

**FAIRCHILD**

A Schlumberger Company

**MPSA10**

T-29-23

NPN Amplifier Transistor

•  $V_{CE0} \dots 40 \text{ V (Min)}$ 

PACKAGE

MPSA10

TO-92

**ABSOLUTE MAXIMUM RATINGS (Note 1)****Temperatures**

Storage Temperature  $-55^\circ \text{C to } 150^\circ \text{C}$   
 Operating Junction Temperature  $150^\circ \text{C}$

**Power Dissipation (Notes 2 & 3)**

Total Dissipation at  
 $25^\circ \text{C}$  Ambient Temperature  $0.625 \text{ W}$   
 $25^\circ \text{C}$  Case Temperature  $1.0 \text{ W}$

**Voltages & Currents**

$V_{CE0}$  Collector to Emitter Voltage  $40 \text{ V}$   
 (Note 4)  
 $V_{EBO}$  Emitter to Base Voltage  $4.0 \text{ V}$   
 $I_C$  Collector Current (Peak)  $100 \text{ mA}$

**ELECTRICAL CHARACTERISTICS ( $25^\circ \text{C}$  Ambient Temperature unless otherwise noted) (Note 6)**

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$BV_{CE0}$	Collector to Emitter Breakdown Voltage	40		V	$I_C = 1.0 \text{ mA}, I_B = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	4.0		V	$I_E = 100 \mu\text{A}, I_C = 0$
$I_{CBO}$	Collector Cutoff Current		100	nA	$V_{CB} = 30 \text{ V}, I_E = 0$
$h_{FE}$	DC Current Gain (Note 5)	40	400		$I_C = 5.0 \mu\text{A}, V_{CE} = 10 \text{ V}$
$f_T$	Current Gain Bandwidth Product	125		MHz	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V}, f = 100 \text{ MHz}$
$C_{obo}$	Output Capacitance		4.0	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 100 \text{ MHz}$

**NOTES:**

- These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- These ratings give a maximum junction temperature of  $150^\circ \text{C}$  and junction-to-case thermal resistance of  $125^\circ \text{C/W}$  (derating factor of  $8.0 \text{ mW}/^\circ \text{C}$ ); junction-to-ambient thermal resistance of  $200^\circ \text{C/W}$  (derating factor of  $5.0 \text{ mW}/^\circ \text{C}$ ).
- Rating refers to a high current point where collector to emitter voltage is lowest.
- Pulse conditions: length =  $300 \mu\text{s}$ ; duty cycle = 1%.
- For product family characteristic curves, refer to Curve Set T144.

**FAIRCHILD**

A Schlumberger Company

**MPSA12/FTSOA12**  
 NPN Monolithic Darlington  
 Amplifiers

T-29-23

- $V_{CEO}$  ... 20 V (Min)
- $h_{FE}$  ... 20,000 (Min) @ 10 mA

**PACKAGE**

MPSA12

TO-92

FTSOA12

TO-236AA/AB

**ABSOLUTE MAXIMUM RATINGS** (Note 1)**Temperatures**

Storage Temperature	-55°C to 150°C
Operating Junction Temperature	150°C

**Power Dissipation** (Notes 2 & 3)

Total Dissipation at	MPS	FTSO
25°C Ambient Temperature	0.625 W	0.350 W*
70°C Ambient Temperature	0.400 W	
25°C Case Temperature	1.0 W	

**Voltages & Currents**

$V_{CEO}$ Collector to Emitter Voltage (Note 4)	20 V
$V_{EBO}$ Emitter to Base Voltage	10 V

