

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

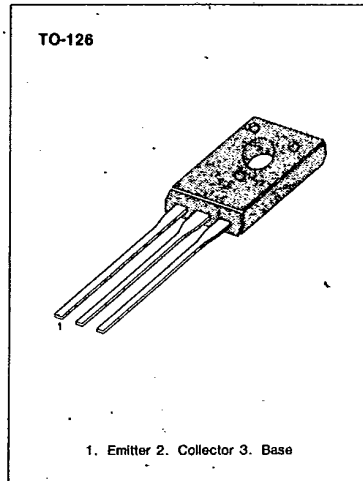
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**AUDIO FREQUENCY, HIGH FREQUENCY
POWER AMPLIFIER**

• Complement to KSA1220/KSA1220A

ABSOLUTE MAXIMUM RATINGS (T_a=25°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°C)	P _C	1.2	W
Collector Dissipation (T _c =25°C)	P _C	20	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55~150	°C



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* PW≤10ms, Duty Cycle ≤50%

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I _{CB0}	V _{CB} =120V, I _E =0			1	μA
Emitter Cutoff Current	I _{EB0}	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	C _{ob}	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

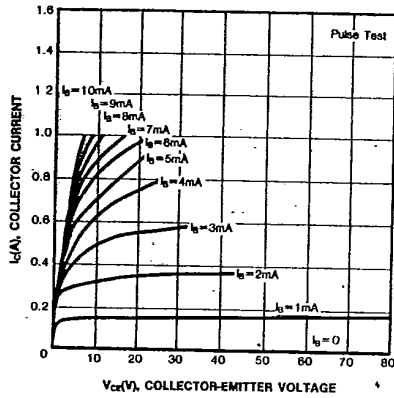


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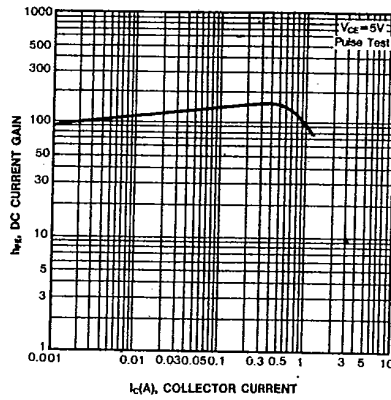
NPN EPITAXIAL SILICON TRANSISTOR

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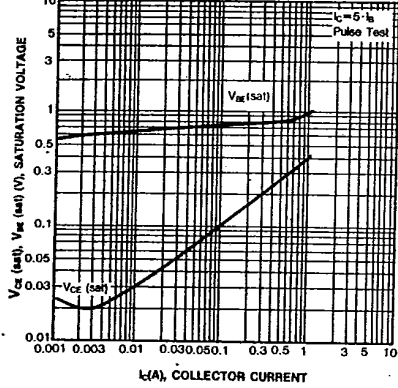
STATIC CHARACTERISTIC



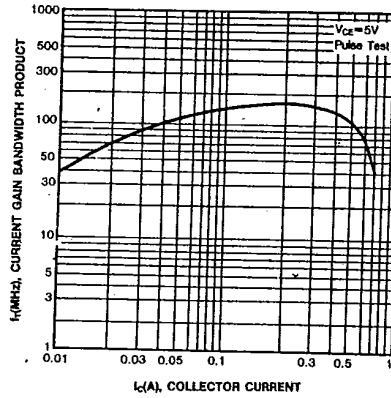
DC CURRENT GAIN



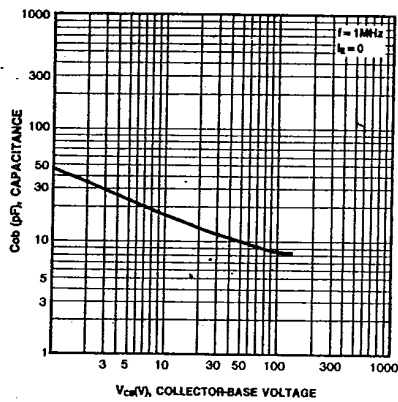
**BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE**



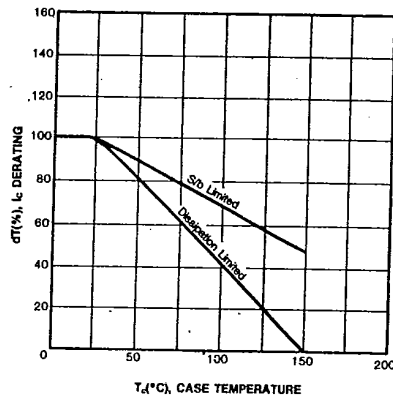
CURRENT GAIN-BANDWIDTH PRODUCT



COLLECTOR OUTPUT CAPACITANCE

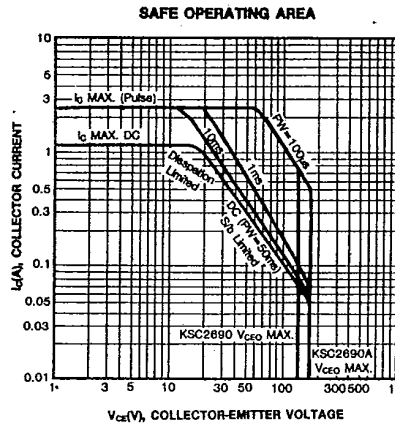
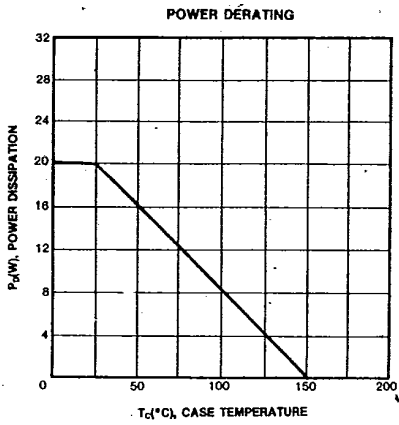


