

KSC2690/2690A**NPN EPITAXIAL SILICON TRANSISTOR**

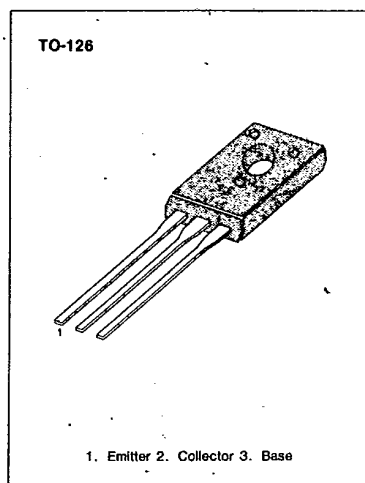
T-33-09

**AUDIO FREQUENCY, HIGH FREQUENCY
POWER AMPLIFIER**

• Complement to KSA1220/KSA1220A

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage : KSC2690	V_{CB0}	120	V
: KSC2690A		160	V
Collector-Emitter Voltage : KSC2690	V_{CE0}	120	V
: KSC2690A		160	V
Emitter-Base Voltage	V_{EB0}	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 ($T_a = 25^\circ\text{C}$)	P_C	1.2	W
Collector Dissipation ($T_c = 25^\circ\text{C}$)	P_C	20	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

* $PW \leq 10\text{ms}$, Duty Cycle $\leq 50\%$ 

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ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	$V_{CB} = 120\text{V}$, $I_E = 0$			1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 3\text{V}$, $I_C = 0$			1	μA
• DC Current Gain	h_{FE1}	$V_{CE} = 5\text{V}$, $I_C = 5\text{mA}$	35	105		
	h_{FE2}	$V_{CE} = 5\text{V}$, $I_C = 0.3\text{A}$	60	140	320	
• Collector Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C = 1\text{A}$, $I_B = 0.2\text{A}$		0.4	0.7	V
• Base Emitter Saturation Voltage	$V_{BE}(\text{sat})$	$I_C = 1\text{A}$, $I_B = 0.2\text{A}$		1	1.3	V
Current Gain Bandwidth Product	f_T	$V_{CE} = 5\text{V}$, $I_C = 0.2\text{A}$		155		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$		19		pF

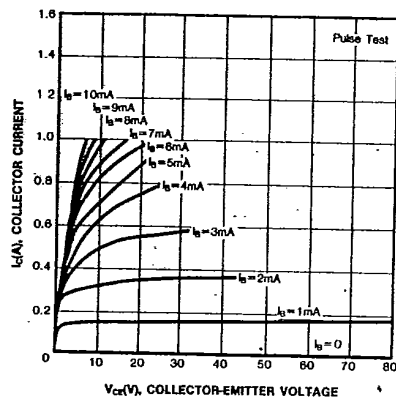
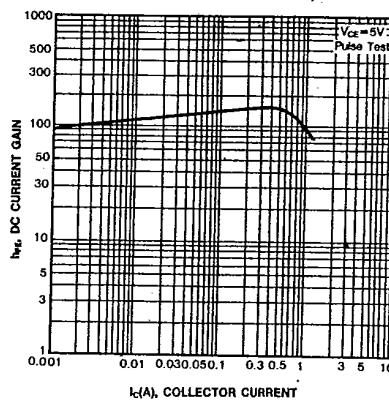
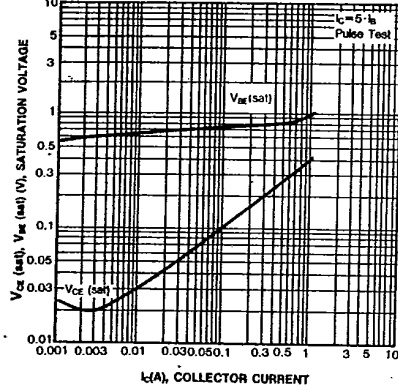
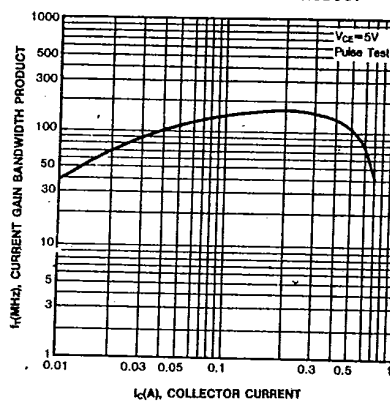
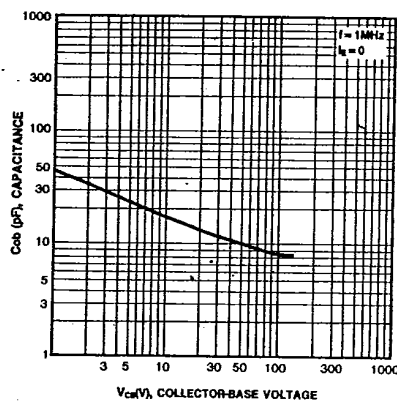
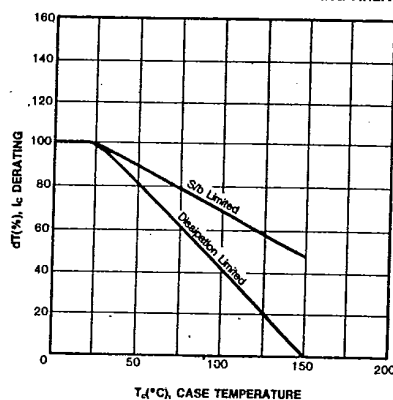
* Pulse Test: $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 2\%$ Pulsed **h_{FE} (2) CLASSIFICATION**