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$BV_{CES}$	Collector to Emitter Breakdown Voltage	20		V	$I_C = 100 \mu A, I_B = 0$
$I_{CBO}$	Collector Cutoff Current		100	nA	$V_{CB} = 15 V, I_C = 0$
$I_{EBO}$	Emitter Cutoff Current		100	nA	$V_{EB} = 10 V, I_C = 0$
$I_{CES}$	Collector Reverse Current		100	nA	$V_{CE} = 15 V, V_{BE} = 0$
$h_{FE}$	DC Pulse Current Gain (Note 5)	20,000			$I_C = 10 mA, V_{CE} = 5.0 V$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage		1.0	V	$I_C = 10 mA, I_B = 0.01 mA$
$V_{BE(on)}$	Base to Emitter "On" Voltage		1.4	V	$I_C = 10 mA, V_{CE} = 5.0 V$

**NOTES:**

1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
  2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
  3. These ratings give a maximum junction temperature of 150°C and (TO-92) junction-to-case thermal resistance of 125°C/W (derating factor of 8.0 mW/°C); junction-to-ambient thermal resistance of 200°C/W (derating factor of 5.0 mW/°C); (TO-236) junction-to-ambient thermal resistance of 357°C/W (derating factor of 2.8 mW/°C).
  4. Rating refers to a high current point where collector to emitter voltage is lowest.
  5. Pulse conditions: length = 300  $\mu s$ ; duty cycle = 1%.
  6. For product family characteristic curves, refer to Curve Set T164.
- \* Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.

**FAIRCHILD**

A Schlumberger Company

**MPSA13/FTSOA13**  
**MPSA14/FTSOA14**

T-29-27

**NPN Monolithic Darlington  
Amplifiers**

- $V_{CEO}$  ... 30 V (Min)
- $h_{FE}$  ... 20,000 (Min) @ 10.0 mA (MPS/FTSOA14)

**PACKAGE**

MPSA13	TO-92
MPSA14	TO-92
FTSOA13	TO-236AA/AB
FTSOA14	TO-236AA/AB

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

Storage Temperature	-55° C to 150° C
Operating Junction Temperature	150° C

**Power Dissipation** (Notes 2 & 3)

Total Dissipation at	<b>MPS</b>	<b>FTSO</b>
25° C Ambient Temperature	0.625 W	0.350 W*
70° C Ambient Temperature	0.400 W	
25° C Case Temperature	1.0 W	

**Voltages & Currents**

$V_{CEO}$ Collector to Emitter Voltage	30 V
(Note 4)	
$V_{CES}$ Collector to Emitter Voltage	30 V
$V_{CBO}$ Collector to Base Voltage	50 V
$V_{EBO}$ Emitter to Base Voltage	10 V
$I_C$ Collector Current	300 mA

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	A13		UNITS	TEST CONDITIONS
		MIN	MAX		
$BV_{CES}$	Collector to Emitter Breakdown Voltage	30		V	$I_C = 100 \mu A, I_B = 0$
$I_{CBO}$	Collector Cutoff Current		100	nA	$V_{CB} = 30 V, I_E = 0$
$I_{EBO}$	Emitter Cutoff Current		100	nA	$V_{EB} = 10 V, I_C = 0$
$h_{FE}$	DC Current Gain (Note 5)	5,000 10,000			$I_C = 10 mA, V_{CE} = 5.0 V$ $I_C = 100 mA, V_{CE} = 5.0 V$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		1.5	V	$I_C = 100 mA, I_B = 0.1 mA$
$V_{BE(ON)}$	Base to Emitter "On" Voltage (Note 5)		2.0	V	$I_C = 100 mA, V_{CE} = 5.0 V$
$f_T$	Current Gain Bandwidth Product	125		MHz	$I_C = 10 mA, V_{CE} = 5.0 V,$ $f = 100 MHz$

**NOTES:**

1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired
  2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
  3. These ratings give a maximum junction temperature of 150° C and (TO-92) junction-to-case thermal resistance of 125° C/W (derating factor of 8.0 mW/° C), junction-to-ambient thermal resistance of 200° C/W (derating factor of 5.0 mW/° C), (TO-236) junction-to-ambient thermal resistance of 357° C/W (derating factor of 2.8 mW/° C).
  4. Rating refers to a high current point where collector to emitter voltage is lowest.
  5. Pulse conditions: length = 300  $\mu s$ ; duty cycle = 2%.
  6. For product family characteristic curves, refer to Curve Set T164.
- \* Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.

