

MPSW55, MPSW56

One Watt Amplifier Transistors

PNP Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Collector – Emitter Voltage	MPSW55 MPSW56	V_{CEO}	-60 -80	Vdc
Collector – Base Voltage	MPSW55 MPSW56	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	W mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C		P_D	2.5 20	W 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	$^\circ\text{C/W}$

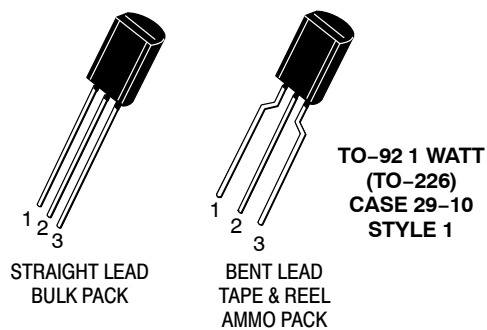
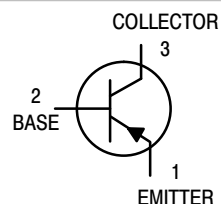
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

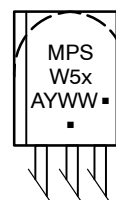


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MARKING DIAGRAM



- x = 5 or 6
- A = Assembly Location
- Y = Year
- WW = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MPSW55G	TO-92 (Pb-Free)	5000 Units/Bulk
MPSW55RLRAG	TO-92 (Pb-Free)	2000/Tape & Reel
MPSW56RLRP	TO-92	2000/Ammo Pack
MPSW56RLRPG	TO-92 (Pb-Free)	2000/Ammo Pack

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

MPSW55, MPSW56

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector – Emitter Breakdown Voltage (Note 1) ($I_C = -1.0\text{ mA}$, $I_B = 0$)	MPSW55 MPSW56	$V_{(BR)CEO}$	-60 -80	– –	Vdc
Emitter – Base Breakdown Voltage ($I_E = -100\text{ }\mu\text{A}$, $I_C = 0$)		$V_{(BR)EBO}$	-4.0	–	Vdc
Collector Cutoff Current ($V_{CE} = -40\text{ Vdc}$, $I_B = 0$) ($V_{CE} = -60\text{ Vdc}$, $I_B = 0$)	MPSW55 MPSW56	I_{CES}	– –	-0.5 -0.5	μA
Collector Cutoff Current ($V_{CB} = -40\text{ Vdc}$, $I_E = 0$) ($V_{CB} = -60\text{ Vdc}$, $I_E = 0$)	MPSW55 MPSW56	I_{CBO}	– –	-0.1 -0.1	μA
Emitter Cutoff Current ($V_{EB} = -3.0\text{ Vdc}$, $I_C = 0$)		I_{EBO}	–	-0.1	μA
ON CHARACTERISTICS⁽¹⁾					
DC Current Gain ($I_C = -50\text{ mA}$, $V_{CE} = -1.0\text{ Vdc}$) ($I_C = -250\text{ mA}$, $V_{CE} = -1.0\text{ Vdc}$)		h_{FE}	100 50	– –	–
Collector – Emitter Saturation Voltage ($I_C = -250\text{ mA}$, $I_B = -10\text{ mA}$)		$V_{CE(sat)}$	–	-0.5	Vdc
Base – Emitter On Voltage ($I_C = -250\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$)		$V_{BE(on)}$	–	-1.2	Vdc
SMALL – SIGNAL CHARACTERISTICS					
Current – Gain — Bandwidth Product ($I_C = -250\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 20\text{ MHz}$)		f_T	50	–	MHz
Output Capacitance ($V_{CB} = -10\text{ Vdc}$, $f = 1.0\text{ MHz}$)		C_{obo}	–	15	pF

