

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	$^\circ\text{C/W}$

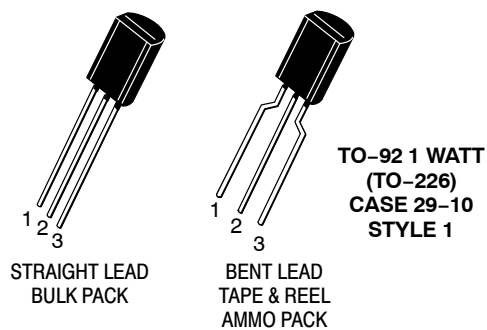
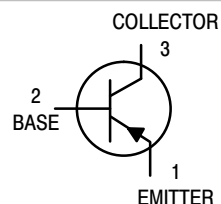
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

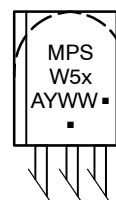


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MARKING DIAGRAM



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.

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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) ($I_C = -1.0\text{ mA}$, $I_B = 0$)	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 $\leq 2.0\%$.

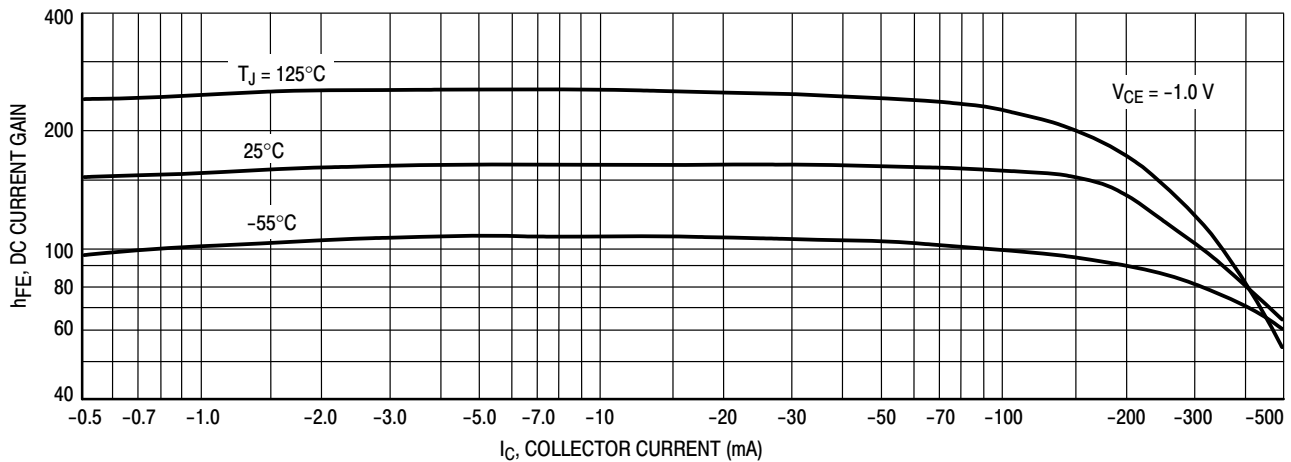


Figure 1. DC Current Gain

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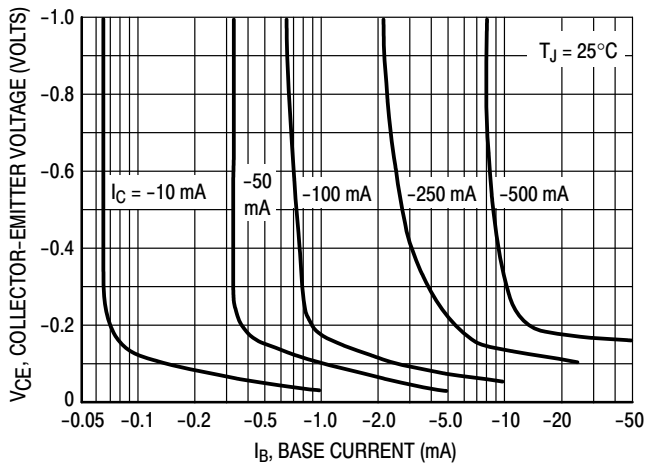