MPSA13/FTSOA13  
MPSA14/FTSOA14

T-29-27

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	A14		UNITS	TEST CONDITIONS
		MIN	MAX		
$BV_{CES}$	Collector to Emitter Breakdown Voltage	30		V	$I_C = 100 \mu A, I_B = 0$
$I_{CBO}$	Collector Cutoff Current		100	nA	$V_{CB} = 30 V, I_E = 0$
$I_{EBO}$	Emitter Cutoff Current		100	nA	$V_{EB} = 10 V, I_C = 0$
$h_{FE}$	DC Current Gain (Note 5)	10,000 20,000			$I_C = 10 mA, V_{CE} = 5.0 V$ $I_C = 100 mA, V_{CE} = 5.0 V$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		1.5	V	$I_C = 100 mA, I_B = 0.1 mA$
$V_{BE(ON)}$	Base to Emitter "On" Voltage (Note 5)		2.0	V	$I_C = 100 mA, V_{CE} = 5.0 V$
$f_T$	Current Gain Bandwidth Product	125		MHz	$I_C = 10 mA, V_{CE} = 5.0 V,$ $f = 100 MHz$



## MPSA18

7-29-23

NPN Small Signal Low Noise Low Level Amplifier

- $V_{CE0}$  ... 45 V (Min)
- $h_{FE}$  ... 500 (Min) @ 100  $\mu$ A
- NF ... 0.5 dB (Typ) (Wideband)

## PACKAGE

MPSA18

TO-92

## ABSOLUTE MAXIMUM RATINGS (Note 1)

## Temperatures

Storage Temperature	-55° C to 150° C
Operating Junction Temperature	150° C

## Power Dissipation (Notes 2 &amp; 3)

Total Dissipation at	
25° C Ambient Temperature	0.625 W
25° C Case Temperature	1.0 W

## Voltages &amp; Currents

$V_{CE0}$ Collector to Emitter Voltage	45 V
(Note 4)	
$V_{CBO}$ Collector to Base Voltage	45 V
$I_C$ Collector Current (Peak)	200 mA

## ELECTRICAL CHARACTERISTICS (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$BV_{CE0}$	Collector to Emitter Breakdown Voltage	45			V	$I_C = 10$ mA, $I_B = 0$
$BV_{CBO}$	Collector to Base Breakdown Voltage	45			V	$I_C = 100$ $\mu$ A, $I_E = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	6.5			V	$I_E = 10$ $\mu$ A, $I_C = 0$
$I_{CBO}$	Collector Cutoff Current			50	nA	$V_{CB} = 30$ V, $I_E = 0$
$h_{FE}$	DC Current Gain (Note 5)	400 500 500 500		1500		$I_C = 10$ $\mu$ A, $V_{CE} = 5.0$ V $I_C = 100$ $\mu$ A, $V_{CE} = 5.0$ V $I_C = 1.0$ mA, $V_{CE} = 5.0$ V $I_C = 10$ mA, $V_{CE} = 5.0$ V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)			0.2 0.3	V	$I_C = 10$ mA, $I_B = 0.5$ mA $I_C = 50$ mA, $I_B = 5.0$ mA
$V_{BE(on)}$	Base to Emitter "On" Voltage (Note 5)			0.7	V	$I_C = 1.0$ mA, $V_{CE} = 5.0$ V

## NOTES:

1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations
3. These ratings give a maximum junction temperature of 150° C and (TO-92) junction-to-case thermal resistance of 125° C/W (derating factor of 8.0 mW/° C); junction-to-ambient thermal resistance of 200° C/W (derating factor of 5.0 mW/° C).
4. Rating refers to a high current point where collector to emitter voltage is lowest.
5. Pulse conditions: length = 300  $\mu$ s; duty cycle = 1%.
6. For product family characteristic curves, refer to Curve Set T107.

