

MPSW55, MPSW56

One Watt Amplifier Transistors

PNP Silicon



ON Semiconductor®

<http://onsemi.com>

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

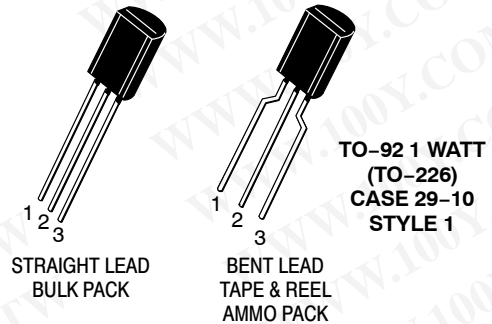
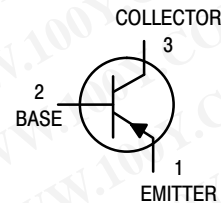
Rating	Symbol	Value	Unit	
Collector - Emitter Voltage	MPSW55 MPSW56	V _{CEO}	-60 -80	Vdc
Collector - Base Voltage	MPSW55 MPSW56	V _{CBO}	-60 -80	Vdc
Emitter - Base Voltage		V _{EBO}	-4.0	Vdc
Collector Current - Continuous		I _C	-500	mAdc
Total Device Dissipation @ T _A = 25°C Derate above 25°C		P _D	1.0 8.0	W mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C		P _D	2.5 20	W mW/°C
Operating and Storage Junction Temperature Range		T _J , T _{stg}	-55 to +150	°C

THERMAL CHARACTERISTICS

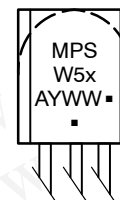
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	R _{θJA}	125	°C/W
Thermal Resistance, Junction-to-Case	R _{θJC}	50	°C/W

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.

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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.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector - Emitter Breakdown Voltage (Note 1) ($I_C = -1.0\text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	-60 -80	-	Vdc
Emitter - Base Breakdown Voltage ($I_E = -100\ \mu\text{A}$, $I_C = 0$)	$V_{(BR)EBO}$	-4.0	-	Vdc
Collector Cutoff Current ($V_{CE} = -40\text{ Vdc}$, $I_B = 0$) ($V_{CE} = -60\text{ Vdc}$, $I_B = 0$)	I_{CES}	-	-0.5 -0.5	μA
Collector Cutoff Current ($V_{CB} = -40\text{ Vdc}$, $I_E = 0$) ($V_{CB} = -60\text{ Vdc}$, $I_E = 0$)	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 $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

