



**Plastic-Encapsulate Transistors**

DUAL TRANSISTOR (NPN+PNP)

**FEATURE**

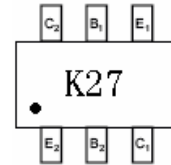
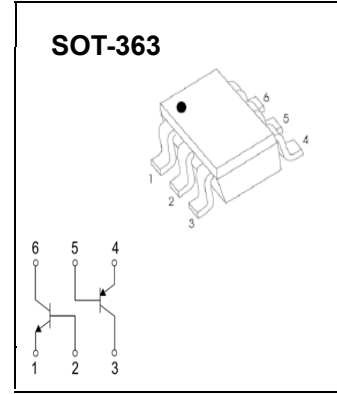
- Epitaxial planar die construction
- One 2222A NPN  
One 2907A PNP
- Ideal for power amplification and switching

**MARKING: K27**

**NPN 2222A**

**MAXIMUM RATINGS (Ta=25°C unless otherwise noted)**

Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	75	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current -Continuous	600	mA
P <sub>C</sub>	Collector Power Dissipation	200	mW
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C



**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> =0	75		V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> =0	40		V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	6		V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 60V, I <sub>E</sub> =0		10	nA
Collector cut-off current	I <sub>CEX</sub>	V <sub>CE</sub> = 60V, V <sub>EB(off)</sub> =3V		10	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 3 V, I <sub>C</sub> =0		10	nA
DC current gain	h <sub>FE(1)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 0.1mA	35		
	h <sub>FE(2)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 1mA	50		
	h <sub>FE(3)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 10mA	75		
	h <sub>FE(4)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 150mA	100	300	
	h <sub>FE(5)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 500mA	40		
	h <sub>FE(6)</sub> *	V <sub>CE</sub> =1V, I <sub>C</sub> = 150mA	35		
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub> *	I <sub>C</sub> =150mA, I <sub>B</sub> = 15mA		0.3	V
	V <sub>CE(sat)2</sub> *	I <sub>C</sub> =500mA, I <sub>B</sub> = 50mA		1	V
Base-emitter saturation voltage	V <sub>BE(sat)1</sub> *	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	0.6	1.2	V
	V <sub>BE(sat)2</sub> *	I <sub>C</sub> =500mA, I <sub>B</sub> = 50mA		2	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> = 20mA, f=100MHz	300		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz		8	pF
Input Capacitance	C <sub>ib</sub>	V <sub>EB</sub> =0.5V, I <sub>C</sub> = 0, f=1MHz		25	pF
Noise Figure	NF	V <sub>CE</sub> =10V, I <sub>C</sub> =100μA, f=1KHz, R <sub>s</sub> =1KΩ		4	dB

\*Pulse test



**Switching characteristics**

Parameter	Symbol	Test conditions	Min	Max	Unit
Delay time	$t_d$	$V_{CC}=30V, I_C=150mA,$ $V_{BE(off)}=0.5V, I_{B1}=15mA$		10	ns
Rise time	$t_r$			25	ns
Storage time	$t_s$			225	ns
Fall time	$t_f$			60	ns

**PNP 2907A**

**MAXIMUM RATINGS (Ta=25°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	-5	V
$I_C$	Collector Current -Continuous	-600	mA
$P_C$	Collector Power Dissipation	200	mW
$T_J$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature	-55-150	°C

