



**Features**

- Epitaxial Die Construction
- 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)

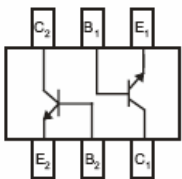
**Maximum Ratings @ 25°C Unless Otherwise Specified**

- 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

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	40	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	200	mA
Collector Power Dissipation	$P_C$	200	mW

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

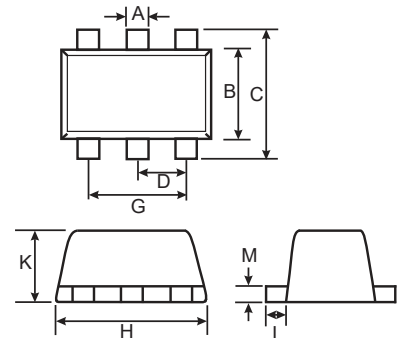
**Internal Structure**



**Marking: KAP**

**NPN  
Plastic Encapsulate  
Amplifier**

**SOT-563**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.006	0.011	0.15	0.30	
B	0.043	0.051	1.10	1.30	
C	0.059	0.067	1.50	1.70	
D	0.020		0.50		TYP.
G	0.035	0.043	0.90	1.10	
H	0.059	0.067	1.50	1.70	
K	0.022	0.026	0.55	0.65	
L	0.004	0.011	0.10	0.30	
M	0.004	0.007	0.10	0.18	

**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	$V_{(BR)CEO}$	40			V	$I_C=1mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu A, I_C=0$
Base Cutoff Current	$I_{BL}$			50	nA	$V_{CE}=30V, V_{EB(OFF)}=3V$
Collector Cutoff Current	$I_{CEX}$			50	nA	$V_{CE}=30V, V_{EB(OFF)}=3V$
DC Current Gain <sup>(Note2)</sup>	$h_{FE(1)}$	40				$V_{CE}=1V, I_C=0.1mA$
	$h_{FE(2)}$	70				$V_{CE}=1V, I_C=1mA$
	$h_{FE(3)}$	100		300		$V_{CE}=1V, I_C=-10mA$
	$h_{FE(4)}$	60				$V_{CE}=1V, I_C=50mA$
	$h_{FE(5)}$	30				$V_{CE}=1V, I_C=100mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.2	V	$I_C=10mA, I_B=1mA$
				0.3	V	$I_C=50mA, I_B=5mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.65		0.85	V	$I_C=10mA, I_B=1mA$
				0.95	V	$I_C=50mA, I_B=5mA$
Transition Frequency	$f_T$	300			MHz	$V_{CE}=20V, I_C=10mA, f=100MHz$
Output Capacitance	$C_{ob}$			4.0	pF	$V_{CB}=5V, I_E=0, f=1MHz,$
Noise Figure	NF			5	dB	$V_{CE}=5V, I_C=0.1mA$ $R_S=1K\Omega, f=1KHz$
Delay Time	$t_d$			35	ns	$V_{CC}=3V, I_C=10mA$
Rise Time	$t_r$			35	ns	$V_{BE(OFF)}=-0.5V, I_{B1}=-I_{B2}=1mA$
Storage Time	$t_s$			200	ns	$V_{CC}=3V, I_C=10mA$
Fall Time	$t_f$			50	ns	$I_{B1}=I_{B2}=1mA$