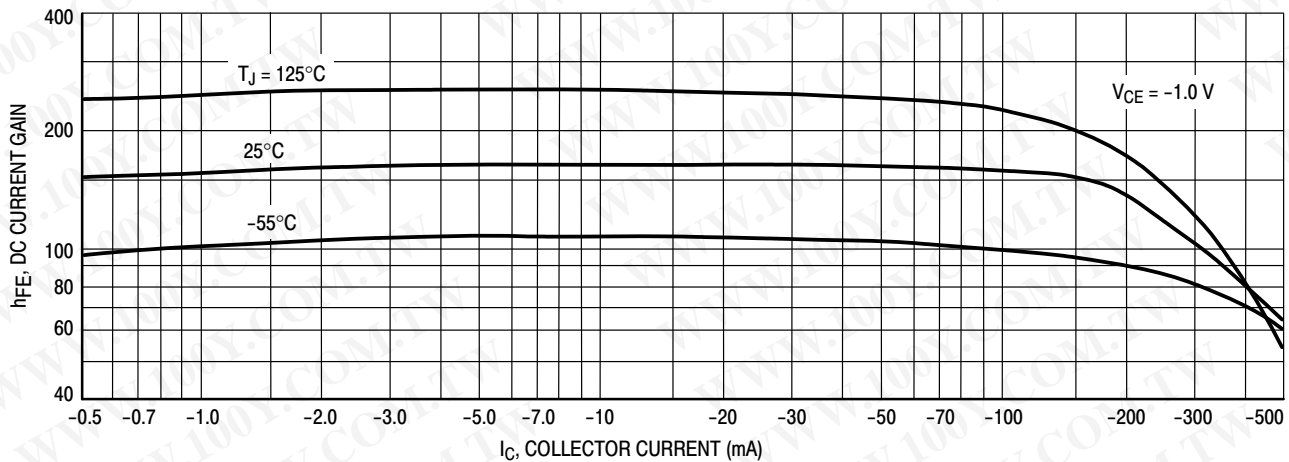


Figure 1. DC Current Gain

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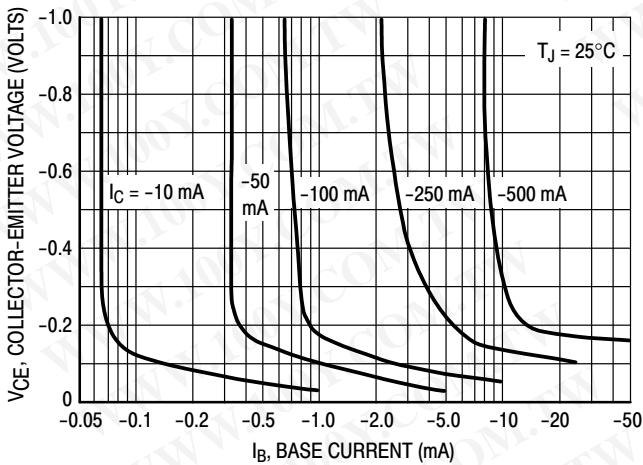


