

**Features**

- Complementary Pair: NPN(2222A) PNP(2907A)
- Ideal for Low Power Amplification and Switching
- Ultra-small Surface Mount Package
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 625°C/W Junction to Ambient

**NPN(2222A) Pin1,&6**

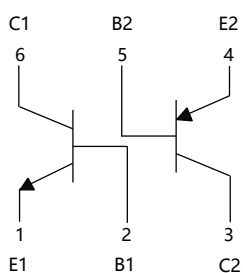
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	75	V
Collector-Emitter Voltage	$V_{CEO}$	40	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	0.6	A
Collector Dissipation	$P_C$	0.2	W

**PNP(2907A) Pin' ,(,)**

Collector-Base Voltage	$V_{CBO}$	-60	V
Collector-Emitter Voltage	$V_{CEO}$	-60	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-0.6	A
Collector Dissipation	$P_C$	0.2	W

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

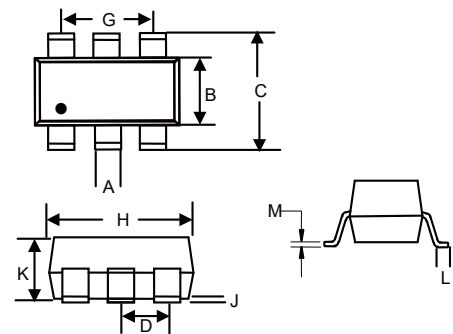
**Internal Structure**



**Marking: ? 27**

**NPN/PNP  
Small Signal Surface  
Mount Transistors**

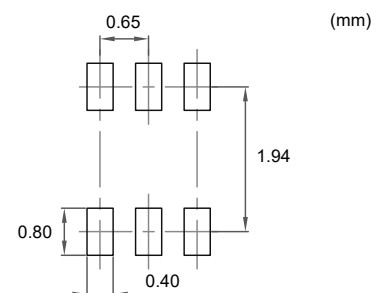
**SOT-363**



**DIMENSIONS**

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.006	0.014	0.15	0.35	
B	0.045	0.053	1.15	1.35	
C	0.079	0.096	2.00	2.45	
D	0.026		0.65		TYP.
G	0.047	0.055	1.20	1.40	
H	0.071	0.087	1.80	2.20	
J	-----	0.004	-----	0.10	
K	0.031	0.043	0.80	1.10	
L	0.010	0.018	0.26	0.46	
M	0.003	0.006	0.08	0.15	

**Suggested Solder Pad Layout**



**NPN 2222A Electrical Characteristics @ 25°C Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75			V	$I_C=10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C=10mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu A, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			10	nA	$V_{CB}=60V, I_E=0$
Collector Cutoff Current	$I_{CEX}$			10	nA	$V_{CE}=60V, V_{BE}=-3V$
Emitter-Base Cutoff Current	$I_{EBO}$			10	nA	$V_{EB}=3.0V, I_C=0$
DC Current Gain (Note2)	$h_{FE(1)}$	35				$V_{CE}=10V, I_C=0.1mA$
	$h_{FE(2)}$	50				$V_{CE}=10V, I_C=1mA$
	$h_{FE(3)}$	75				$V_{CE}=10V, I_C=10mA$
	$h_{FE(4)}$	100		300		$V_{CE}=10V, I_C=150mA$
	$h_{FE(5)}$	40				$V_{CE}=10V, I_C=500mA$
	$h_{FE(6)}$	35				$V_{CE}=1V, I_C=150mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.3	V	$I_C=150mA, I_B=15mA$
				1.0	V	$I_C=500mA, I_B=50mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.6		1.2	V	$I_C=150mA, I_B=15mA$
				2.0	V	$I_C=500mA, I_B=50mA$
Transition Frequency	$f_T$	300			MHz	$V_{CE}=20V, I_C=20mA, f=100MHz$
Output Capacitance	$C_{ob}$			8	pF	$V_{CB}=10V, I_E=0, f=1MHz$
Noise Figure	NF			4	dB	$V_{CE}=10V, I_C=0.1mA, f=1KHz, R_S=1K\Omega$

