

**Features**

- Halogen Free Available Upon Request By Adding Suffix "-HF"
- 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)

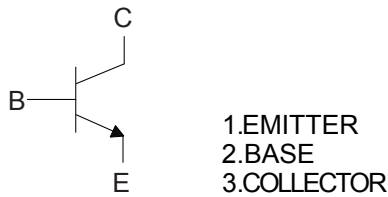
**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 200°C/W Junction to Ambient
- Thermal Resistance: 83.3°C/W Junction to Case

Parameter	Symbol	Rating	Unit	
Collector-Base Voltage	$V_{CBO}$	30	V	
Collector-Emitter Voltage	$V_{CEO}$	30	V	
Emitter-Base Voltage	$V_{EBO}$	10	V	
Continuous Collector Current	$I_C$	500	mA	
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$ , Derate above 25°C	625	mW
			5	mW/°C
		$T_C=25^\circ\text{C}$ , Derate above 25°C	1.5	W
			12	mW/°C

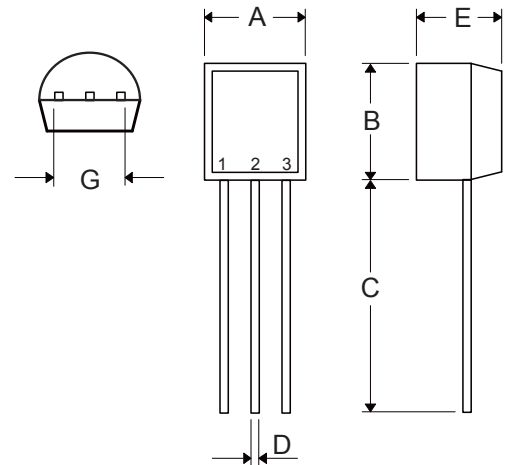
**Marking:** MPSA13/MPSA14

**Internal Structure**



**NPN  
Silicon Darlington  
Transistor**

TO-92



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.169	0.185	4.30	4.70	
B	0.169	0.185	4.30	4.70	
C	0.500	-----	12.70	-----	
D	0.015	0.022	0.38	0.55	
E	0.130	0.146	3.30	3.70	
G	0.095	0.105	2.42	2.67	Straight Lead
	0.173	0.220	4.40	5.60	Bent

**Electrical Characteristics @  $T_A=25^\circ\text{C}$  Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	30			V	$I_C=100\mu\text{A}, I_B=0$
Collector Cut-off Current	$I_{CBO}$			0.1	$\mu\text{A}$	$V_{CB}=30\text{V}, I_E=0$
Emitter Cut-off Current	$I_{EBO}$			0.1	$\mu\text{A}$	$V_{EB}=10\text{V}, I_C=0$
DC Current Gain*	MPSA13	5000				$V_{CE}=5\text{V}, I_C=10\text{mA}$
	MPSA14					
	MPSA13	10000			$V_{CE}=5\text{V}, I_C=100\text{mA}$	
	MPSA14					
Collector-Emitter Saturation Voltage*	$V_{CE(sat)}$			1.5	V	$I_C=100\text{mA}, I_B=0.1\text{mA}$
Base-emitter voltage*	$V_{BE}$			2.0	V	$V_{CE}=5\text{V}, I_C=100\text{mA}$
Transition Frequency	$f_T$	125			MHz	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$

\*.Pulse test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 2.0\%$ .