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

**Curve Characteristics**

Fig. 1 - Static Characteristics

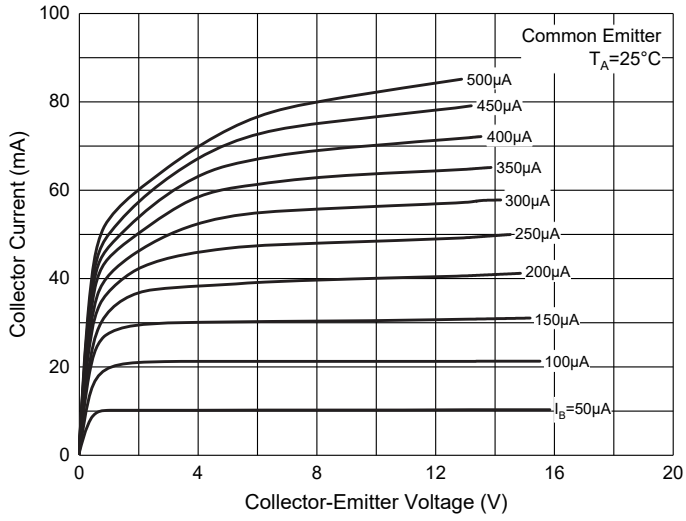


Fig. 2 - DC Current Gain Characteristics

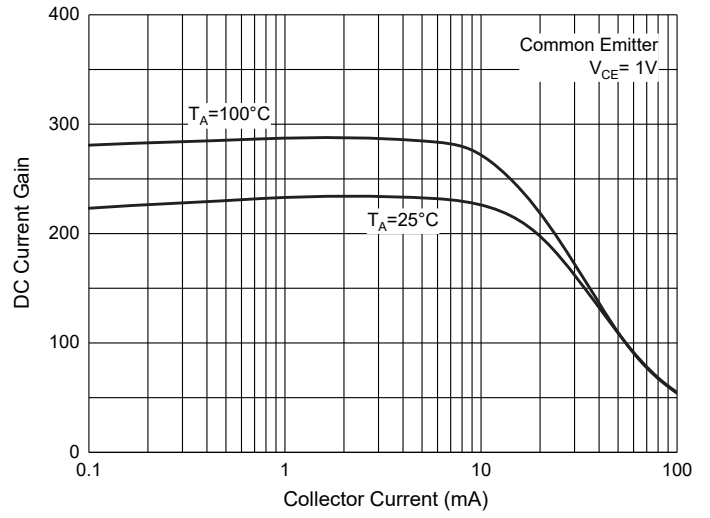


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

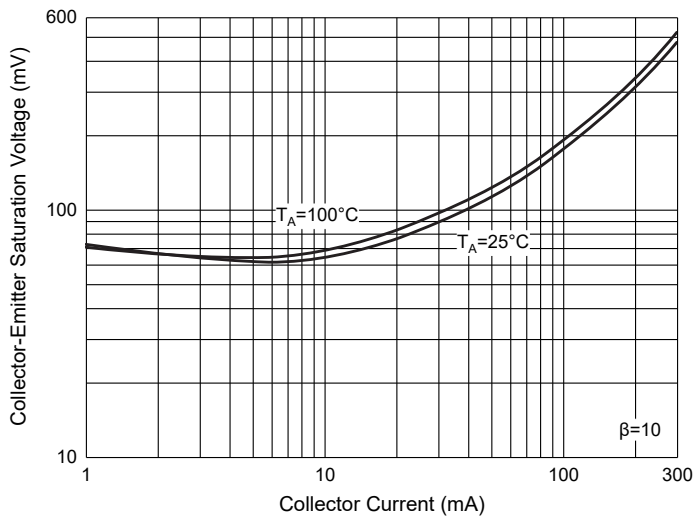


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

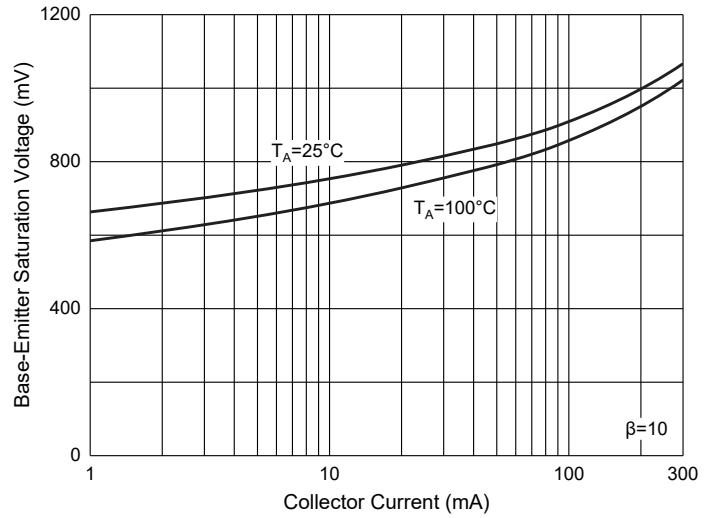


Fig. 5 - Base-Emitter Voltage Characteristics

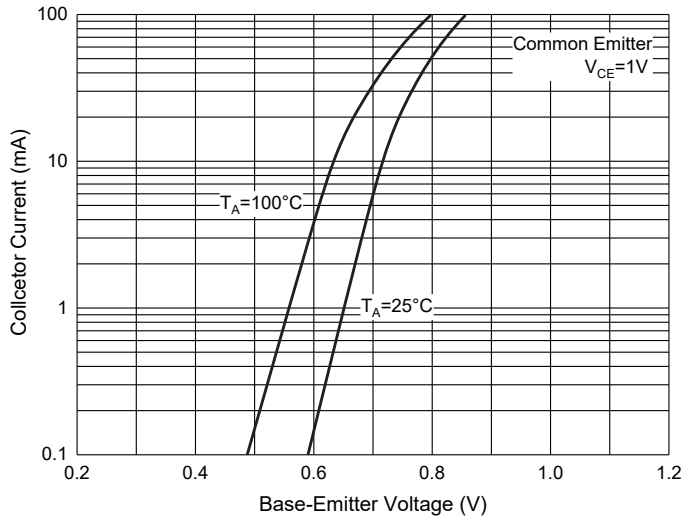
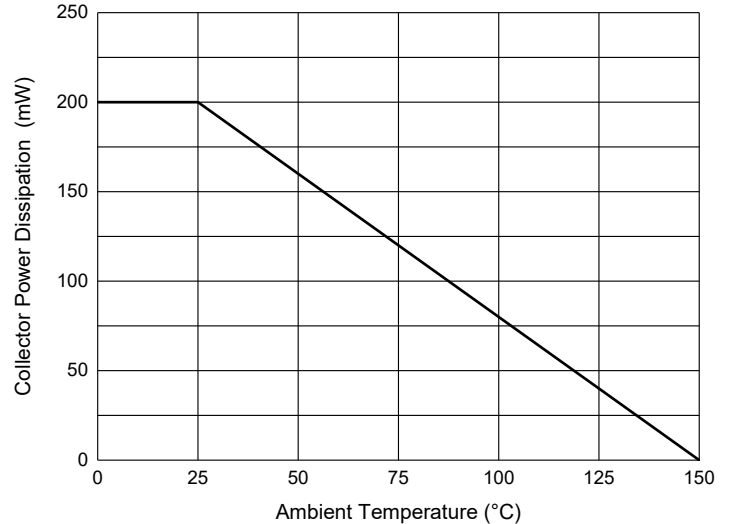


Fig. 6 - Collector Power Derating Curve



## Ordering Information

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

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