**PNP 2907A Electrical Characteristics @ 25°C Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-60			V	$I_C=-10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60			V	$I_C=-10mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E=-10\mu A, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			-10	nA	$V_{CB}=-50V, I_E=0$
Collector Cutoff Current	$I_{CEX}$			-50	nA	$V_{CE}=-30V, V_{BE}=0.5V$
DC Current Gain (Note2)	$h_{FE(1)}$	75				$V_{CE}=-10V, I_C=-0.1mA$
	$h_{FE(2)}$	100				$V_{CE}=-10V, I_C=-1mA$
	$h_{FE(3)}$	100				$V_{CE}=-10V, I_C=-10mA$
	$h_{FE(4)}$	100		300		$V_{CE}=-10V, I_C=-150mA$
	$h_{FE(5)}$	50				$V_{CE}=-10V, I_C=-500mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-0.4	V	$I_C=-150mA, I_B=-15mA$
				-1.6	V	$I_C=-500mA, I_B=-50mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			-1.3	V	$I_C=-150mA, I_B=-15mA$
				-2.6	V	$I_C=-500mA, I_B=-50mA$
Transition Frequency	$f_T$	200			MHz	$V_{CE}=-20V, I_C=-50mA, f=100MHz$
Output Capacitance	$C_{ob}$			8	pF	$V_{CB}=-5V, I_E=0, f=1MHz$

