHING TIME