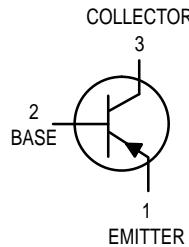


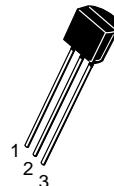
One Watt Amplifier Transistors

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		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ⁽¹⁾ ($I_C = -1.0$ mAdc, $I_B = 0$)	$V_{(BR)CEO}$	-60 -80	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = -100$ µAdc, $I_C = 0$)	$V_{(BR)EBO}$	-4.0	—	Vdc
Collector Cutoff Current ($V_{CE} = -40$ Vdc, $I_B = 0$) ($V_{CE} = -60$ Vdc, $I_B = 0$)	I_{CES}	— —	-0.5 -0.5	µAdc
Collector Cutoff Current ($V_{CB} = -40$ Vdc, $I_E = 0$) ($V_{CB} = -60$ Vdc, $I_E = 0$)	I_{CBO}	— —	-0.1 -0.1	µAdc
Emitter Cutoff Current ($V_{EB} = -3.0$ Vdc, $I_C = 0$)	I_{EBO}	—	-0.1	µAdc

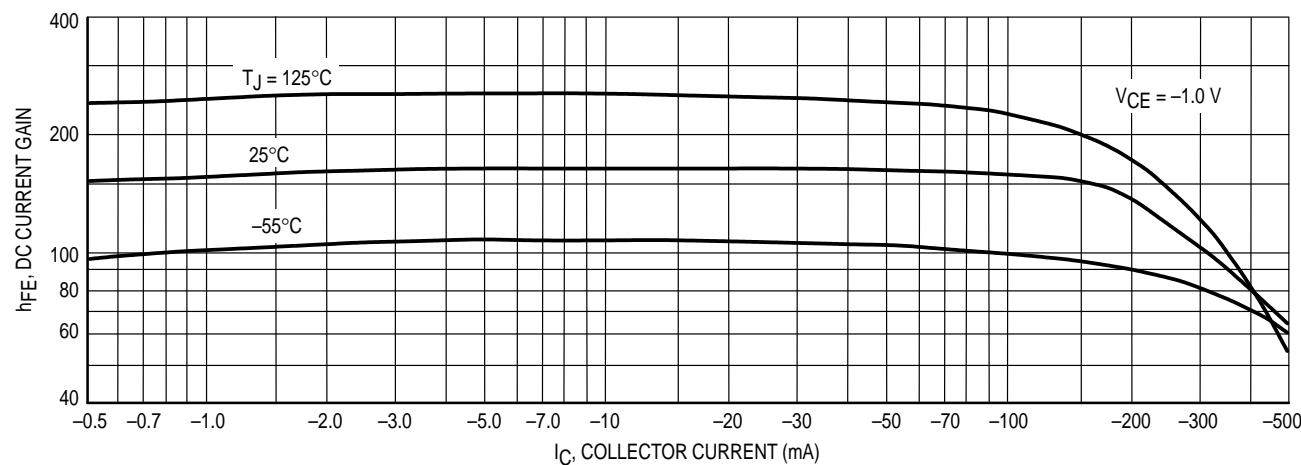
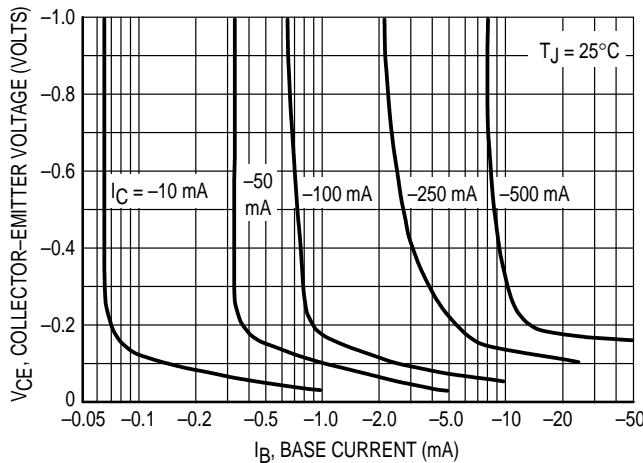
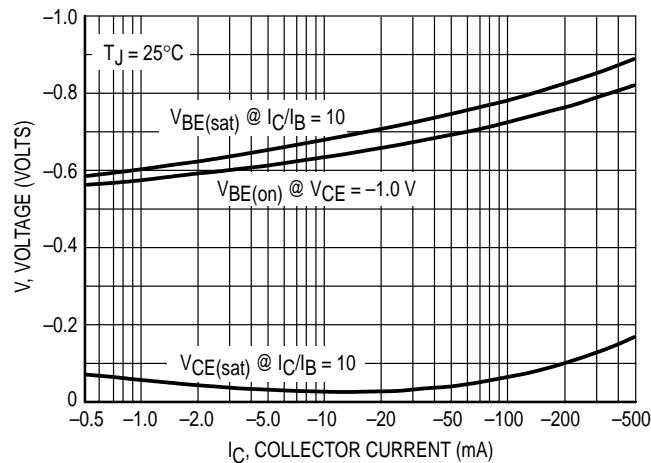
1. Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle $\leq 2.0\%$.

