

MAXIMUM RATINGS

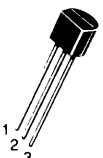
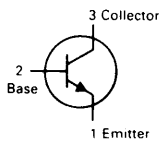
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE0}	30	Vdc
Collector-Base Voltage	V_{CBO}	40	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	200	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_A = 60^\circ\text{C}$	P_D	450	mW
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^\circ\text{C/W}$

MPS3566

**CASE 29-04, STYLE 1
TO-92 (TO-226AA)**

**GENERAL PURPOSE
TRANSISTOR**

NPN SILICON

Refer to 2N4400 for graphs.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage(1) ($I_C = 30 \text{ mA}$)	$V_{(BR)CEO(sus)}$	30	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{A}$)	$V_{(BR)CBO}$	40	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{A}$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 20 \text{ V}$) ($V_{CB} = 20 \text{ V}, T_A = 75^\circ\text{C}$)	I_{CBO}	—	50 5.0	nA μA
Emitter Cutoff Current ($V_{BE} = 5.0 \text{ V}$)	I_{EBO}	—	10	μA
ON CHARACTERISTICS				
DC Current Gain ($I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$) ($I_C = 2.0 \text{ mA}, V_{CE} = 10 \text{ V}$)	h_{FE}	150 80	600 —	—
Collector-Emitter Saturation Voltage ($I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$)	$V_{CE(sat)}$	—	1.0	Vdc
Base-Emitter On Voltage(1) ($I_C = 100 \text{ mA}, V_{CE} = 1.0 \text{ V}$)	$V_{BE(on)}$	—	0.9	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Output Capacitance ($V_{CB} = 10 \text{ V}, f = 1.0 \text{ MHz}$)	C_{obo}	—	25	pF
Small-Signal Current Gain ($I_C = 30 \text{ mA}, V_{CE} = 10 \text{ V}, f = 20 \text{ MHz}$)	h_{fe}	2.0	35	—

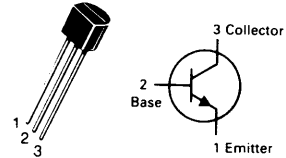
(1) Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

MAXIMUM RATINGS

Rating	Symbol	MPS3567/MPS3568		Unit
		MPS3567	MPS3568	
Collector-Emitter Voltage	V_{CE0}	40	60	Vdc
Collector-Base Voltage	V_{CBO}	80		Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	600		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625	5	mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5	12	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	°C/W

MPS3567
MPS3568
MPS3569
CASE 29-04, STYLE 1
TO-92 (TO-226AA)

AMPLIFIER TRANSISTOR
NPN SILICON

Refer to 2N4400 for graphs for MPS3567, 3569.*

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage(1) ($I_C = 30\text{ mAdc}, I_B = 0$)	MPS3567, MPS3569 MPS3568	$V_{CE0(sus)}$	40 60	Vdc
Collector-Base Breakdown Voltage ($I_C = 100\ \mu\text{Adc}, I_E = 0$)		$V_{(BR)CBO}$	80	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10\ \mu\text{Adc}, I_C = 0$)		$V_{(BR)EBO}$	5.0	Vdc
Collector Cutoff Current ($V_{CB} = 40\text{ Vdc}, I_E = 0$) ($V_{CB} = 40\text{ Vdc}, I_E = 0, T_A = 75^\circ\text{C}$)		I_{CBO}	— 50 5.0	nAdc μAdc
Emitter Cutoff Current ($V_{EB} = 4.0\text{ Vdc}, I_C = 0$)		I_{EBO}	— 25	nAdc
ON CHARACTERISTICS(1)				
DC Current Gain ($I_C = 30\text{ mAdc}, V_{CE} = 1.0\text{ Vdc}$)	MPS3567, MPS3568 MPS3569	h_{FE}	40 100	—
($I_C = 150\text{ mAdc}, V_{CE} = 1.0\text{ Vdc}$)			40 100	120 300
Collector-Emitter Saturation Voltage ($I_C = 150\text{ mAdc}, I_B = 15\text{ mAdc}$)		$V_{CE(sat)}$	— 0.25	Vdc
Base-Emitter Saturation Voltage ($I_C = 150\text{ mAdc}, I_B = 15\text{ mAdc}$)		$V_{BE(sat)}$	— 1.1	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product(1) ($I_C = 50\text{ mAdc}, V_{CE} = 10\text{ Vdc}, f = 20\text{ MHz}$)		f_T	60	MHz
Output Capacitance ($V_{CB} = 10\text{ V}, f = 1.0\text{ MHz}$)		C_{obo}	— 20	pF
Input Capacitance ($V_{EB} = 0.5\text{ Vdc}, I_C = 0, f = 1.0\text{ MHz}$)		C_{ibo}	— 80	pF

*Refer to MPS8098 for graphs for MPS3568.

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

MAXIMUM RATINGS

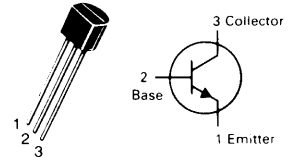
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	30	Vdc
Collector-Base Voltage	V _{CBO}	55	Vdc
Emitter-Base Voltage	V _{EBO}	3.5	Vdc
Collector Current — Continuous	I _C	0.4	Adc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	625 5.0	mW mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	1.5 12	Watts mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	83.3	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	200	°C/W

MPS3866

**CASE 29-04, STYLE 1
TO-92 (TO-226AA)**



AMPLIFIER TRANSISTOR

NPN SILICON

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I _C = 5.0 mA _{dc} , V _{BE} = 10 Ω)	V _{CER(sus)}	55	—	Vdc
Collector-Emitter Sustaining Voltage (I _C = 5.0 mA _{dc} , I _B = 0)	V _{CEO(sus)}	30	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 100 μA _{dc} , I _C = 0)	V _{(BR)EBO}	3.5	—	Vdc
Collector Cutoff Current (V _{CE} = 28 Vdc, I _B = 0)	I _{CEO}	—	0.02	mA _{dc}
Collector Cutoff Current (V _{CE} = 30 Vdc, V _{BE} = -1.5 Vdc (Rev.), T _C = 150°C) (V _{CE} = 55 Vdc, V _{BE} = -1.5 Vdc (Rev.))	I _{CEX}	—	5.0 0.1	mA _{dc}
Emitter Cutoff Current (V _{BE} = 3.5 Vdc, I _C = 0)	I _{EBO}	—	0.1	mA _{dc}
ON CHARACTERISTICS				
DC Current Gain (I _C = 360 mA _{dc} , V _{CE} = 5.0 Vdc(1)) (I _C = 50 mA _{dc} , V _{CE} = 5.0 Vdc)	h _{FE}	5.0 10	— 200	—
Collector-Emitter Saturation Voltage (I _C = 100 mA _{dc} , I _B = 20 mA _{dc})	V _{CE(sat)}	—	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I _C = 50 mA _{dc} , V _{CE} = 15 Vdc, f = 200 MHz)	f _T	500	—	MHz
Output Capacitance (V _{CB} = 28 Vdc, I _E = 0, f = 1.0 MHz)	C _{obo}	—	3.0	pF
FUNCTIONAL TEST				
Amplifier Power Gain (V _{CC} = 28 Vdc, P _{out} = 1.0 W, f = 400 MHz)	G _{pe}	10	—	dB
Collector Efficiency (V _{CC} = 28 Vdc, P _{out} = 1.0 W, f = 400 MHz)	η	45	—	%

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.