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



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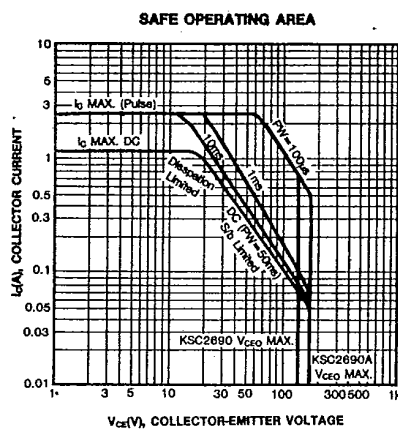
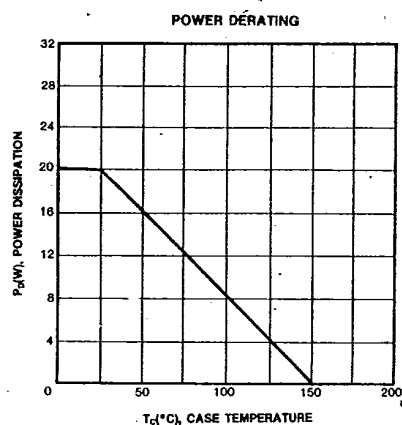
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STATIC CHARACTERISTIC**DC CURRENT GAIN****BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE****CURRENT GAIN-BANDWIDTH PRODUCT****COLLECTOR OUTPUT CAPACITANCE****DERATING CURVE OF SAFE OPERATING AREAS**

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KSC2749**NPN EPITAXIAL SILICON TRANSISTOR**

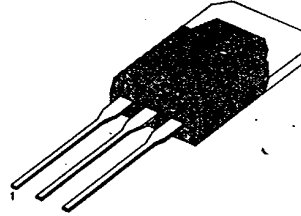
T-33-13

**HIGH SPEED, HIGH CURRENT SWITCHING
INDUSTRIAL USE****ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	500	V
Collector-Emitter Voltage	V_{CE0}	400	V
Emitter-Base Voltage	V_{EB0}	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 ($T_c=25^\circ\text{C}$)	P_C	100	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

* $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 10\%$

TO-3P



1. Base 2. Collector 3. Emitter

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CE0}(\text{sus})$	$I_C=6\text{A}$, $I_{B1}=1.2\text{A}$, $L=100\mu\text{H}$	400			V
Collector Emitter Sustaining Voltage	$V_{CEX}(\text{sus})1$	$I_C=6\text{A}$, $I_{B1}=-I_{B2}=1.2\text{A}$	450			V
Collector Emitter Sustaining Voltage	$V_{CEX}(\text{sus})2$	$T_a=125^\circ\text{C}$, $L=180\mu\text{H}$, Clamped $I_C=12\text{A}$, $I_{B1}=2.4\text{A}$, $-I_{B2}=1.2\text{A}$	400			V
Collector Cutoff Current	I_{CB0}	$T_a=125^\circ\text{C}$, $L=180\mu\text{H}$, Clamped $V_{CB}=400\text{V}$, $I_E=0$			100	μA
Collector Cutoff Current	I_{CER}	$V_{CE}=400\text{V}$, $R_{BE}=50\Omega$, $T_a=125^\circ\text{C}$			2	mA
Collector Cutoff Current	I_{CEX1}	$V_{CE}=400\text{V}$, $V_{BE}(\text{off})=-1.5\text{V}$			100	μA
Collector Cutoff Current	I_{CEX2}	$V_{CE}=400\text{V}$, $V_{BE}(\text{off})=-1.5\text{V}$ $T_a=125^\circ\text{C}$			1	mA
Emitter Cutoff Current	I_{EB0}	$V_{EB}=5\text{V}$, $I_C=0$			10	μA
*DC Current Gain	h_{FE1}	$V_{CE}=5\text{V}$, $I_C=1\text{A}$	15	35	80	
	h_{FE2}	$V_{CE}=5\text{V}$, $I_C=3\text{A}$	10			
	h_{FE3}	$V_{CE}=5\text{V}$, $I_C=6\text{A}$	7			
*Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C=6\text{A}$, $I_B=1.2\text{A}$			1	V
*Base-Emitter Saturation Voltage	$V_{BE}(\text{sat})$	$I_C=6\text{A}$, $I_B=1.2\text{A}$			1.5	V
Turn On Time	t_{on}	$I_C=6\text{A}$, $R_L=25\Omega$			1	μs
Storage Time	t_s	$I_{B1}=-I_{B2}=1.2\text{A}$, $V_{CC}=150\text{V}$			2.5	μs
Fall Time	t_f				0.7	μs

