



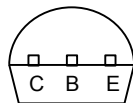
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# MPSA42 THRU MPSA43

## Features

- Through Hole Package
- 150°C Junction Temperature

Pin Configuration  
 Bottom View



## NPN Silicon High Voltage Transistor 625mW

## Mechanical Data

- Case: TO-92, Molded Plastic
- Marking:

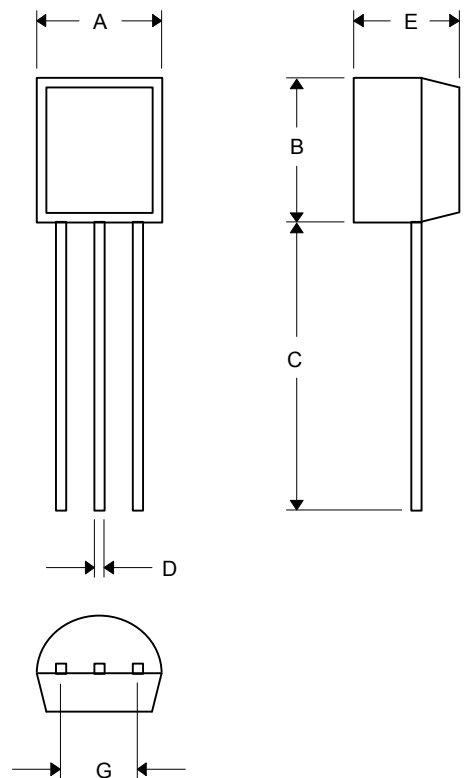
MPSA42 ----- A42

MPSA43 ----- A43

Maximum Ratings @ 25°C Unless Otherwise Specified

Characteristic	Symbol	Value	Unit
Collector-Emitter Voltage MPSA42 MPSA43	$V_{CEO}$	300 200	V
Collector-Base Voltage MPSA42 MPSA43	$V_{CBO}$	300 200	V
Emitter-Base Voltage MPSA42 MPSA43	$V_{EBO}$	5.0	V
Collector Current(DC)	$I_C$	300	mA
Power Dissipation@ $T_A=25^\circ\text{C}$	$P_d$	625 5.0	mW mW/°C
Power Dissipation@ $T_C=25^\circ\text{C}$	$P_d$	1.5 12	W mW/°C
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W
Operating & Storage Temperature	$T_j, T_{STG}$	-55~150	°C

### TO-92



DIM	DIMENSIONS				NOTE
	INCHES		MM		
A	.175	.185	4.45	4.70	
B	.175	.185	4.46	4.70	
C	.500	---	12.7	---	
D	.016	.020	0.41	0.63	
E	.135	.145	3.43	3.68	
G	.095	.105	2.42	2.67	

# MPSA42 thru MPSA43

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit	
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Breakdown Voltage <sup>(1)</sup> ( $I_C = 1.0\text{ mA}$ , $I_B = 0$ )	MPSA42 MPSA43	$V_{(BR)CEO}$	300 200	— —	Vdc
Collector–Base Breakdown Voltage ( $I_C = 100\ \mu\text{A}$ , $I_E = 0$ )	MPSA42 MPSA43	$V_{(BR)CBO}$	300 200	— —	Vdc
Emitter–Base Breakdown Voltage ( $I_E = 10\ \mu\text{A}$ , $I_C = 0$ )		$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ( $V_{CB} = 200\text{ Vdc}$ , $I_E = 0$ ) ( $V_{CB} = 160\text{ Vdc}$ , $I_E = 0$ )	MPSA42 MPSA43	$I_{CBO}$	— —	0.25 0.1	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 3.0\text{ Vdc}$ , $I_C = 0$ ) ( $V_{EB} = 4.0\text{ Vdc}$ , $I_C = 0$ )	MPSA42 MPSA43	$I_{EBO}$	— —	0.25 0.1	$\mu\text{A}$

