

**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

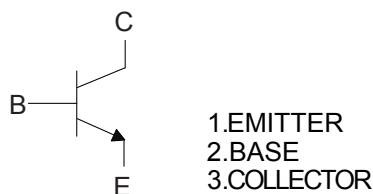
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	MPSA42	300	V
	MPSA43	200	
Collector-Emitter Voltage	MPSA42	300	V
	MPSA43	200	
Emitter-Base Voltage	MPSA42	5	V
	MPSA43	5	
Continuous Collector Current	$I_C$	300	mA
Power Dissipation @ $T_A=25^\circ\text{C}$	$P_D$	625	mW
		5	mW/°C
Power Dissipation @ $T_C=25^\circ\text{C}$	$P_D$	1.5	W
		12	mW/°C

**Marking:**

MPSA42 ----A42

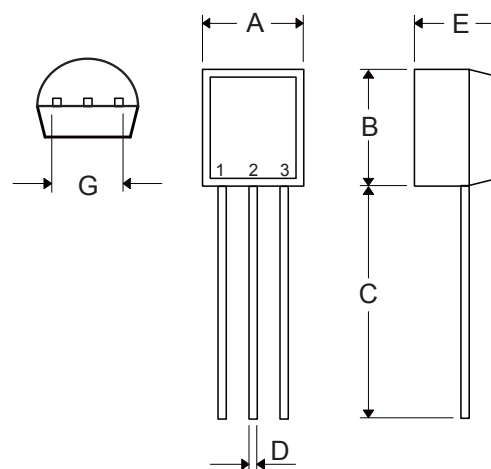
MPSA43 ----MPSA43

**Internal Structure**



# NPN Silicon High Voltage Transistor

TO-92



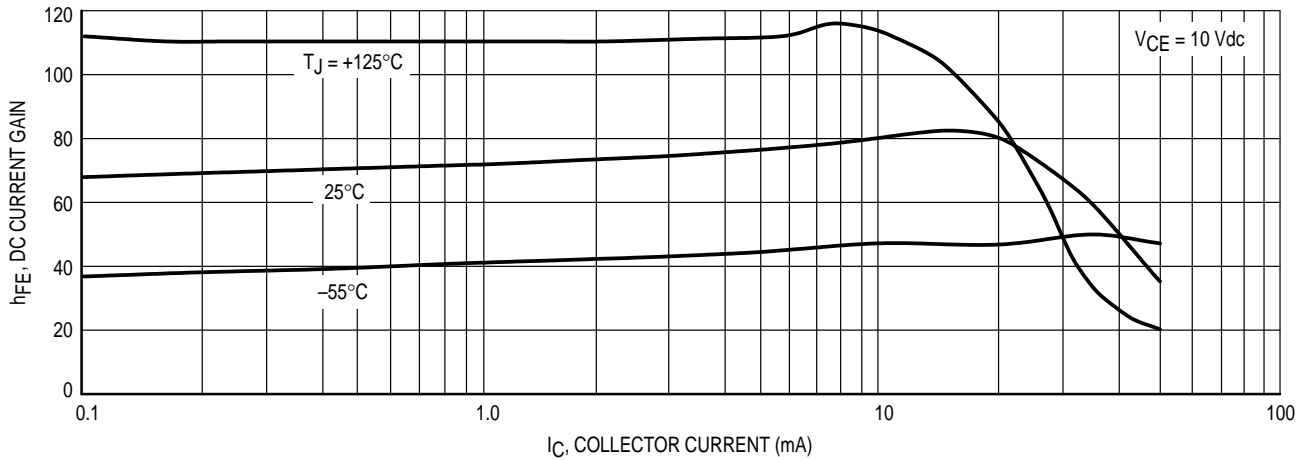
DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.169	0.185	4.30	4.70	
B	0.169	0.185	4.30	4.70	
C	0.500	-----	12.70	-----	
D	0.015	0.022	0.38	0.55	
E	0.130	0.146	3.30	3.70	
G	0.095	0.105	2.42	2.67	Straight Lead
	0.173	0.220	4.40	5.60	Bent