DERATING CURVE OF SAFE OPERATING AREAS



KSC2690/2690A NPN EPITAXIAL SILICON TRANSISTOR

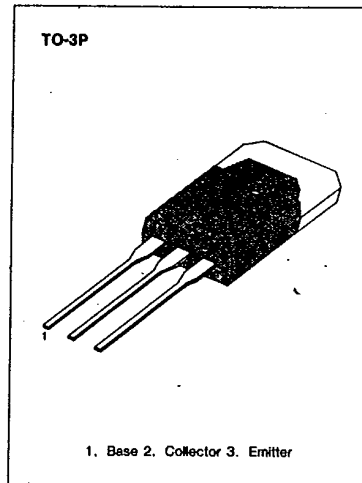
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KSC2749**NPN EPITAXIAL SILICON TRANSISTOR****HIGH SPEED, HIGH CURRENT SWITCHING
INDUSTRIAL USE****ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	500	V
Collector-Emitter Voltage	V_{CEO}	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 $\leq 10\%$ **ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO}(\text{sus})$	$I_C=6\text{A}$, $I_{B1}=1.2\text{A}$, $L=100\mu\text{H}$	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 $I_C=12\text{A}$, $I_{B1}=2.4\text{A}$, $-I_{B2}=1.2\text{A}$ $T_a=125^\circ\text{C}$, $L=180\mu\text{H}$, Clamped	400			V
Collector Cutoff Current	I_{CB0}	$V_{CB}=400\text{V}$, $I_E=0$			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

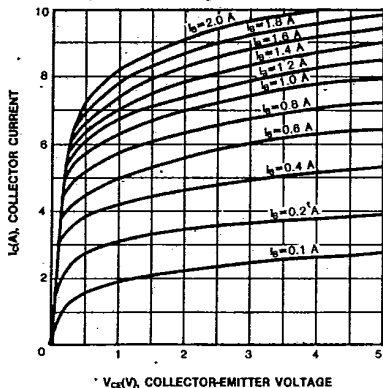


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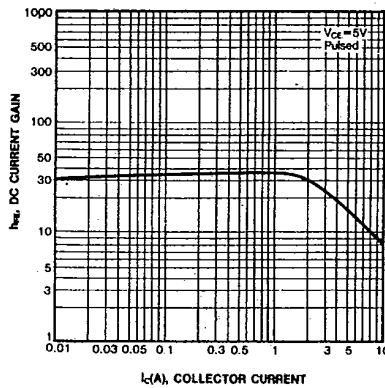
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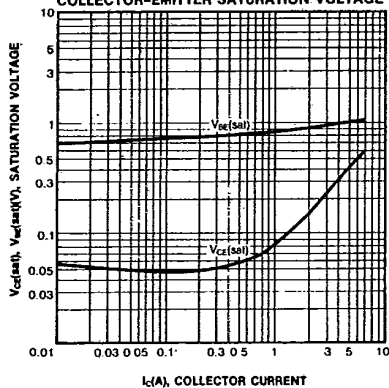
STATIC CHARACTERISTIC



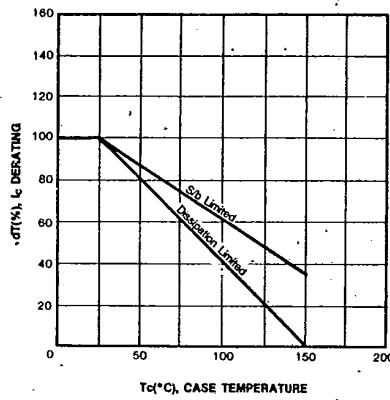
DC CURRENT GAIN



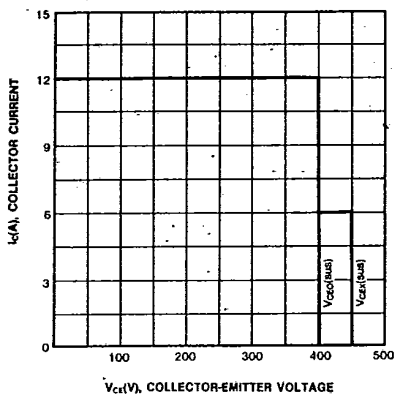
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



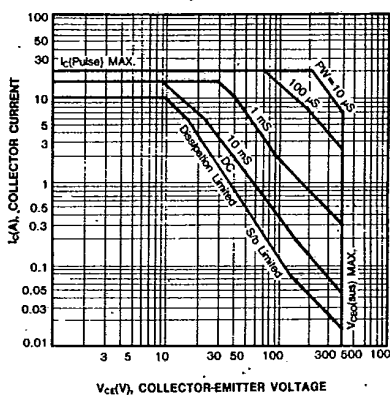
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREA



SAFE OPERATING AREA



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