**Curve Characteristics**

Fig. 1 - Static Characteristics

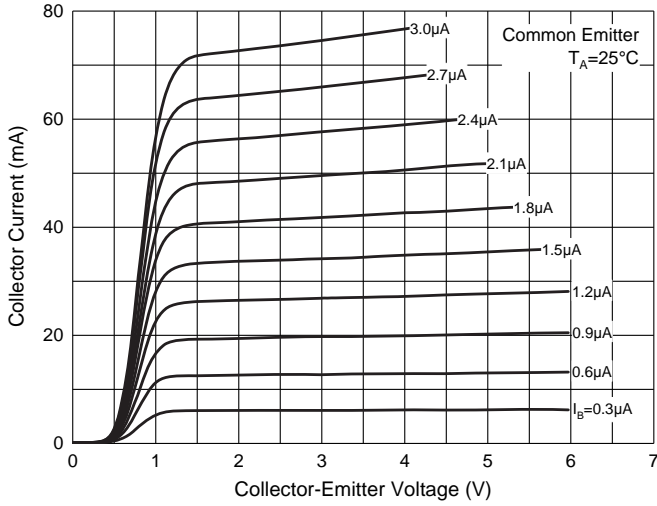


Fig. 2 - DC Current Gain Characteristics

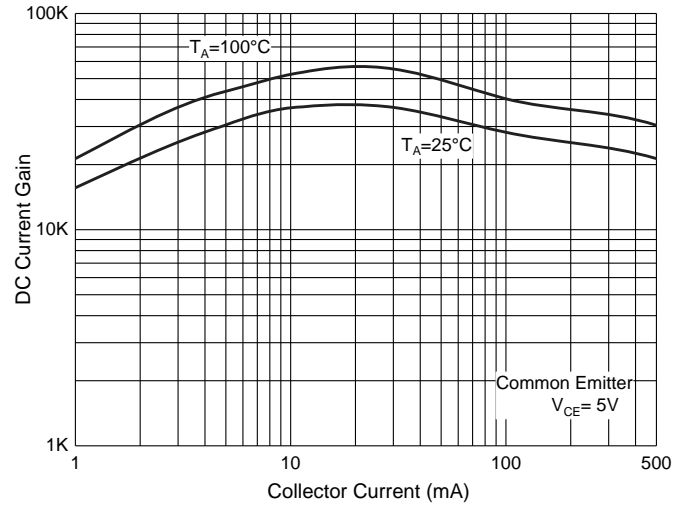


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

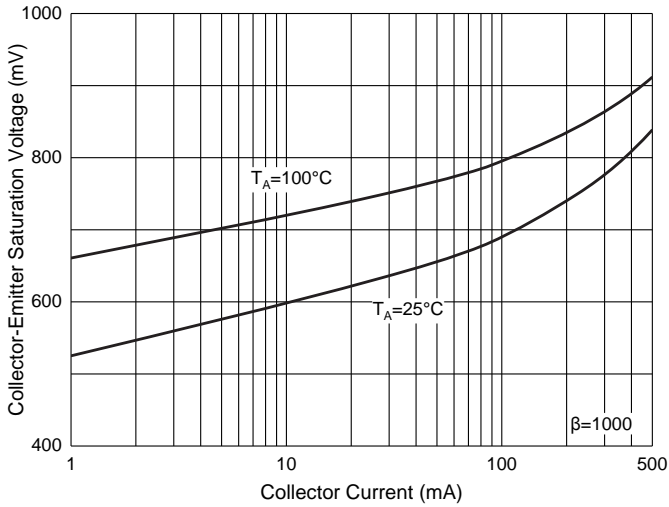


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

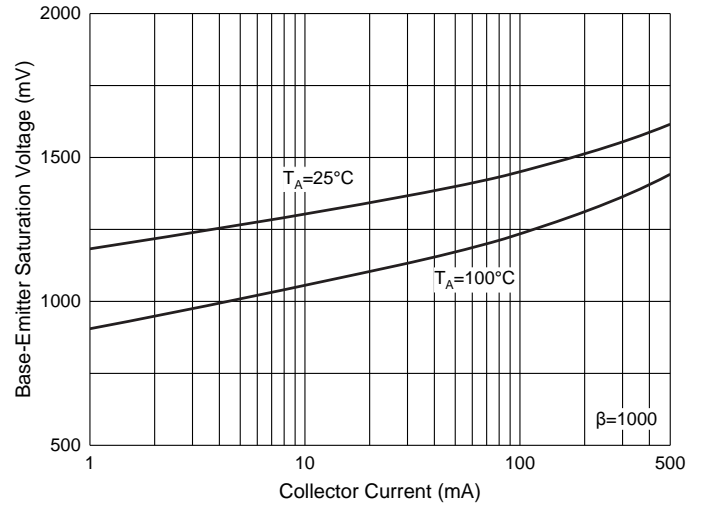


Fig. 5 - Base-Emitter Voltage Characteristics

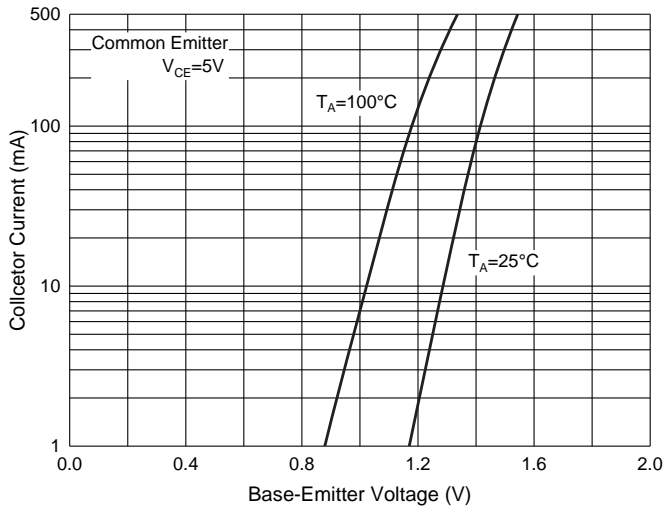
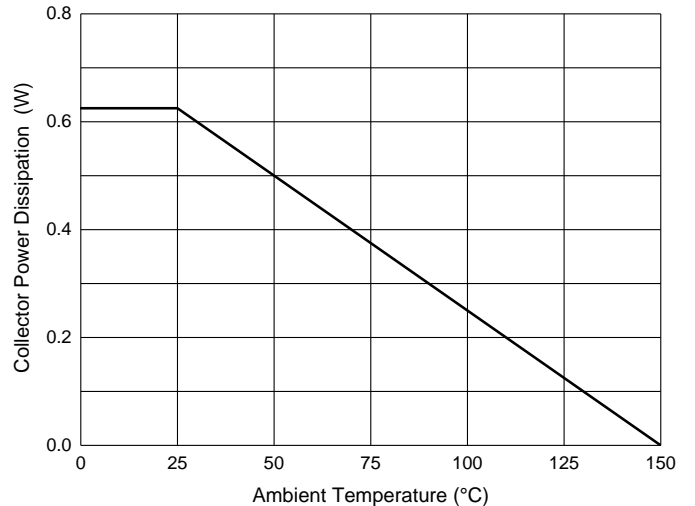


Fig. 6 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-AP	Ammo Packing: 20Kpcs/Carton
Part Number-BP	Bulk: 100Kpcs/Carton

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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