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

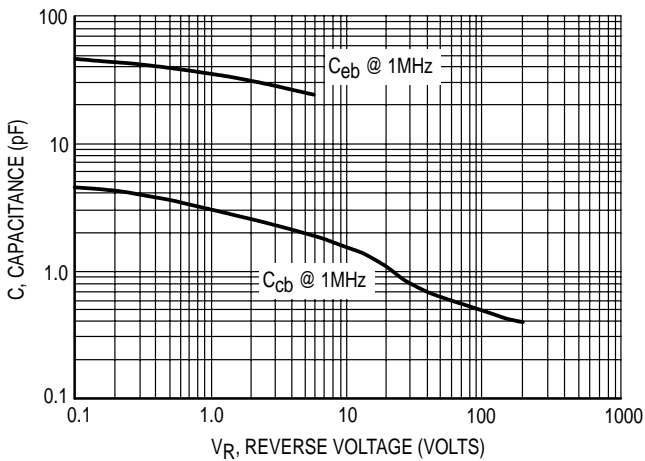
Parameter		Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	MPSA42	$V_{(BR)CBO}$	300			V	$I_C=100\mu\text{A}, I_E=0$
	MPSA43		200			V	
Collector-Emitter Breakdown Voltage*	MPSA42	$V_{(BR)CEO}$	300			V	$I_C=1\text{mA}, I_B=0$
	MPSA43		200				
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	5			V	$I_E=10\mu\text{A}, I_C=0$
Collector Cutoff Current	MPSA42	$I_{CBO}$			0.25	$\mu\text{A}$	$V_{CB}=200\text{V}, I_E=0$
	MPSA43				0.1	$\mu\text{A}$	$V_{CB}=160\text{V}, I_E=0$
Emitter Cutoff Current	MPSA42	$I_{EBO}$			0.25	$\mu\text{A}$	$V_{EB}=3\text{V}, I_C=0$
	MPSA43				0.1	$\mu\text{A}$	$V_{EB}=4\text{V}, I_C=0$
DC Current Gain*		$h_{FE(1)}$	25				$V_{CE}=10\text{V}, I_C=1\text{mA}$
		$h_{FE(2)}$	80		250		$V_{CE}=10\text{V}, I_C=10\text{mA}$
		$h_{FE(3)}$	25				$V_{CE}=10\text{V}, I_C=50\text{mA}$
Collector-Emitter Saturation Voltage	MPSA42	$V_{CE(sat)}$			0.5	V	$I_C=20\text{mA}, I_B=2\text{mA}$
	MPSA43				0.4	V	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$			0.9	V	$I_C=20\text{mA}, I_B=2\text{mA}$
Transition Frequency		$f_T$	50			MHz	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=30\text{MHz}$
Collector-Base Capacitance	MPSA42	$C_{cb}$			3	pF	$V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$
	MPSA43				4		

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

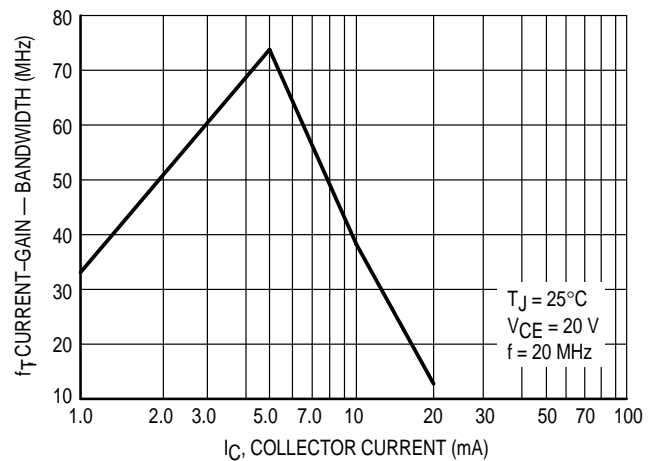
**Curve Characteristics**



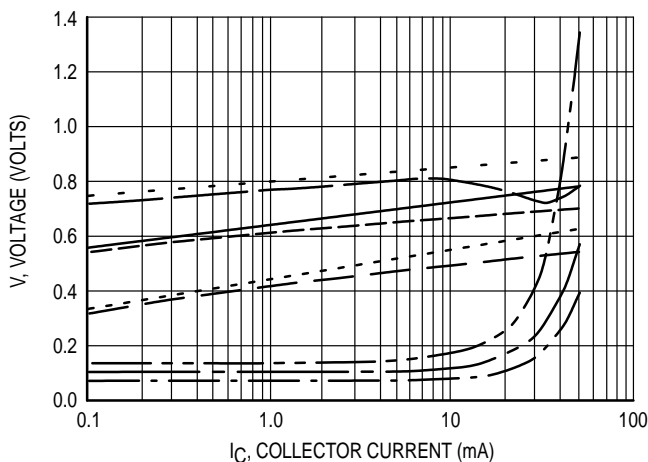
**Figure 1. DC Current Gain**



**Figure 2. Capacitance**



**Figure 3. Current-Gain - Bandwidth**



**Figure 4. "ON" Voltages**

- $V_{CE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(on)}$  @  $25^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$
- $V_{BE(on)}$  @  $125^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$
- $V_{BE(on)}$  @  $-55^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$

## 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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