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 mA _{dc} , V _{CE} = -1.0 V _{dc}) (I _C = -250 mA _{dc} , V _{CE} = -1.0 V _{dc})	h _{FE}	100 50	— —	—
Collector-Emitter Saturation Voltage (I _C = -250 mA _{dc} , I _B = -10 mA _{dc})	V _{CE(sat)}	—	-0.5	V _{dc}
Base-Emitter On Voltage (I _C = -250 mA _{dc} , V _{CE} = -5.0 V _{dc})	V _{BE(on)}	—	-1.2	V _{dc}
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I _C = -250 mA _{dc} , V _{CE} = -5.0 V _{dc} , f = 20 MHz)	f _T	50	—	MHz
Output Capacitance (V _{CB} = -10 V _{dc} , f = 1.0 MHz)	C _{obo}	—	15	pF

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


Figure 1. DC Current Gain

Figure 2. Collector Saturation Region

Figure 3. "On" Voltages

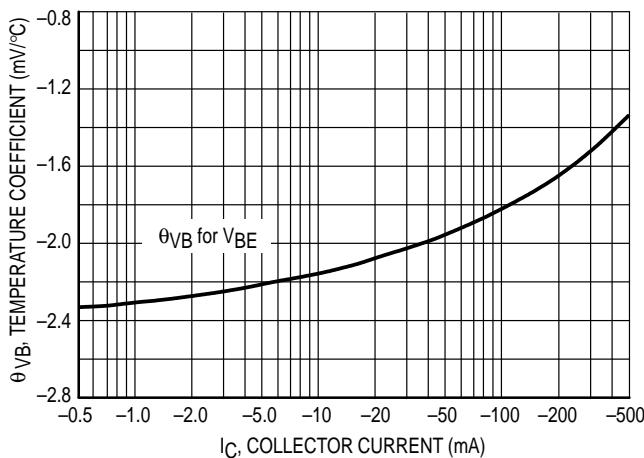


Figure 4. Base-Emitter Temperature Coefficient

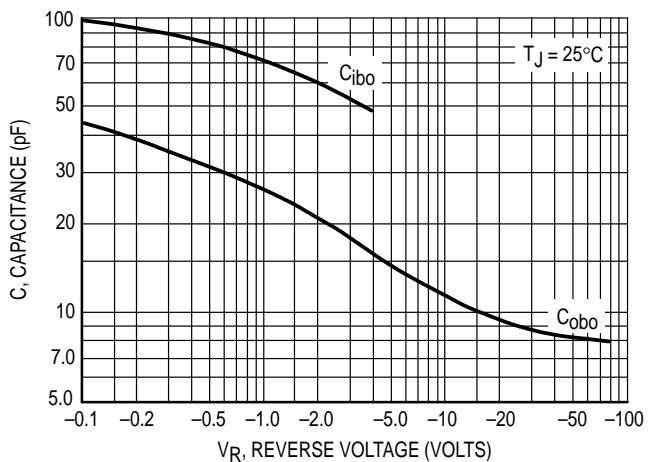


Figure 5. Capacitance