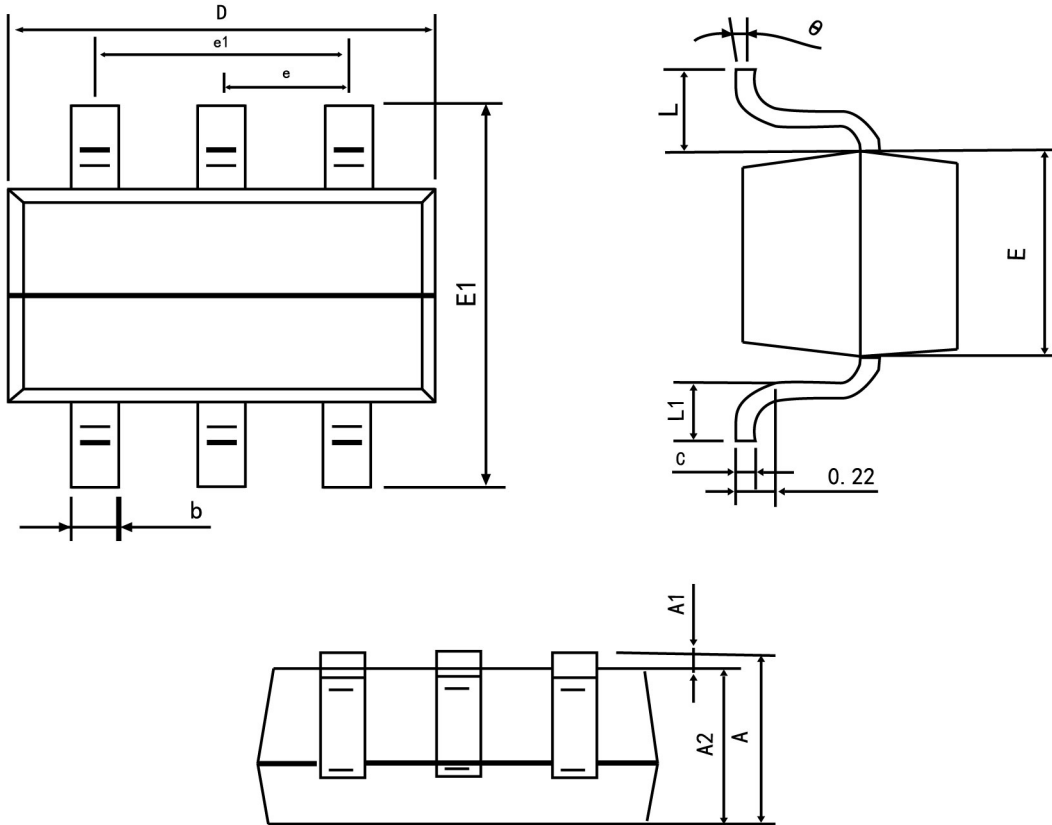
**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu A, I_E = 0$	-60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10mA, I_B = 0$	-60		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu A, I_C = 0$	-5		V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -50V, I_E = 0$		-10	nA
Collector cut-off current	$I_{CEX}$	$V_{CE} = -30V, V_{EB(off)} = -0.5V$		-50	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -3V, I_C = 0$		-10	nA
DC current gain	$h_{FE(1)}^*$	$V_{CE} = -10V, I_C = -0.1mA$	75		
	$h_{FE(2)}^*$	$V_{CE} = -10V, I_C = -1mA$	100		
	$h_{FE(3)}^*$	$V_{CE} = -10V, I_C = -10mA$	100		
	$h_{FE(4)}^*$	$V_{CE} = -10V, I_C = -150mA$	100	300	
	$h_{FE(5)}^*$	$V_{CE} = -10V, I_C = -500mA$	50		
Collector-emitter saturation voltage	$V_{CE(sat)1}^*$	$I_C = -150mA, I_B = -15mA$		-0.4	V
	$V_{CE(sat)2}^*$	$I_C = -500mA, I_B = -50mA$		-1.6	V
Base-emitter saturation voltage	$V_{BE(sat)1}^*$	$I_C = -150mA, I_B = -15mA$		-1.3	V
	$V_{BE(sat)2}^*$	$I_C = -500mA, I_B = -50mA$		-2.6	V
Transition frequency	$f_T$	$V_{CE} = -20V, I_C = -50mA, f = 100MHz$	200		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = -10V, I_E = 0, f = 1MHz$		8	pF
Input Capacitance	$C_{ib}$	$V_{EB} = -2V, I_C = 0, f = 1MHz$		30	pF
Delay time	$t_d$	$V_{CC} = -30V, I_C = -150mA, I_{B1} = -15mA$		10	ns
Rise time	$t_r$			40	ns
Storage time	$t_s$			225	ns
Fall time	$t_f$			60	ns

\*pulse test



**SOT-363-Package Outline Dimensions**



Symbol	Dimension in Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP	
e1	1.200	1.400
L	0.525 REF	
L1	0.260	0.460
θ	0°	8°