FAIRCHILD SEMICONDUCTOR

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3469674 FAIRCHILD SEMICONDUCTOR

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MPSA18

7-29-23

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$f_T$	Current Gain Bandwidth Product	100			MHz	$I_C = 1.0 \text{ mA}$ , $V_{CE} = 5.0 \text{ V}$ , $f = 100 \text{ kHz}$
$C_{cb}$	Collector to Base Capacitance			3.0	pF	$V_{CB} = 5.0 \text{ V}$ , $I_E = 0$ , $f = 1.0 \text{ MHz}$
$C_{eb}$	Emitter to Base Capacitance			6.5	pF	$V_{EB} = 0.5 \text{ V}$ , $I_C = 0$ , $f = 1.0 \text{ MHz}$
NF	Noise Figure		0.5	1.5	dB	$I_C = 100 \mu\text{A}$ , $V_{CE} = 5.0 \text{ V}$ , $R_S = 10 \text{ k}\Omega$ , $f = 10 \text{ Hz to } 15.7 \text{ kHz}$
			4.0		dB	$I_C = 100 \mu\text{A}$ , $V_{CE} = 5.0 \text{ V}$ , $R_S = 10 \text{ k}\Omega$ , $f = 100 \text{ Hz}$



**MPSA20/FTSOA20**  
**MPSA70/FTSOA70** T-29.23

NPN-PNP Small Signal General  
 Purpose Complementary Amplifiers

- $V_{CE0} \dots 40 \text{ V (Min)}$
- $h_{FE} \dots 40-400 @ 5.0 \text{ mA}$
- $V_{CE(sat)} \dots 0.25 \text{ V (Max) @ } 10 \text{ mA}$
- $C_{ob} \dots 4.0 \text{ pF (Max) } 10 \text{ V}$
- **Complements ... MPS/FTSOA20 (NPN), MPS/FTSOA70 (PNP)**

**PACKAGE**

MPSA20	TO-92
MPSA70	TO-92
FTSOA20	TO-236AA/AB
FTSOA70	TO-236AA/AB

**ABSOLUTE MAXIMUM RATINGS (Note 1)****Temperatures**

Storage Temperature	-55°C to 150°C
Operating Junction Temperature	150°C

**Power Dissipation (Notes 2 & 3)**

Total Dissipation at	<b>MPS</b>	<b>FTSO</b>
25°C Ambient Temperature	0.625 W	0.350 W*
70°C Ambient Temperature	0.400 W	
25°C Case Temperature	1.0 W	

**Voltages & Currents**

$V_{CE0}$ Collector to Emitter Voltage	40 V
(Note 4)	
$V_{EBO}$ Emitter to Base Voltage	4.0 V
$I_C$ Collector Current (Continuous)	100 mA

**ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted) (Note 6)**

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$BV_{CE0}$	Collector to Emitter Breakdown Voltage	40		V	$I_C = 1.0 \text{ mA}, I_B = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	4.0		V	$I_E = 100 \mu\text{A}, I_C = 0$
$I_{CBO}$	Collector Cutoff Current		100	nA	$V_{CB} = 30 \text{ V}, I_E = 0$
$h_{FE}$	DC Current Gain (Note 5)	40	400		$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V}$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		0.25	V	$I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$
$f_T$	Current Gain Bandwidth Product	125		MHz	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V}, f = 100 \text{ MHz}$
$C_{ob}$	Output Capacitance		4.0	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 100 \text{ kHz}$

**NOTES:**

- These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- These ratings give a maximum junction temperature of 150°C and (TO-92) junction-to-case thermal resistance of 125°C/W (derating factor of 8.0 mW/°C); junction-to-ambient thermal resistance of 200°C/W (derating factor of 5.0 mW/°C); (TO-236) junction-to-ambient thermal resistance of 357°C/W (derating factor of 2.8 mW/°C).
- Rating refers to a high current point where collector to emitter voltage is lowest.
- Pulse conditions: length = 300 μs; duty cycle = 1%.
- For product family characteristic curves, refer to Curve Set T144 for MPSA20 & T215 for MPSA70.
- \* Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.