*Pulse Test: $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 2\%$ Pulsed **h_{FE} (1) CLASSIFICATION**

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

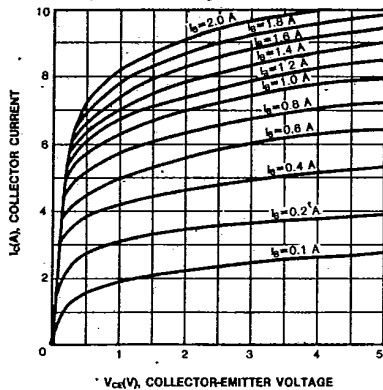


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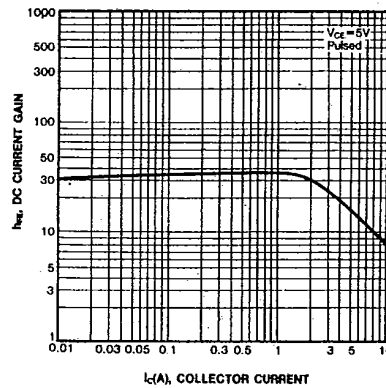
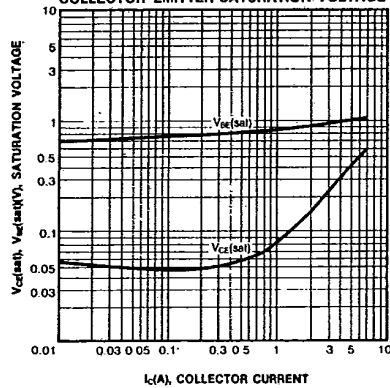
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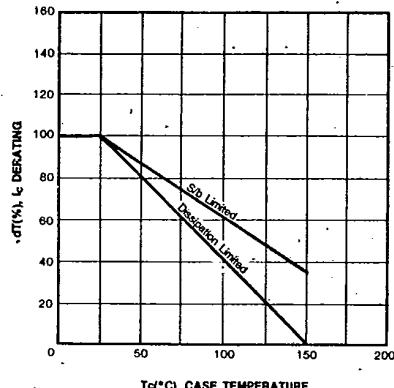
STATIC CHARACTERISTIC



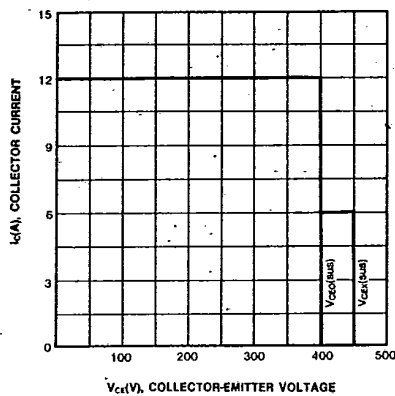
DC CURRENT GAIN

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE

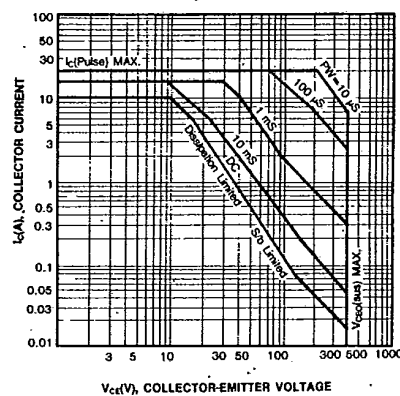
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREA



SAFE OPERATING AREA



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