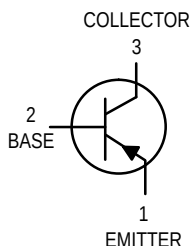


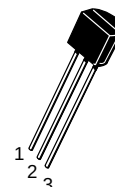
One Watt Amplifier Transistors

PNP Silicon



MPSW55
MPSW56*

*Motorola Preferred Device



CASE 29-05, STYLE 1
TO-92 (TO-226AE)

MAXIMUM RATINGS

Rating	Symbol	MPSW55	MPSW56	Unit
Collector–Emitter Voltage	V_{CEO}	–60	–80	Vdc
Collector–Base Voltage	V_{CBO}	–60	–80	Vdc
Emitter–Base Voltage	V_{EBO}	–4.0		Vdc
Collector Current — Continuous	I_C	–500		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0	8.0	Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	2.5	20	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 Ambient	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ⁽¹⁾ ($I_C = -1.0$ mAdc, $I_B = 0$)	MPSW55 MPSW56	$V_{(BR)CEO}$	–60 –80	— —	Vdc
Emitter–Base Breakdown Voltage ($I_E = -100$ μ Adc, $I_C = 0$)		$V_{(BR)EBO}$	–4.0	—	Vdc
Collector Cutoff Current ($V_{CE} = -40$ Vdc, $I_B = 0$) ($V_{CE} = -60$ Vdc, $I_B = 0$)	MPSW55 MPSW56	I_{CES}	— —	–0.5 –0.5	μ Adc
Collector Cutoff Current ($V_{CB} = -40$ Vdc, $I_E = 0$) ($V_{CB} = -60$ Vdc, $I_E = 0$)	MPSW55 MPSW56	I_{CBO}	— —	–0.1 –0.1	μ Adc
Emitter Cutoff Current ($V_{EB} = -3.0$ Vdc, $I_C = 0$)		I_{EBO}	—	–0.1	μ Adc

1. Pulse Test: Pulse Width ≤ 300 μ s, Duty Cycle $\leq 2.0\%$.

Preferred devices are Motorola recommended choices for future use and best overall value.

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

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS(1)				
DC Current Gain (I _C = -50 mAdc, V _{CE} = -1.0 Vdc) (I _C = -250 mAdc, V _{CE} = -1.0 Vdc)	h _{FE}	100 50	— —	—
Collector–Emitter Saturation Voltage (I _C = -250 mAdc, I _B = -10 mAdc)	V _{CE(sat)}	—	-0.5	Vdc
Base–Emitter On Voltage (I _C = -250 mAdc, V _{CE} = -5.0 Vdc)	V _{BE(on)}	—	-1.2	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current–Gain — Bandwidth Product (I _C = -250 mAdc, V _{CE} = -5.0 Vdc, f = 20 MHz)	f _T	50	—	MHz
Output Capacitance (V _{CB} = -10 Vdc, f = 1.0 MHz)	C _{obo}	—	15	pF

