



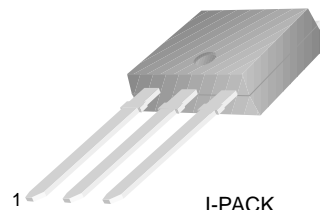
**THE DATASHEET OF  
KSD12210TU**



# KSD1221

## Low Frequency Power Amplifier

- Low Collector-Emitter Saturation Voltage
- Complement to KSB906



I-PACK  
1. Base 2. Collector 3. Emitter

## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{CEO}$	Collector-Emitter Voltage	60	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current	3	A
$I_B$	Base Current	0.5	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	20	W
$P_C$	Collector Dissipation ( $T_a=25^\circ\text{C}$ )	1	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 50\text{mA}, I_B = 0$	60			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 60\text{V}, I_E = 0$			100	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 7\text{V}, I_C = 0$			100	$\mu\text{A}$
$h_{FE1}$	DC Current Gain	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}$	60		300	
$h_{FE2}$		$V_{CE} = 5\text{V}, I_C = 3\text{A}$	20			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 3\text{A}, I_B = 0.3\text{A}$		0.4	1	V
$V_{BE(on)}$	Base-Emitter ON Voltage	$I_C = 5\text{A}, I_C = 0.5\text{A}$		0.7	1	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}$		3		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		70		pF
$t_{ON}$	Turn ON Time	$V_{CC} = 30\text{V}, I_C = 1\text{A}$ $I_{B1} = -I_{B2} = 0.2\text{A}$ $R_L = 30\Omega$		0.8		$\mu\text{s}$
$t_{STG}$	Storage Time			1.5		$\mu\text{s}$
$t_F$	Fall Time			0.8		$\mu\text{s}$