Note: 2.Pluse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

**Curve Characteristics (NPN Transistor)**

Fig. 1 - Static Characteristics

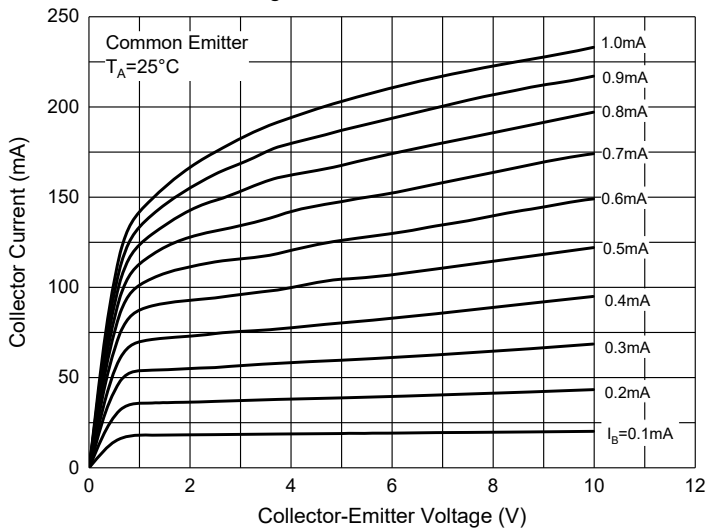


Fig. 2 - DC Current Gain Characteristics

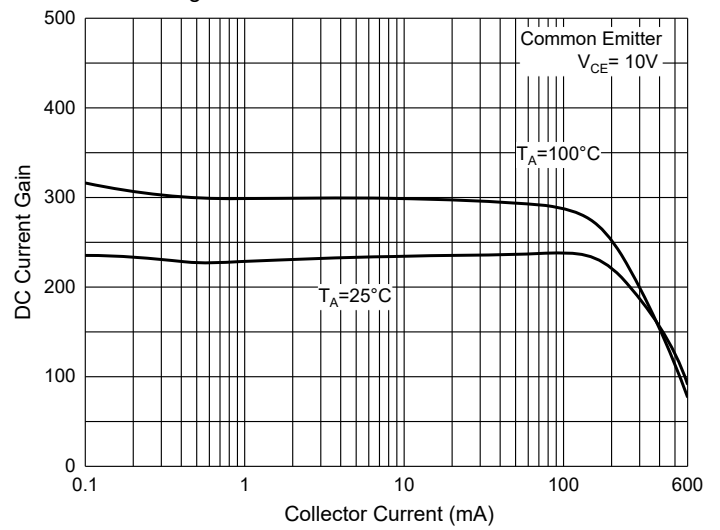


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

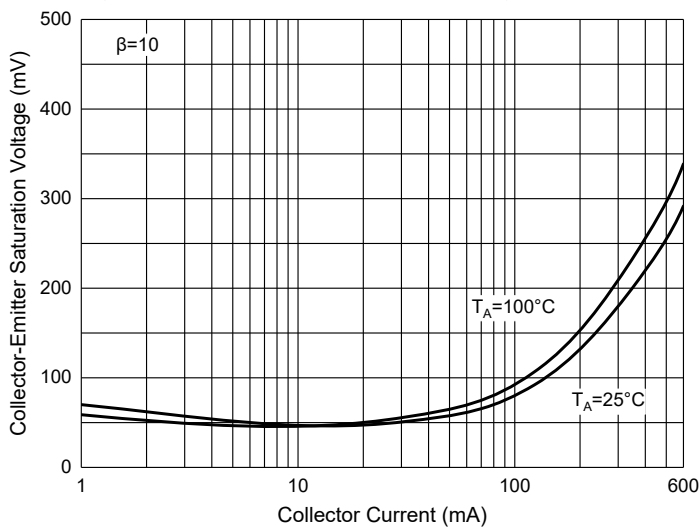


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

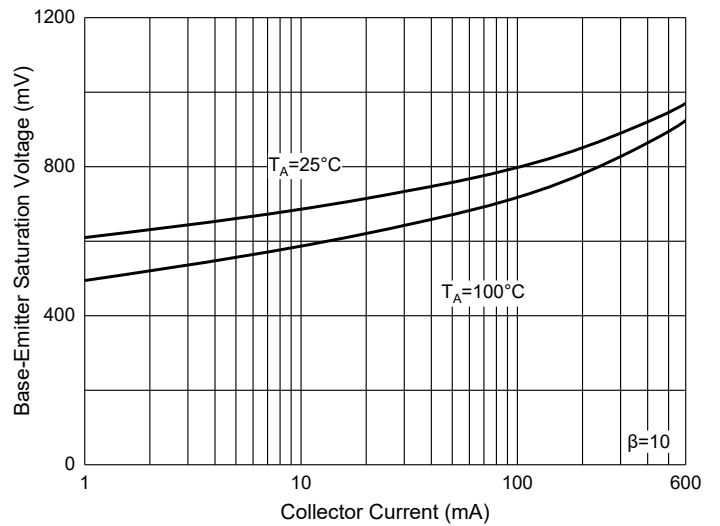


Fig. 5 - Base-Emitter Voltage Characteristics

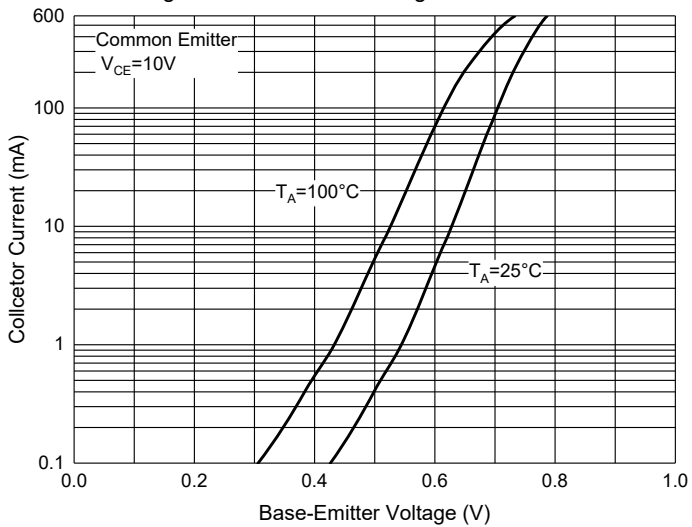
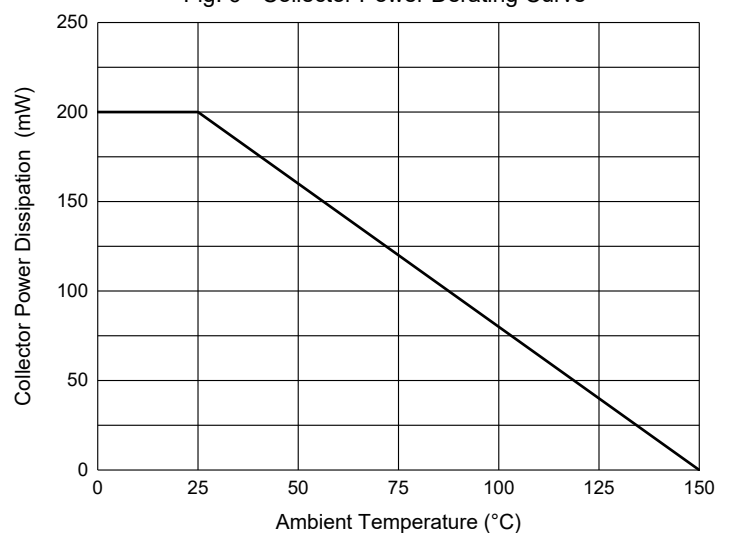