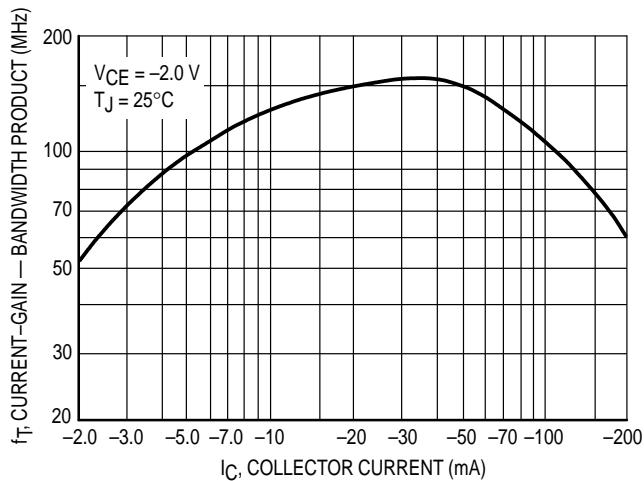


Figure 6. Current-Gain — Bandwidth Product

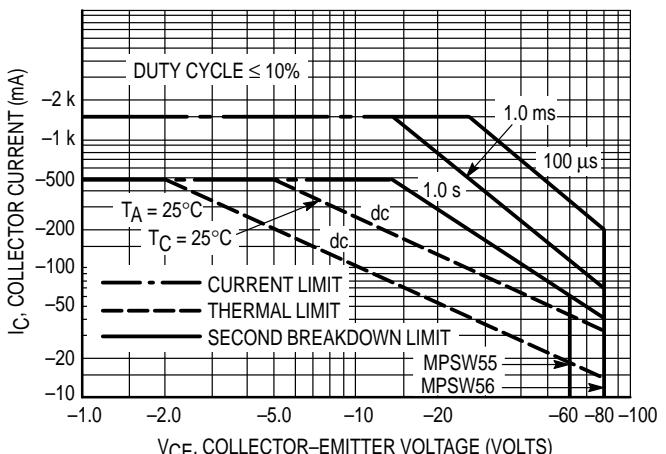
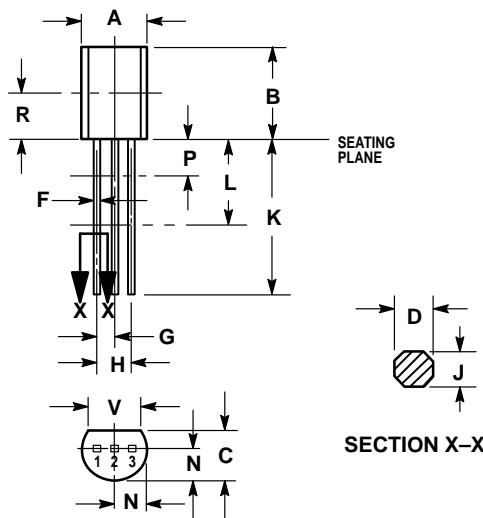


Figure 7. Active Region — Safe Operating Area

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
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.018	0.024	0.46	0.61
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.135	—	3.43	—
V	0.135	—	3.43	—

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

STYLE 1:
PIN 1. Emitter
2. Base
3. Collector

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How to reach us:

USA/EUROPE: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, Toshikatsu Otsuki,
6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-3521-8315

MFAX: RMFAX0@email.sps.mot.com – TOUCHTONE (602) 244-6609
INTERNET: <http://Design-NET.com>

HONG KONG: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

