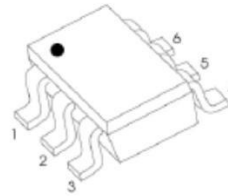


## Features

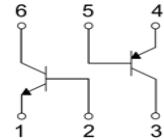
- Epitaxial planar die construction
- One 2222A NPN  
One 2907A PNP
- Ideal for power amplification and switching

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

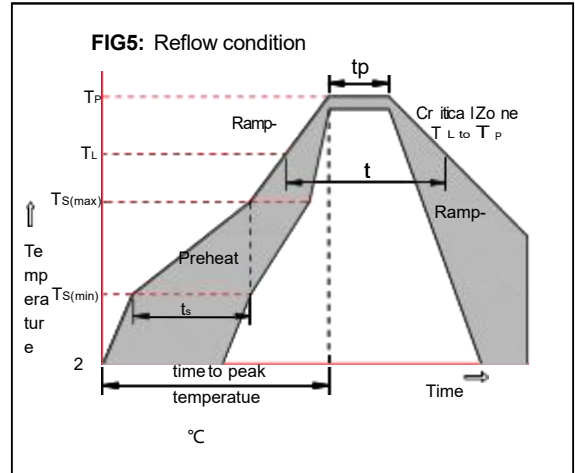
\*pulse test

### 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	$^\circ\text{C}$

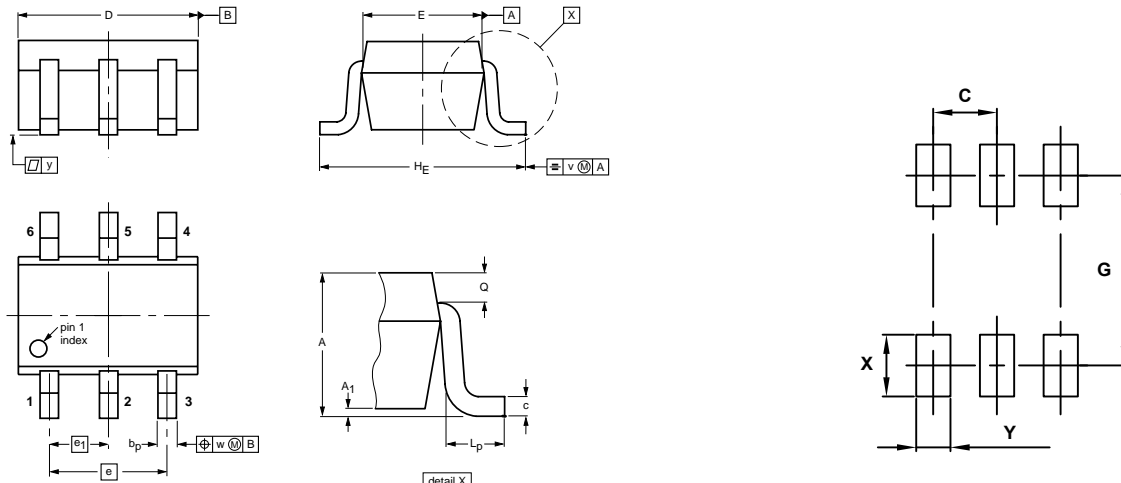
Soldering parameters

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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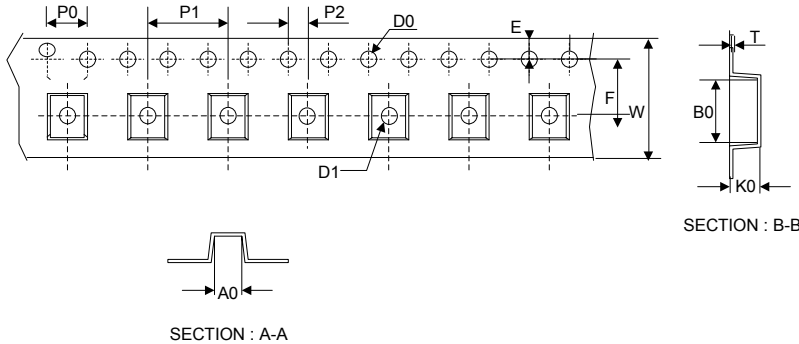
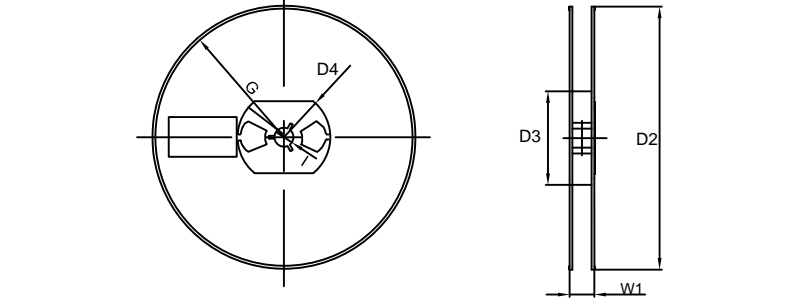


Dimensions	Value (in mm)
C	0.65
G	1.90
X	0.85
Y	0.40

DIMENSIONS (mm are the original dimensions)

UNIT	A	A1 max	bp	c	D	E	e	e1	H <sub>E</sub>	L <sub>p</sub>	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	
	<p>7" Reel</p> 	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	
Quantity: 3000PCS			