Fig. 6 - Collector Power Derating Curve



**Curve Characteristics (PNP Transistor)**

Fig. 7 - Static Characteristics

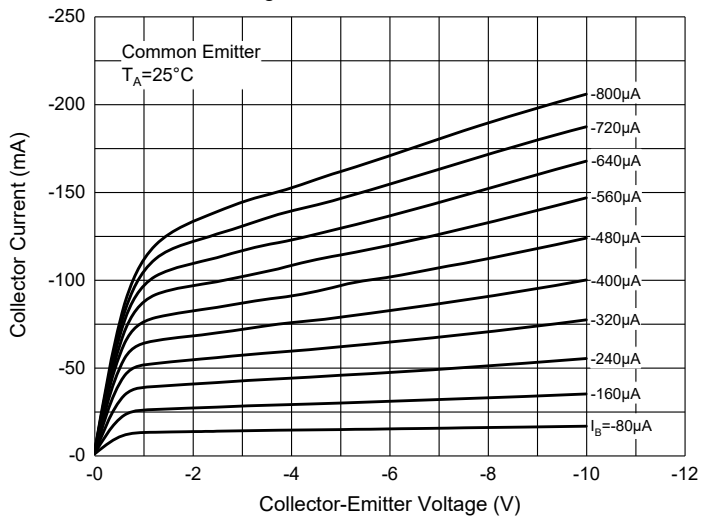


Fig. 8 - DC Current Gain Characteristics

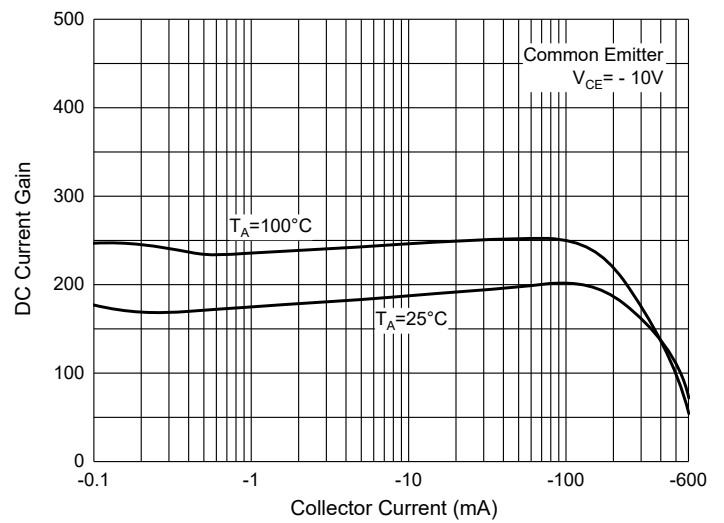


Fig. 9 - Collector-Emitter Saturation Voltage Characteristics

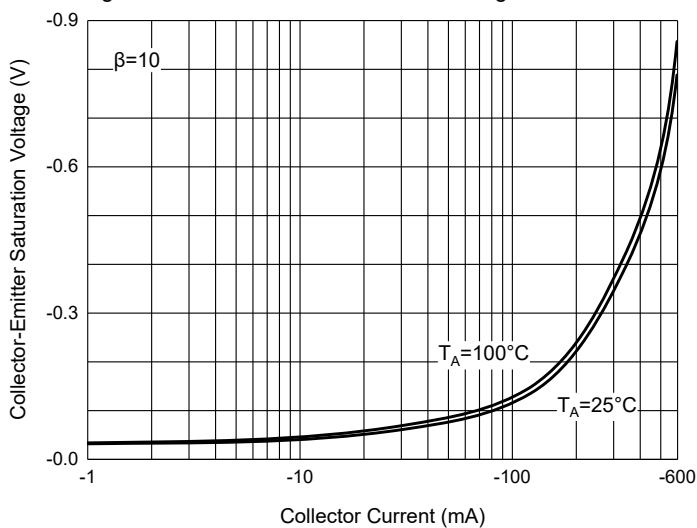