Figure 2. Collector Saturation Region

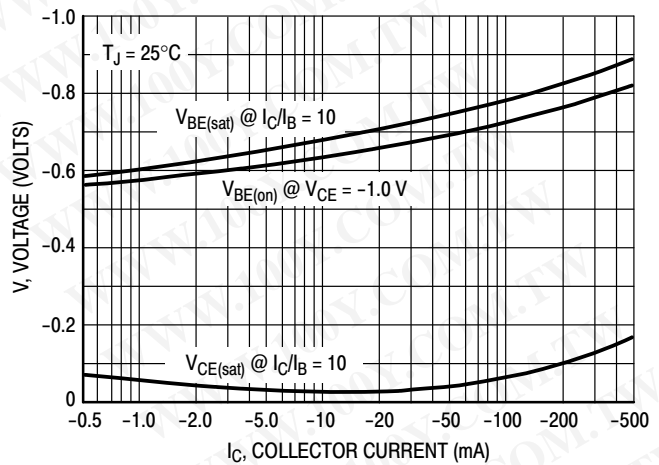


Figure 3. "On" Voltages

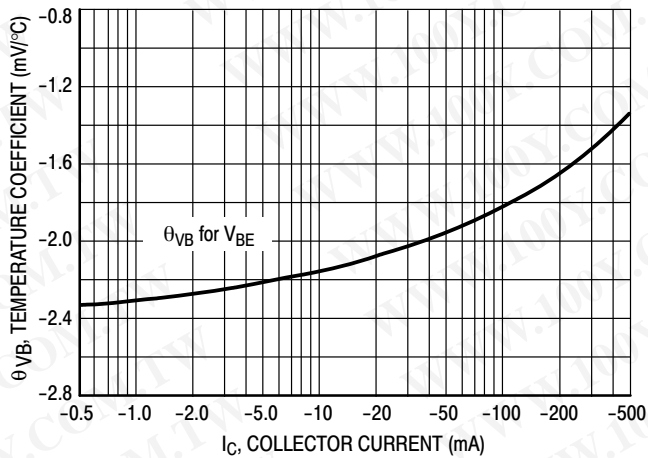


Figure 4. Base-Emitter Temperature Coefficient

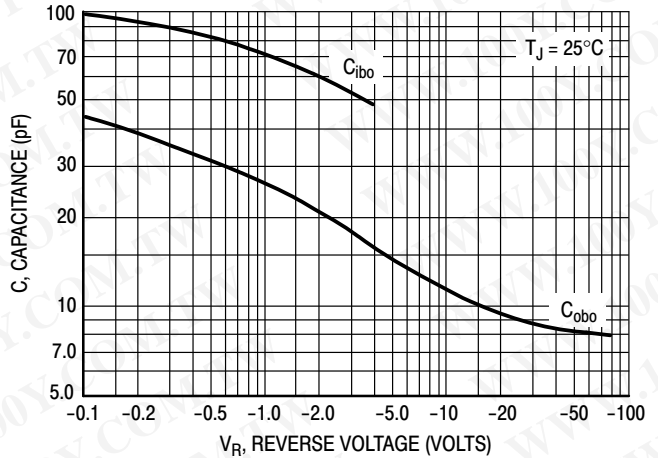


Figure 5. Capacitance

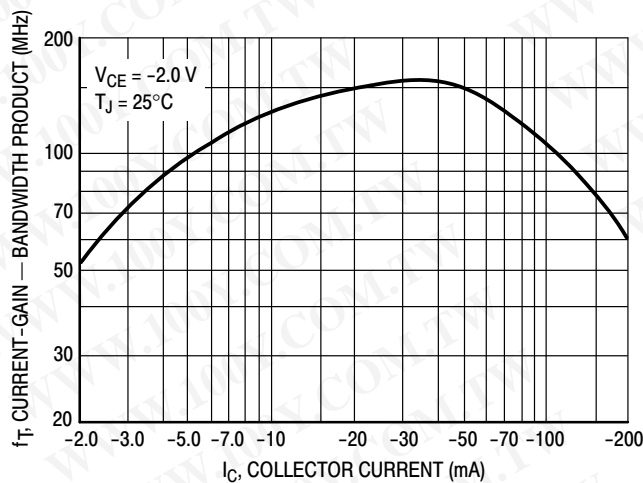


Figure 6. Current-Gain — Bandwidth Product

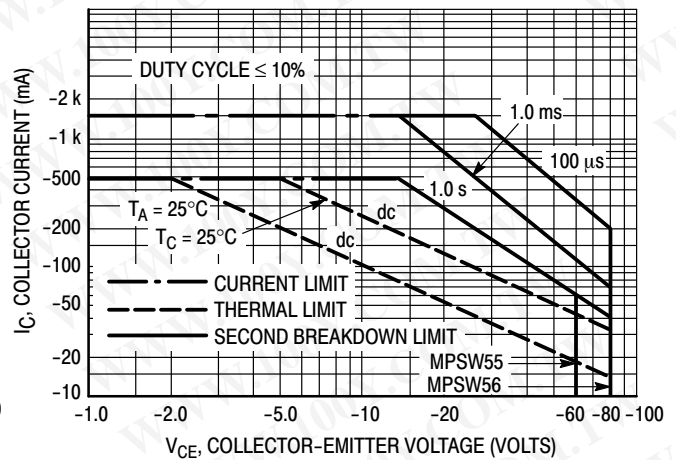


Figure 7. Active Region — Safe Operating Area

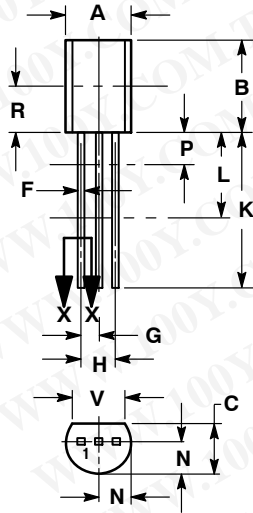
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PACKAGE DIMENSIONS

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

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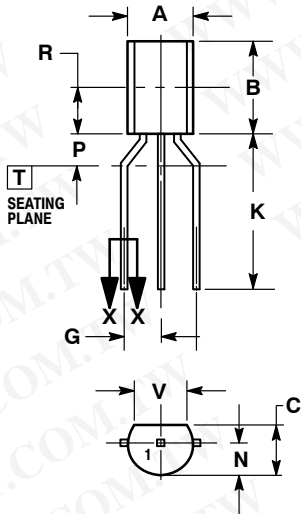
STRAIGHT LEAD
BULK PACK

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	---

- STYLE 1:
 PIN 1. EMITTER
 2. BASE
 3. COLLECTOR



BENT LEAD
TAPE & REEL
AMMO PACK

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
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3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
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	MIN	MAX	MIN	MAX
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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
G	0.094	0.102	2.40	2.80
J	0.018	0.024	0.46	0.61
K	0.500	---	12.70	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.135	---	3.43	---
V	0.135	---	3.43	---

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