**MPSA42/FTSOA42**  
**MPSA43/FTSOA43**

NPN Small Signal High Voltage  
General Purpose Amplifiers

T-29.23

- $V_{CE0}$  ... 300 V (Min) (MPS/FTSOA42), 200 V (Min) MPS/FTSOA43
- $h_{FE}$  ... 40 (Min) @ 10 mA
- $f_T$  ... 50 MHz (Min)
- Complements ... MPSA92, MPSA93

PACKAGE	
MPSA42	TO-92
MPSA43	TO-92
FTSOA42	TO-236AA/AB
FTSOA43	TO-236AA/AB

**ABSOLUTE MAXIMUM RATINGS (Note 1)**

Temperatures	
Storage Temperature	-55° C to 150° C
Operating Junction Temperature	150° C

Power Dissipation (Notes 2 & 3)		MPS	FTSO
Total Dissipation at 25° C Ambient Temperature		0.625 W	0.350 W*
25° C Case Temperature		1.0 W	

Voltages & Currents		A42	A43
$V_{CE0}$ Collector to Emitter Voltage (Note 4)		300 V	200 V
$V_{CBO}$ Collector to Base Voltage		300 V	200 V
$V_{EBO}$ Emitter to Base Voltage		8.0 V	6.0 V
$I_C$ Collector Current (Continuous)		500 mA	500 mA

**ELECTRICAL CHARACTERISTICS (25° C Ambient Temperature unless otherwise noted) (Note 6)**

SYMBOL	CHARACTERISTIC	A42		A43		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
$BV_{CE0}$	Collector to Emitter Breakdown Voltage (Note 5)	300		200		V	$I_C = 1.0 \text{ mA}, I_E = 0$
$BV_{CBO}$	Collector to Base Breakdown Voltage	300		200		V	$I_C = 100 \mu\text{A}, I_E = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	8.0		6.0		V	$I_E = 100 \mu\text{A}, I_C = 0$
$I_{CBO}$	Collector Cutoff Current		0.1		0.1	$\mu\text{A}$ $\mu\text{A}$	$V_{CB} = 200 \text{ V}, I_E = 0$ $V_{CB} = 160 \text{ V}, I_E = 0$

**NOTES:**

1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired
  2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations
  3. These ratings give a maximum junction temperature of 150° C and (TO-92) junction-to-case thermal resistance of 125° C/W (derating factor of 8.0 mW/° C); junction-to-ambient thermal resistance of 200° C/W (derating factor of 5.0 mW/° C); (TO-236) junction-to-ambient thermal resistance of 357° C/W (derating factor of 2.8 mW/° C).
  4. Rating refers to a high current point where collector to emitter voltage is lowest.
  5. Pulse conditions: length = 300  $\mu\text{s}$ ; duty cycle = 1%.
  6. For product family characteristic curves, refer to Curve Set T176.
- \* Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.





**MPSA55/FTSOA55**  
**MPSA56/FTSOA56** T-29-23  
 PNP Small Signal General Purpose  
 Complementary Amplifiers

- |   |                |             |
|---|----------------|-------------|
| • $V_{CE0} \dots -60 \text{ V (Min) (MPS/FTSOA55),}$<br>$-80 \text{ V (Min) (MPS/FTSOA56)}$ | <b>PACKAGE</b> |             |
| • $h_{FE} \dots 50 \text{ (Min) @ } 100 \text{ mA}$   | MPSA55         | TO-92       |
| • $V_{CE(sat)} \dots -0.25 \text{ V (Max) @ } 100 \text{ mA}$                               | MPSA56         | TO-92       |
| • <b>Complements ... MPS/FTSOA05, MPS/FTSOA06 (NPN)</b>                                     | FTSOA55        | TO-236AA/AB |
|   | FTSOA56        | TO-236AA/AB |