Fig. 10 - Base-Emitter Saturation Voltage Characteristics

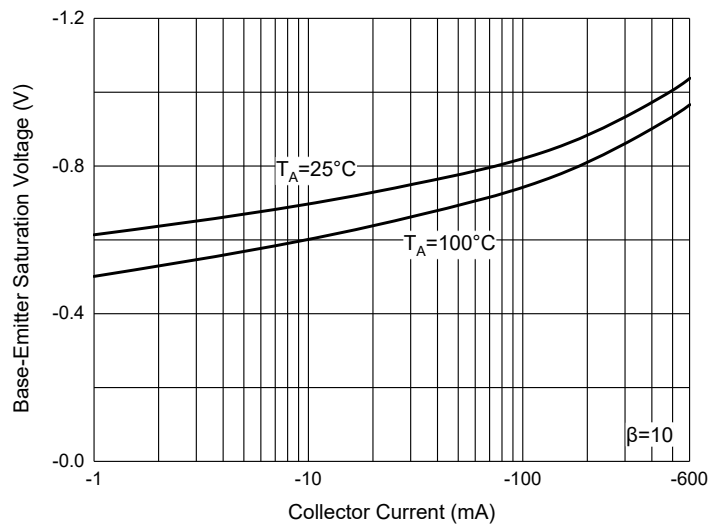


Fig. 11 - Base-Emitter Voltage Characteristics

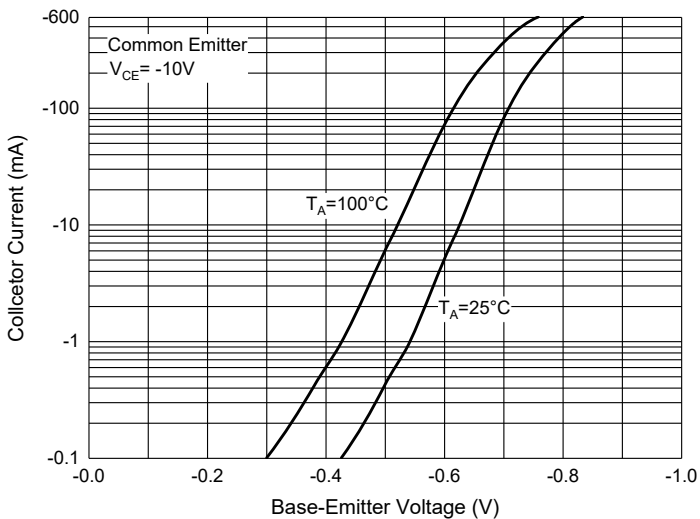
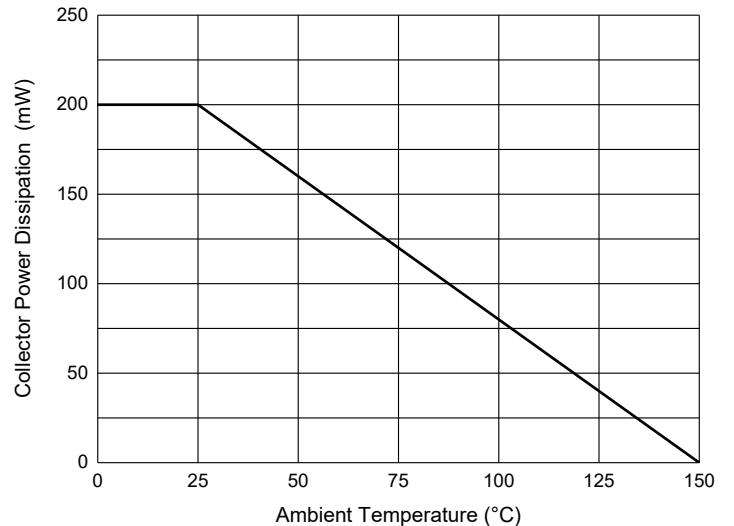


Fig. 12 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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