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

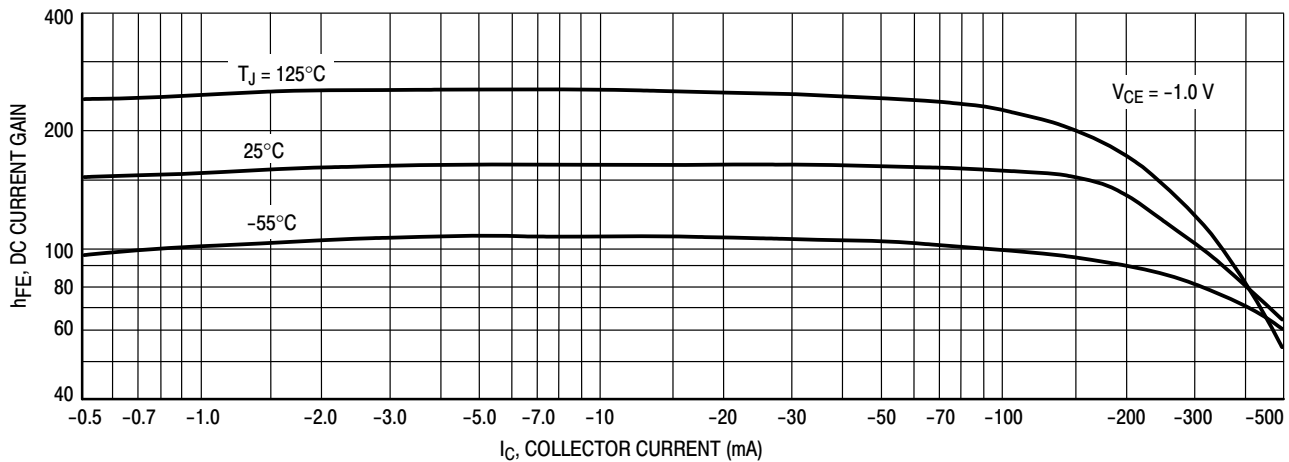


Figure 1. DC Current Gain

MPSW55, MPSW56

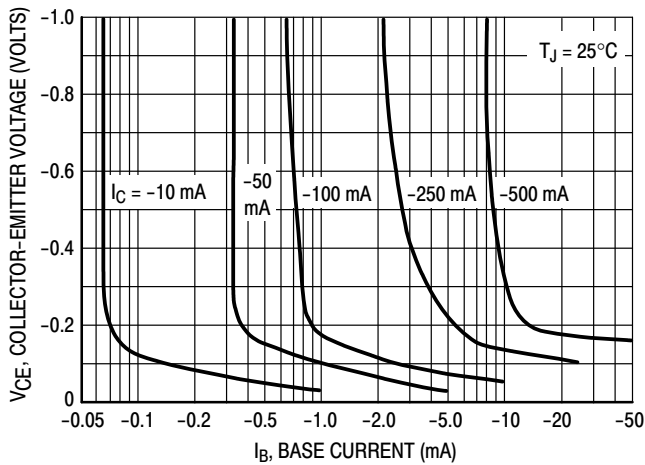


Figure 2. Collector Saturation Region

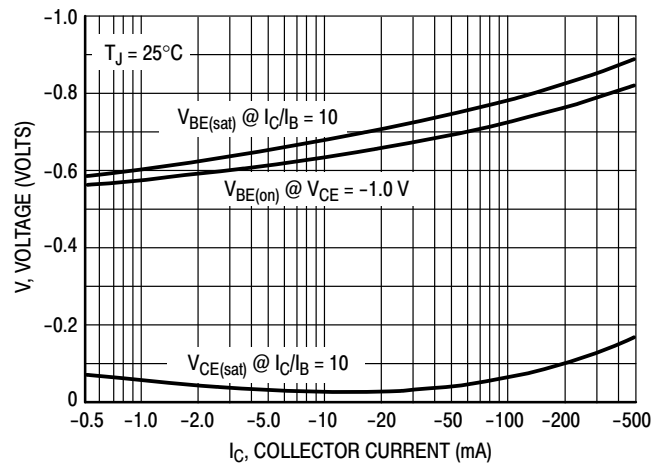


Figure 3. "On" Voltages

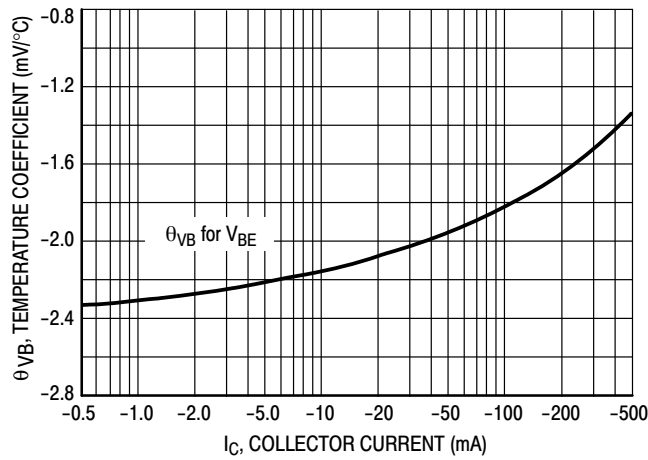


