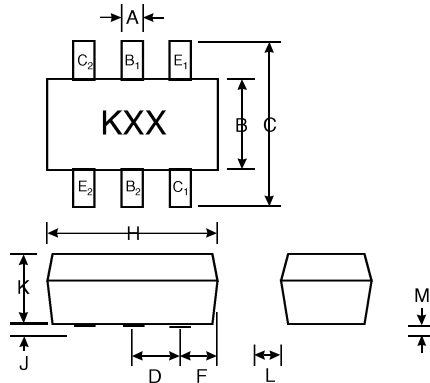


### Features

Complementary Pair  
 Epitaxial Planar Die Construction  
 Ultra-Small Surface Mount Package  
 One 2222A-Type NPN,  
 One 2907A-Type PNP  
 Ideal for Low Power Amplification and Switching

### Mechanical Data

Case: SOT-363, Molded Plastic  
 Terminals: Solderable per MIL-STD-202, Method 208  
 Terminal Connections: See Diagram  
 Marking: K27  
 Weight: 0.006 grams (approx.)



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J		0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
All Dimensions in mm		

Note: E1, B1, and C1 = PNP2907A Section,  
 E2, B2, and C2 = NPN2222A Section.  
 Type marking indicates orientation.

### Maximum Ratings, NPN2222A Section

@ T<sub>A</sub> = 25 C unless otherwise specified

Characteristic	Symbol	NPN2222A	Unit
Collector-Base Voltage	V <sub>CBO</sub>	75	V
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter-Base Voltage	V <sub>EBO</sub>	6.0	V
Collector Current - Continuous (Note 1)	I <sub>C</sub>	600	mA
Power Dissipation (Note 1)	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	R <sub>JA</sub>	625	K/W
Operating and Storage and Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	C

### Maximum Ratings, PNP2907A Section

@ T<sub>A</sub> = 25 C unless otherwise specified

Characteristic	Symbol	PNP2907A	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5.0	V
Collector Current - Continuous (Note 1)	I <sub>C</sub>	-600	mA
Power Dissipation (Note 1)	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	R <sub>JA</sub>	625	K/W
Operating and Storage and Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	C

Note: 1. Valid provided that terminals are kept at ambient temperature.  
 2. Pulse test: Pulse width 300 s, duty cycle 2%.

**Electrical Characteristics, NPN2222A Section**

 @  $T_A = 25\text{ C}$  unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 2)</b>					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75		V	$I_C = 10\text{ A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40		V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6.0		V	$I_E = 10\text{ A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$		10	nA A	$V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 60\text{V}, I_E = 0, T_A = 150\text{ C}$
Collector Cutoff Current	$I_{CEX}$		10	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$
Emitter Cutoff Current	$I_{EBO}$		10	nA	$V_{EB} = 3.0\text{V}, I_C = 0$
Base Cutoff Current	$I_{BL}$		20	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$
<b>ON CHARACTERISTICS (Note 2)</b>					
DC Current Gain	$h_{FE}$	35 50 75 100 40 50 35	300		$I_C = 100\text{ A}, V_{CE} = 10\text{V}$ $I_C = 1.0\text{mA}, V_{CE} = 10\text{V}$ $I_C = 10\text{mA}, V_{CE} = 10\text{V}$ $I_C = 150\text{mA}, V_{CE} = 10\text{V}$ $I_C = 500\text{mA}, V_{CE} = 10\text{V}$ $I_C = 10\text{mA}, V_{CE} = 10\text{V}, T_A = -55\text{ C}$ $I_C = 150\text{mA}, V_{CE} = 1.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		0.3 1.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
Base- Emitter Saturation Voltage	$V_{BE(SAT)}$	0.6	1.2 2.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	$C_{obo}$		8	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Input Capacitance	$C_{ibo}$	—	25	pF	$V_{EB} = 0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$
Current Gain-Bandwidth Product	$f_T$	300		MHz	$V_{CE} = 20\text{V}, I_C = 20\text{mA},$ $f = 100\text{MHz}$
Noise Figure	NF		4.0	dB	$V_{CE} = 10\text{V}, I_C = 100\text{ A},$ $R_S = 1.0\text{k}\quad f = 1.0\text{kHz}$
<b>SWITCHING CHARACTERISTICS</b>					
Delay Time	$t_d$		10	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA},$ $V_{BE(off)} = -0.5\text{V}, I_{B1} = 15\text{mA}$
Rise Time	$t_r$		25	ns	

- Note:
1. Valid provided that terminals are kept at ambient temperature.
  2. Pulse test: Pulse width 300  $\mu$ s, duty cycle 2%.

**Electrical Characteristics, PNP2907A Section**

 @  $T_A = 25\text{ C}$  unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 2)</b>					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-60		V	$I_C = -10\text{ A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60		V	$I_C = -10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5.0		V	$I_E = -10\text{ A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$		-10	nA A	$V_{CB} = -50\text{V}, I_E = 0$ $V_{CB} = -50\text{V}, I_E = 0, T_A = 125\text{ C}$
Collector Cutoff Current	$I_{CEX}$		-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$
Base Cutoff Current	$I_{BL}$		-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$
<b>ON CHARACTERISTICS (Note 2)</b>					
DC Current Gain	$h_{FE}$	75 100 100 100 50	300		$I_C = -100\mu\text{A}, V_{CE} = -10\text{V}$ $I_C = -1.0\text{mA}, V_{CE} = -10\text{V}$ $I_C = -10\text{mA}, V_{CE} = -10\text{V}$ $I_C = -150\text{mA}, V_{CE} = -10\text{V}$ $I_C = -500\text{mA}, V_{CE} = -10\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		-0.4 -1.6	V	$I_C = -150\text{mA}, I_B = -15\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$
Base- Emitter Saturation Voltage	$V_{BE(SAT)}$		-1.3 -2.6	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	$C_{obo}$		8.0	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Input Capacitance	$C_{ibo}$	—	30	pF	$V_{EB} = -2.0\text{V}, f = 1.0\text{MHz}, I_C = 0$
Current Gain-Bandwidth Product	$f_T$	200		MHz	$V_{CE} = -20\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
<b>SWITCHING CHARACTERISTICS</b>					
Turn-On Time	$t_{on}$		45	ns	$I_C = -150\text{mA}, V_{CC} = -30\text{V}, I_{B1} = -15\text{mA}$
Delay Time	$t_d$		10	ns	$V_{CC} = -30\text{V}, I_C = -150\text{mA}, I_{B1} = -15\text{mA}$
Rise Time	$t_r$		40	ns	

- Notes: 1. Valid provided that terminals are kept at ambient temperature.  
2. Pulse test: Pulse width 300 s, duty cycle 2%.