### $h_{FE}$ Classification

Classification	O	Y	G
$h_{FE1}$	60 ~ 120	100 ~ 200	150 ~ 300

# Typical Characteristics

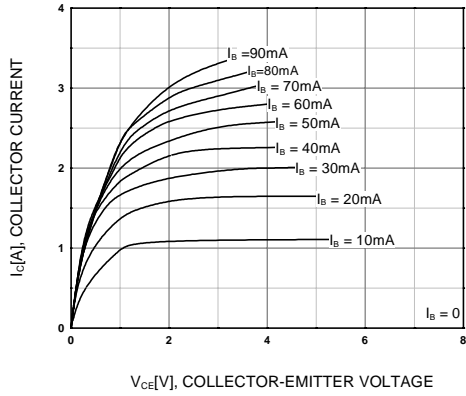


Figure 1. Static Characteristic

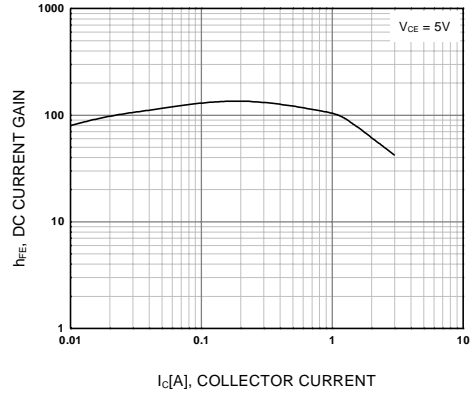


Figure 2. DC current Gain

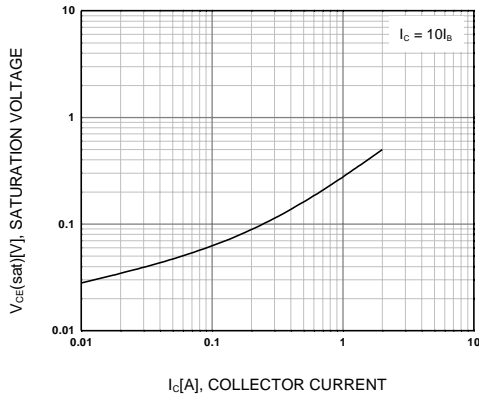


Figure 3. Collector-Emitter Saturation Voltage

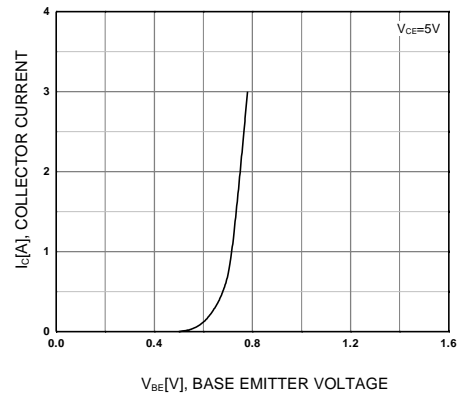


Figure 4. Base-Emitter On Voltage

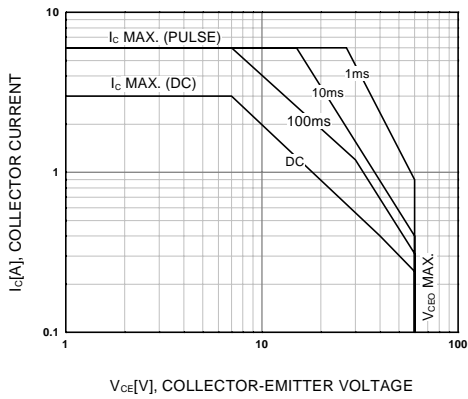


Figure 5. Safe Operating Area

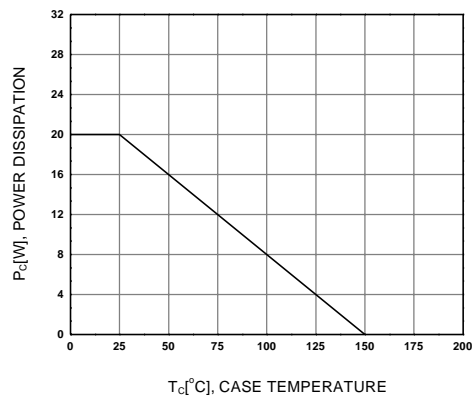
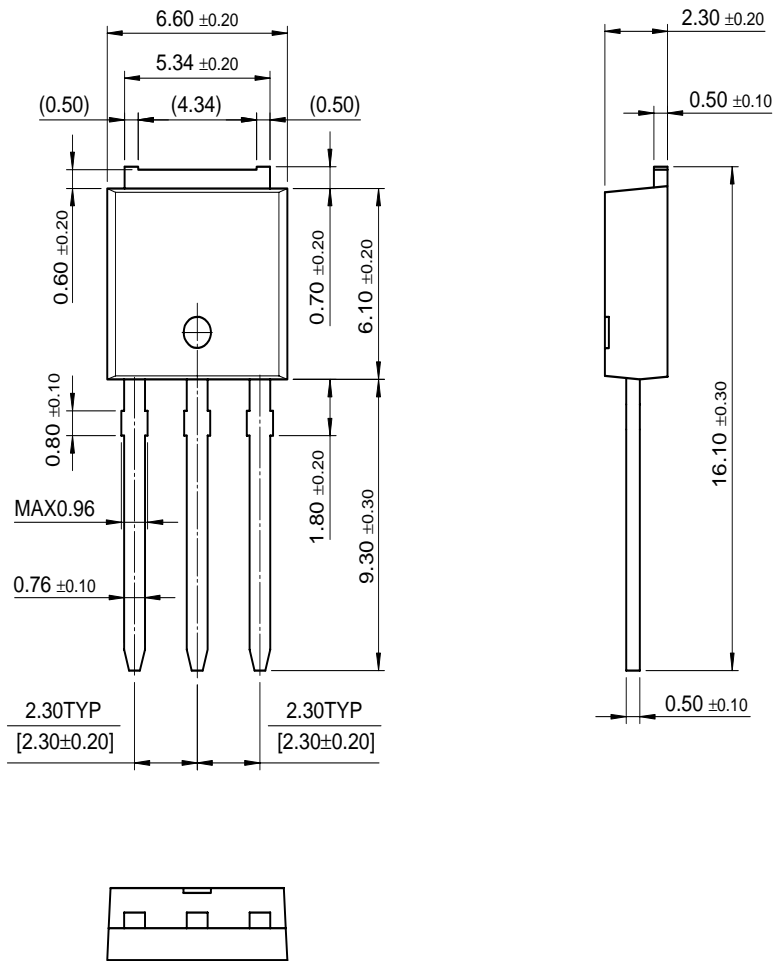


Figure 6. Power Derating

# Package Dimensions

## I-PAK



Dimensions in Millimeters

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