**ABSOLUTE MAXIMUM RATINGS (Note 1)**

**Temperatures**

Storage Temperature  $-55^\circ\text{C}$  to  $150^\circ\text{C}$   
 Operating Junction Temperature  $150^\circ\text{C}$

**Power Dissipation (Notes 2 & 3)**

Total Dissipation at	MPS	FTSO
$25^\circ\text{C}$ Ambient Temperature	0.625 W	0.350 W*
$70^\circ\text{C}$ Ambient Temperature	0.400 W	
$25^\circ\text{C}$ Case Temperature	1.0 W	

**Voltages & Currents**

	A55	A56
$V_{CE0}$ Collector to Emitter Voltage (Note 4)	$-60 \text{ V}$	$-80 \text{ V}$
$V_{CBO}$ Collector to Base Voltage	$-60 \text{ V}$	$-80 \text{ V}$
$V_{EBO}$ Emitter to Base Voltage	$-4.0 \text{ V}$	$-4.0 \text{ V}$
$I_C$ Collector Current	500 mA	500 mA

**ELECTRICAL CHARACTERISTICS ( $25^\circ\text{C}$  Ambient Temperature unless otherwise noted) (Note 6)**

SYMBOL	CHARACTERISTIC	A55		A56		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
$BV_{CE0}$	Collector to Emitter Breakdown Voltage	-60		-80		V	$I_C = 1.0 \text{ mA}, I_E = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	-4.0		-4.0		V	$I_E = 100 \mu\text{A}, I_C = 0$
$I_{CBO}$	Collector Cutoff Current		100		100	nA	$V_{CB} = -60 \text{ V}, I_E = 0$ $V_{CB} = -80 \text{ V}, I_E = 0$

**NOTES:**

- These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- These ratings give a maximum junction temperature of  $150^\circ\text{C}$  and (TO-92) junction-to-case thermal resistance of  $125^\circ\text{C/W}$  (derating factor of  $8.0 \text{ mW/}^\circ\text{C}$ ); junction-to-ambient thermal resistance of  $200^\circ\text{C/W}$  (derating factor of  $5.0 \text{ mW/}^\circ\text{C}$ ); (TO-236) junction-to-ambient thermal resistance of  $357^\circ\text{C/W}$  (derating factor of  $2.8 \text{ mW/}^\circ\text{C}$ ).
- Rating refers to a high current point where collector to emitter voltage is lowest.
- Pulse conditions: length =  $300 \mu\text{s}$ ; duty cycle = 1%.
- For product family characteristic curves, refer to Curve Set T224.
- \* Package mounted on 99.5% alumina  $8 \text{ mm} \times 8 \text{ mm} \times 0.6 \text{ mm}$ .

MPSA55/FTSOA55  
MPSA56/FTSOA56

T-29-23

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	A55		A56		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
$h_{FE}$	DC Current Gain (Note 5)	50		50			$I_C = 10 \text{ mA}$ , $V_{CE} = -1.0 \text{ V}$ $I_C = 100 \text{ mA}$ , $V_{CE} = -1.0 \text{ V}$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		-0.25		-0.25	V	$I_C = 100 \text{ mA}$ , $I_B = 10 \text{ mA}$
$V_{BE(ON)}$	Base to Emitter "On" Voltage		-1.2		-1.2	V	$I_C = 100 \text{ mA}$ , $V_{CE} = -1.0 \text{ V}$
$f_T$	Current Gain Bandwidth Product	50		50		MHz	$I_C = 100 \text{ mA}$ , $V_{CE} = -1.0 \text{ V}$ , $f = 100 \text{ MHz}$