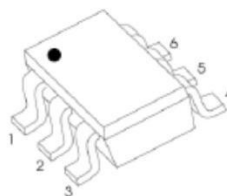


Features

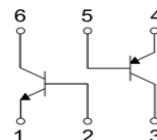
- Epitaxial planar die construction
- One 2222A NPN
One 2907A PNP
- Ideal for power amplification and switching

K27

SOT-363



Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

MAXIMUM RATINGS TR1 ($T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	75	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	600	mA
P_C	Collector Power Dissipation	200	mW
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55-150	$^\circ\text{C}$

Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	75		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	6		V
Collector cut-off current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$		10	nA
Collector cut-off current	I_{CEX}	$V_{CE} = 60\text{V}, V_{EB(off)} = 3\text{V}$		10	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = 3\text{V}, I_C = 0$		10	nA
DC current gain	$h_{FE(1)}^*$	$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	35		
	$h_{FE(2)}^*$	$V_{CE} = 10\text{V}, I_C = 1\text{mA}$	50		
	$h_{FE(3)}^*$	$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	75		
	$h_{FE(4)}^*$	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	100	300	
	$h_{FE(5)}^*$	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	40		
	$h_{FE(6)}^*$	$V_{CE} = 1\text{V}, I_C = 150\text{mA}$	35		
Collector-emitter saturation voltage	$V_{CE(sat)1}^*$	$I_C = 150\text{mA}, I_B = 15\text{mA}$		0.3	V
	$V_{CE(sat)2}^*$	$I_C = 500\text{mA}, I_B = 50\text{mA}$		1	V
Base-emitter saturation voltage	$V_{BE(sat)1}^*$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	0.6	1.2	V
	$V_{BE(sat)2}^*$	$I_C = 500\text{mA}, I_B = 50\text{mA}$		2	V
Transition frequency	f_T	$V_{CE} = 20\text{V}, I_C = 20\text{mA}, f = 100\text{MHz}$	300		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		8	pF
Input Capacitance	C_{ib}	$V_{EB} = 0.5\text{V}, I_C = 0, f = 1\text{MHz}$		25	pF
Noise Figure	NF	$V_{CE} = 10\text{V}, I_C = 100\mu\text{A}, f = 1\text{kHz}, R_s = 1\text{K}\Omega$		4	dB

*pulse test

Switching characteristics

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

Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

PNP 2907A

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

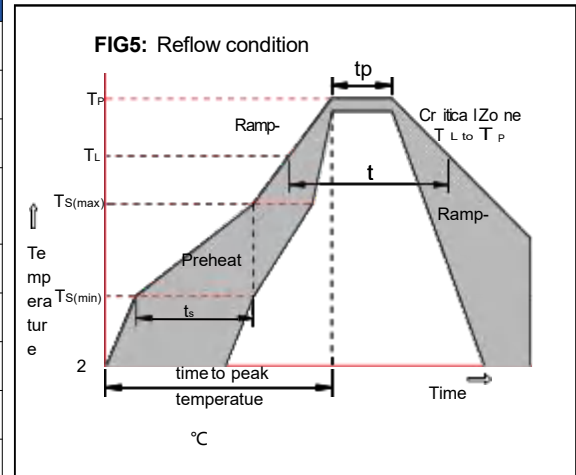
*pulse test

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ 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	-5	V
I_C	Collector Current -Continuous	-600	mA
P_C	Collector Power Dissipation	200	mW
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55-150	$^{\circ}\text{C}$

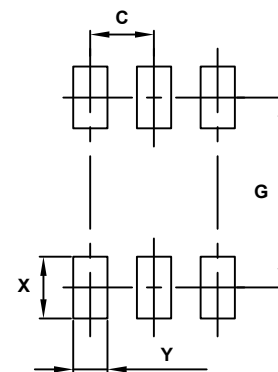
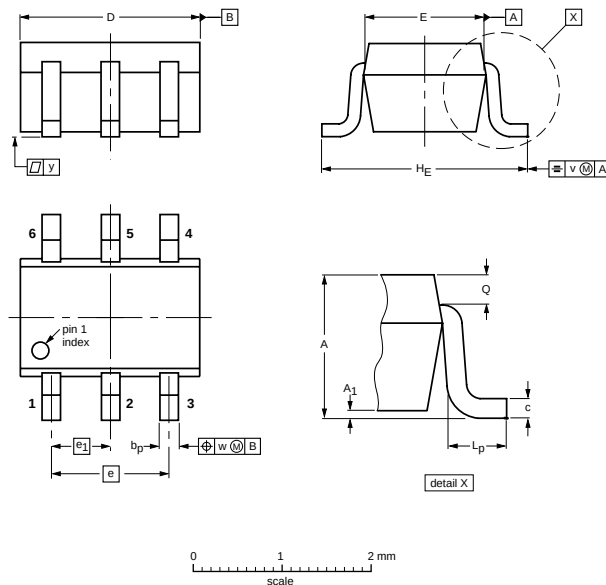
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C



Package Dimensions & Suggested Pad Layout

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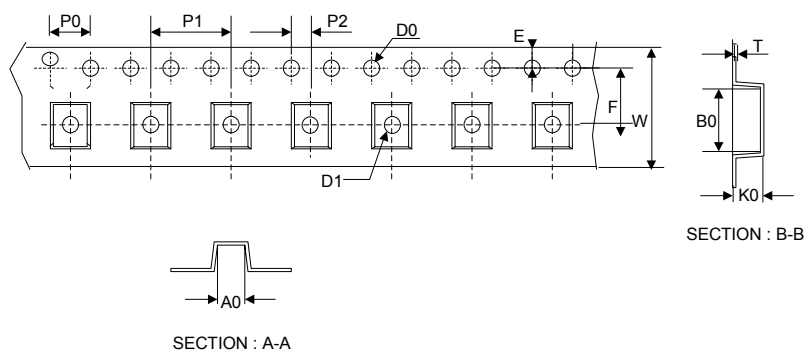
Dimensions	Value (in mm)
C	0.65
G	1.90
X	0.85
Y	0.40

DIMENSIONS (mm are the original dimensions)

UNIT	A	A1 max	b _p	c	D	E	e	e ₁	H _E	L _P	Q	v	w	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.25 0.15	0.2	0.2	0.1

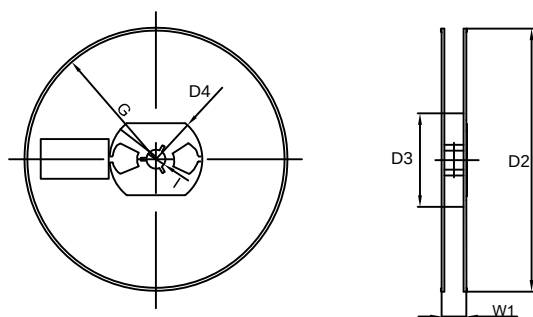
Tape & reel specification

Tape



Symbol	Dimension (mm)
P0	4.00±0.20
P1	4.00±0.20
P2	2.00±0.20
D0	1.55±0.20
D1	1.00±0.20
E	1.55±0.25
F	3.60±0.20
W	8.00±0.20
A0	3.00±0.20
B0	3.00±0.20
K0	1.30±0.20
T	0.20±0.20
D2	177.0±5.0
D3	55Min.
D4	R24.6±2.0
G	R82.0±2.0
I	13.0±2.0
W1	10.20±3.0

7" Reel



Quantity: 3000PCS