Figure 4. Base-Emitter Temperature Coefficient

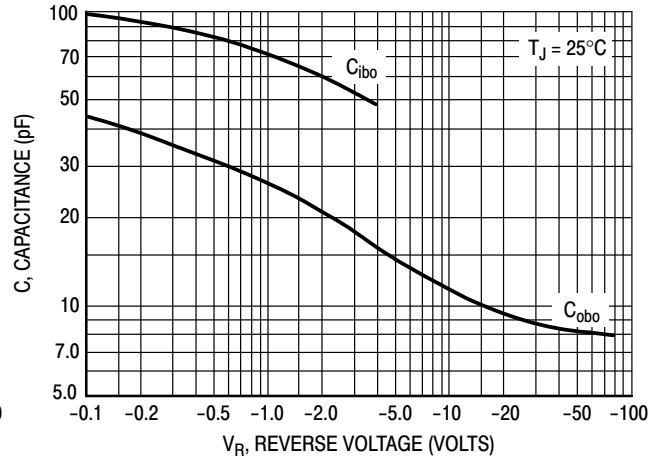


Figure 5. Capacitance

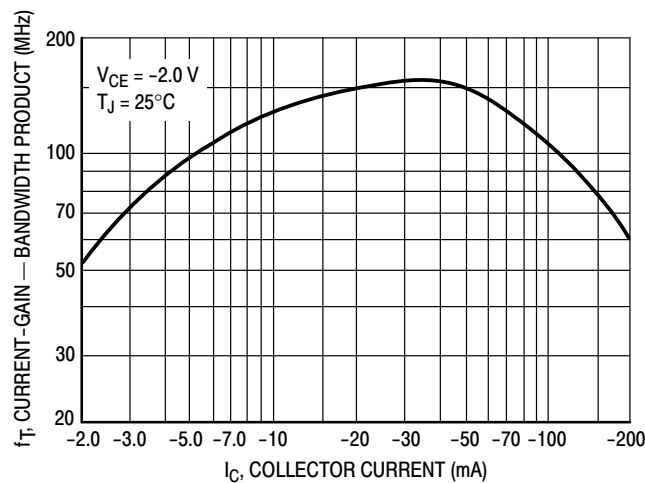


Figure 6. Current-Gain — Bandwidth Product

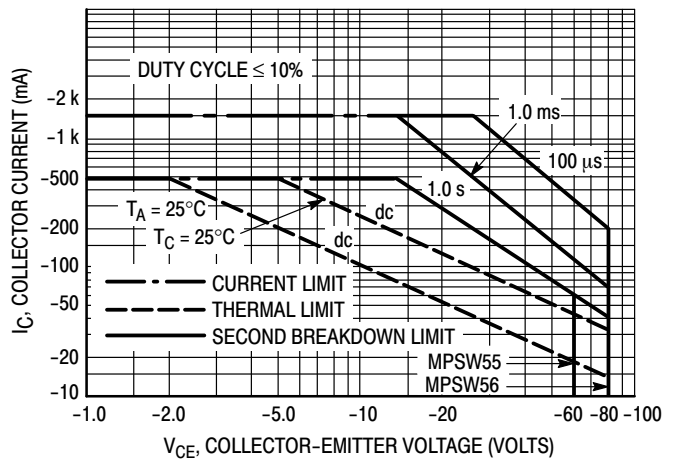


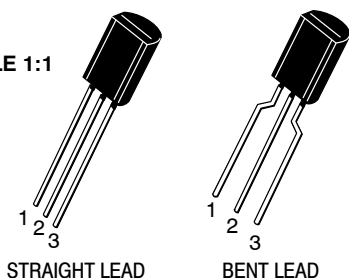
Figure 7. Active Region — Safe Operating Area

MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

ON Semiconductor®

ON

SCALE 1:1

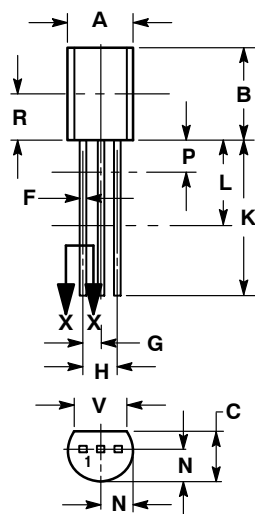


STRAIGHT LEAD

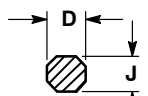
BENT LEAD

TO-92 (TO-226) 1 WATT
CASE 29-10
ISSUE A

DATE 08 MAY 2012



STRAIGHT LEAD

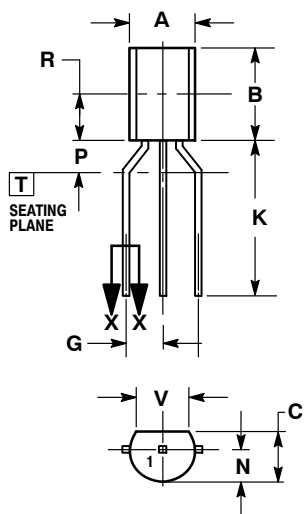


SECTION X-X

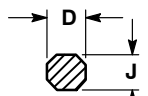
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN DIMENSIONS P AND L. DIMENSIONS D AND J APPLY BETWEEN DIMENSIONS L AND K MINIMUM. THE LEAD DIMENSIONS ARE UNCONTROLLED IN DIMENSION 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	0.021	0.46	0.53
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	---



BENT LEAD



SECTION X-X

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
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G	0.094	0.102	2.40	2.80
J	0.018	0.024	0.46	0.61
K	0.500	---	12.70	---
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STYLES ON PAGE 2

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TO-92 (TO-226) 1 WATT
CASE 29-10
ISSUE A


DATE 08 MAY 2012

STYLE 1: PIN 1. EMITTER 2. BASE 3. COLLECTOR	STYLE 2: PIN 1. BASE 2. EMITTER 3. COLLECTOR	STYLE 3: PIN 1. ANODE 2. ANODE 3. CATHODE	STYLE 4: PIN 1. CATHODE 2. CATHODE 3. ANODE	STYLE 5: PIN 1. DRAIN 2. SOURCE 3. GATE
STYLE 6: PIN 1. GATE 2. SOURCE & SUBSTRATE 3. DRAIN	STYLE 7: PIN 1. SOURCE 2. DRAIN 3. GATE	STYLE 8: PIN 1. DRAIN 2. GATE 3. SOURCE & SUBSTRATE	STYLE 9: PIN 1. BASE 1 2. EMITTER 3. BASE 2	STYLE 10: PIN 1. CATHODE 2. GATE 3. ANODE
STYLE 11: PIN 1. ANODE 2. CATHODE & ANODE 3. CATHODE	STYLE 12: PIN 1. MAIN TERMINAL 1 2. GATE 3. MAIN TERMINAL 2	STYLE 13: PIN 1. ANODE 1 2. GATE 3. CATHODE 2	STYLE 14: PIN 1. EMITTER 2. COLLECTOR 3. BASE	STYLE 15: PIN 1. ANODE 1 2. CATHODE 3. ANODE 2
STYLE 16: PIN 1. ANODE 2. GATE 3. CATHODE	STYLE 17: PIN 1. COLLECTOR 2. BASE 3. EMITTER	STYLE 18: PIN 1. ANODE 2. CATHODE 3. NOT CONNECTED	STYLE 19: PIN 1. GATE 2. ANODE 3. CATHODE	STYLE 20: PIN 1. NOT CONNECTED 2. CATHODE 3. ANODE
STYLE 21: PIN 1. COLLECTOR 2. EMITTER 3. BASE	STYLE 22: PIN 1. SOURCE 2. GATE 3. DRAIN	STYLE 23: PIN 1. GATE 2. SOURCE 3. DRAIN	STYLE 24: PIN 1. EMITTER 2. COLLECTOR/ANODE 3. CATHODE	STYLE 25: PIN 1. MT 1 2. GATE 3. MT 2
STYLE 26: PIN 1. V _{CC} 2. GROUND 2 3. OUTPUT	STYLE 27: PIN 1. MT 2. SUBSTRATE 3. MT	STYLE 28: PIN 1. CATHODE 2. ANODE 3. GATE	STYLE 29: PIN 1. NOT CONNECTED 2. ANODE 3. CATHODE	STYLE 30: PIN 1. DRAIN 2. GATE 3. SOURCE
STYLE 31: PIN 1. GATE 2. DRAIN 3. SOURCE	STYLE 32: PIN 1. BASE 2. COLLECTOR 3. EMITTER	STYLE 33: PIN 1. RETURN 2. INPUT 3. OUTPUT	STYLE 34: PIN 1. INPUT 2. GROUND 3. LOGIC	STYLE 35: PIN 1. GATE 2. COLLECTOR 3. EMITTER

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