## ON CHARACTERISTICS<sup>(1)</sup>

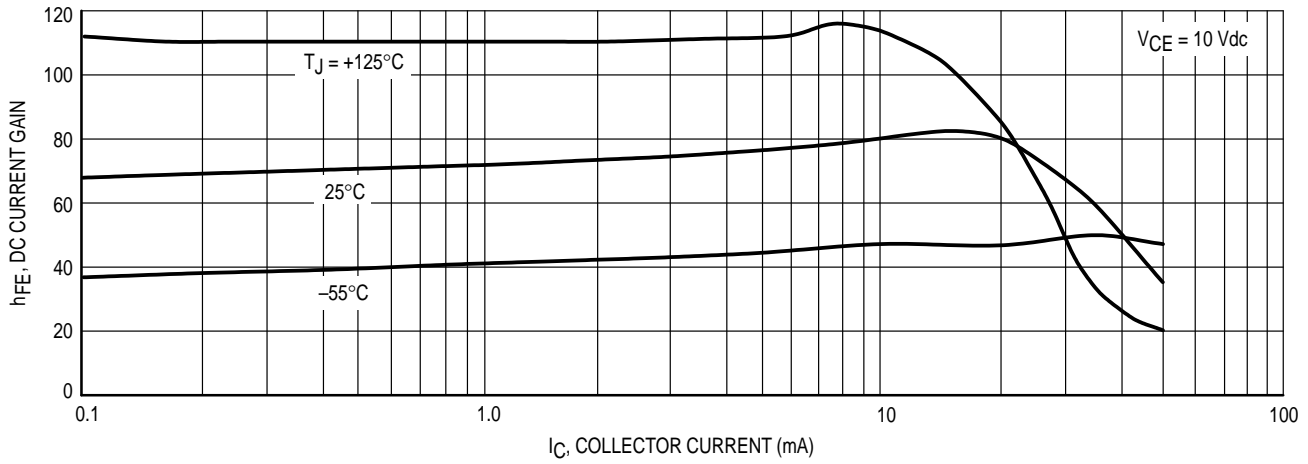
DC Current Gain ( $I_C = 1.0\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ ) ( $I_C = 10\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ ) ( $I_C = 50\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ )		$h_{FE}$	25 80 25	— —	250
Collector–Emitter Saturation Voltage ( $I_C = 20\text{ mA}$ , $I_B = 2.0\text{ mA}$ )	MPSA42 MPSA43	$V_{CE(sat)}$	— —	0.5 0.4	Vdc
Base–Emitter Saturation Voltage ( $I_C = 20\text{ mA}$ , $I_B = 2.0\text{ mA}$ )		$V_{BE(sat)}$	—	0.9	Vdc

## SMALL–SIGNAL CHARACTERISTICS

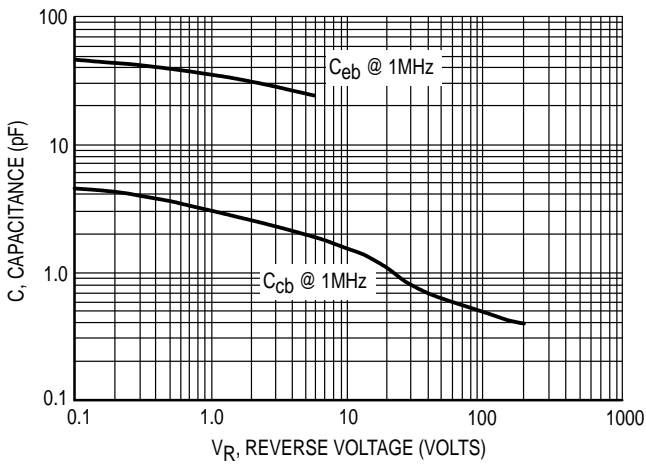
Current–Gain — Bandwidth Product ( $I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ Vdc}$ , $f = 30\text{ MHz}$ )		$f_T$	50	—	MHz
Collector–Base Capacitance ( $V_{CB} = 20\text{ Vdc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )	MPSA42 MPSA43	$C_{cb}$	— —	3.0 4.0	pF

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

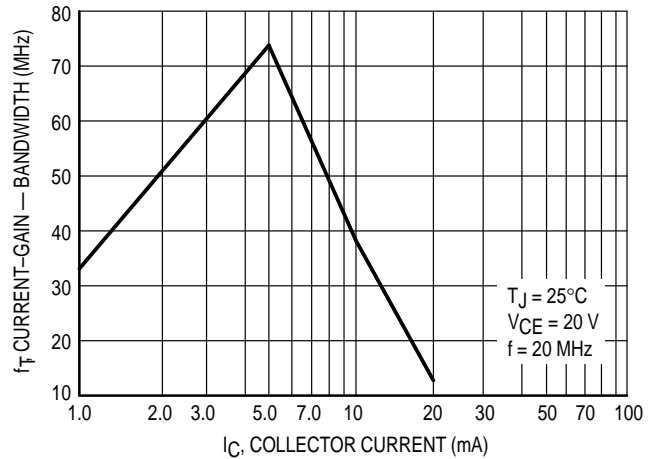
# MPSA42 thru MPSA43



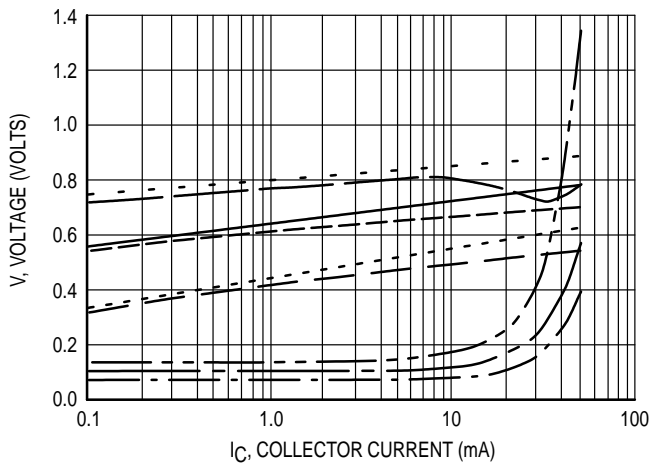
**Figure 1. DC Current Gain**



**Figure 2. Capacitance**



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



**Figure 4. "ON" Voltages**

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