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

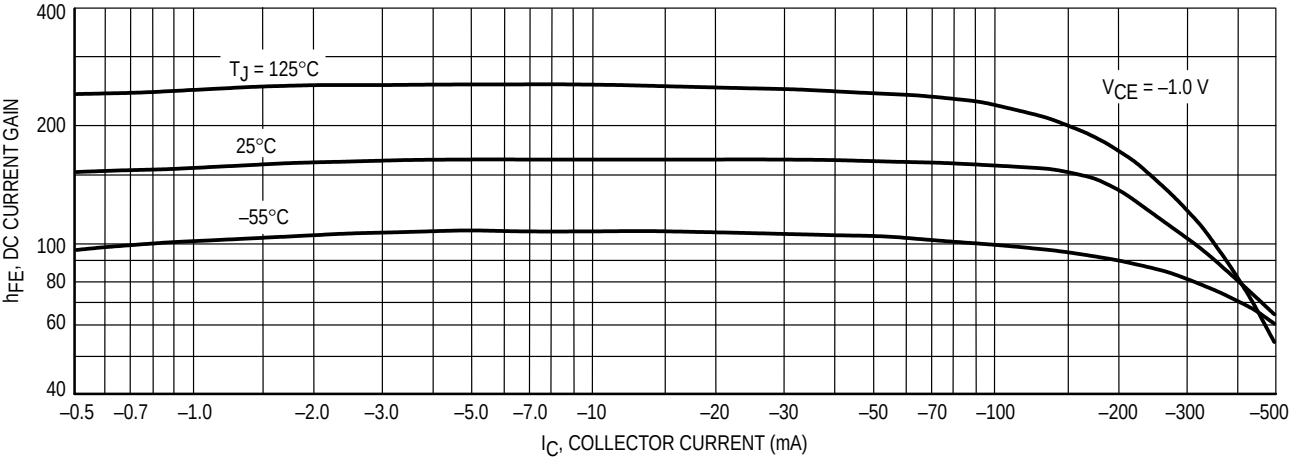


Figure 1. DC Current Gain

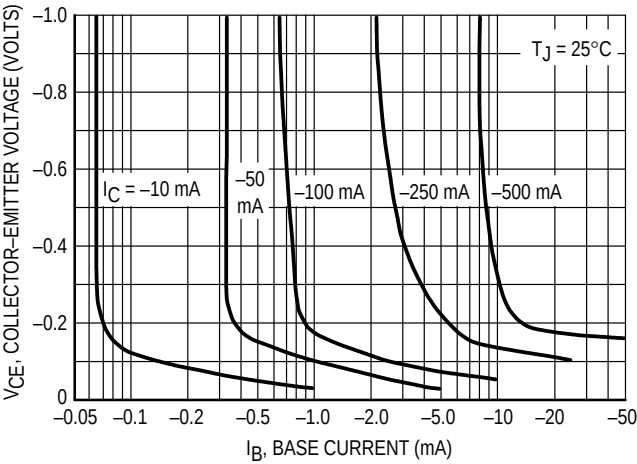


Figure 2. Collector Saturation Region

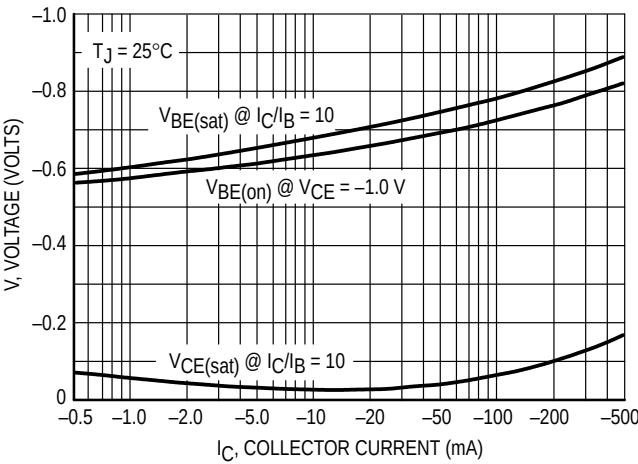


Figure 3. "On" Voltages

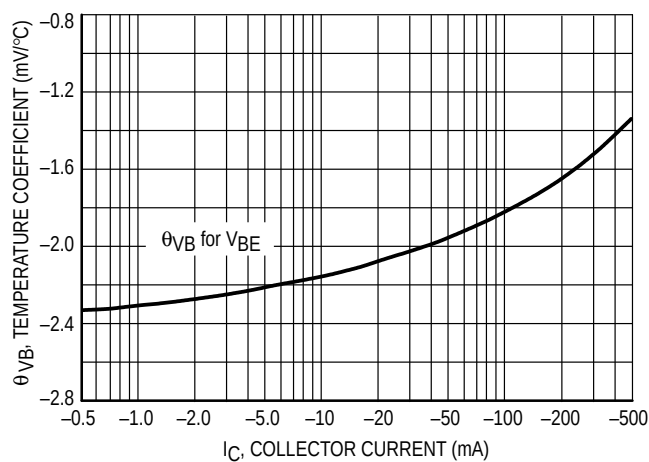


Figure 4. Base-Emitter Temperature Coefficient

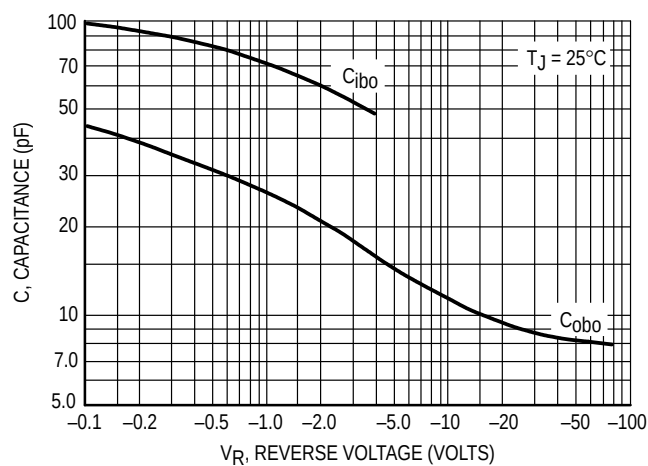


Figure 5. Capacitance

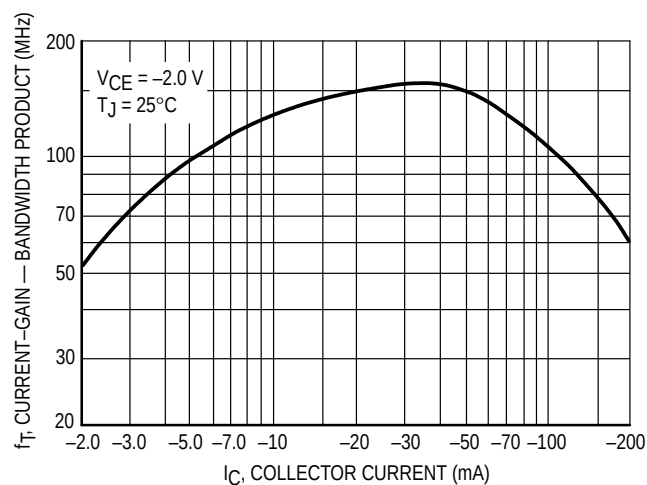


Figure 6. Current-Gain — Bandwidth Product

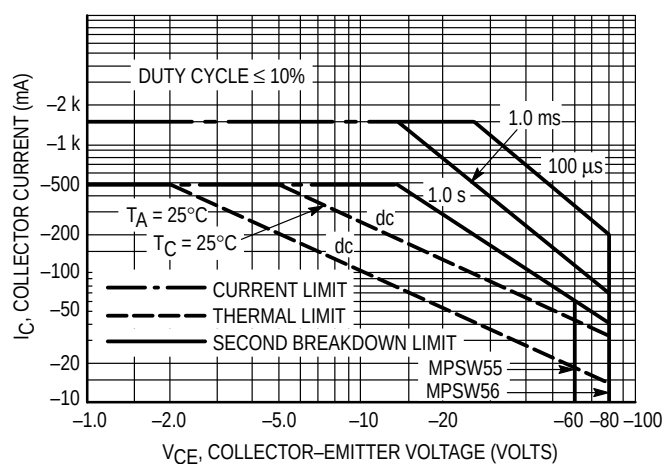
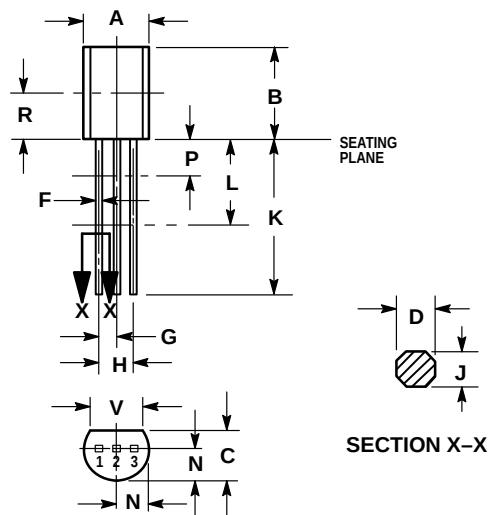


Figure 7. Active Region — Safe Operating Area

PACKAGE DIMENSIONS



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSIONS D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.44	5.21
B	0.290	0.310	7.37	7.87
C	0.125	0.165	3.18	4.19
D	0.018	0.022	0.46	0.56
E	0.016	0.019	0.41	0.48
F	0.045	0.055	1.15	1.39
G	0.095	0.105	2.42	2.66
H	0.018	0.024	0.46	0.61
I	0.500	—	12.70	—
J	0.250	—	6.35	—
K	0.080	0.105	2.04	2.66
L	—	0.100	—	2.54
M	0.135	—	3.43	—
N	0.135	—	3.43	—

STYLE 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

**CASE 029-05
(TO-226AE)
ISSUE AD**

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