Figure 2. Collector Saturation Region

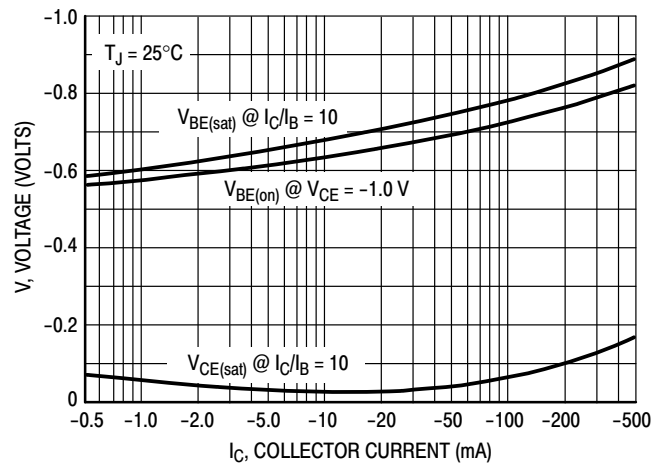


Figure 3. "On" Voltages

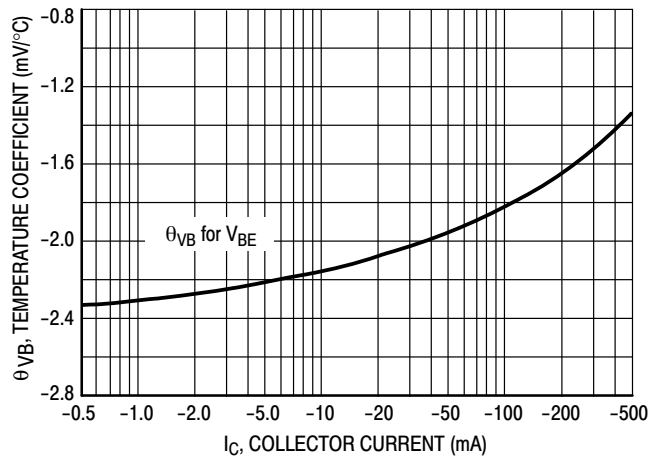


Figure 4. Base-Emitter Temperature Coefficient

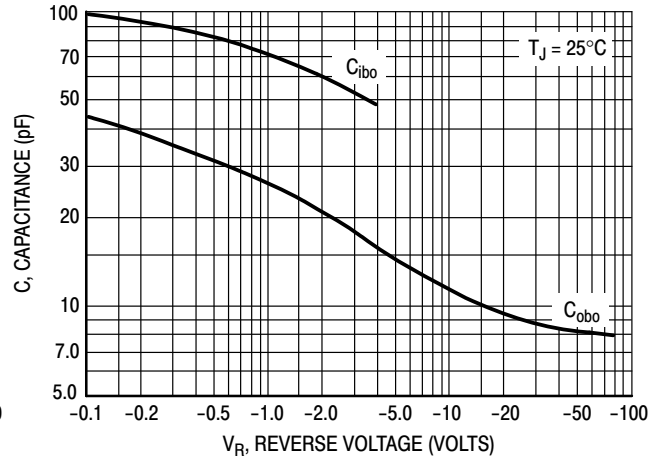


Figure 5. Capacitance

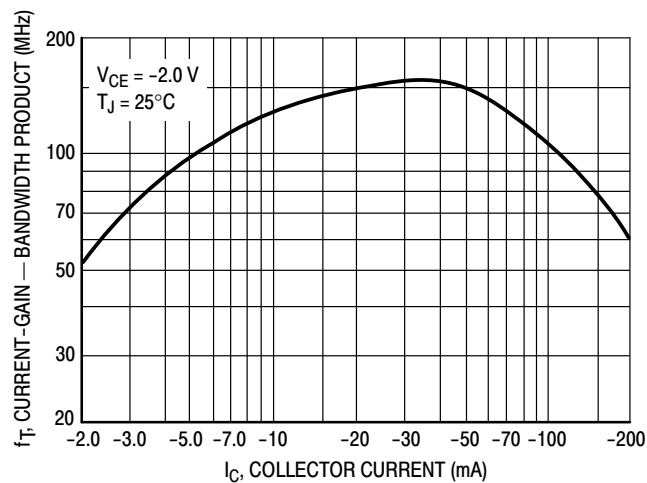


Figure 6. Current-Gain — Bandwidth Product

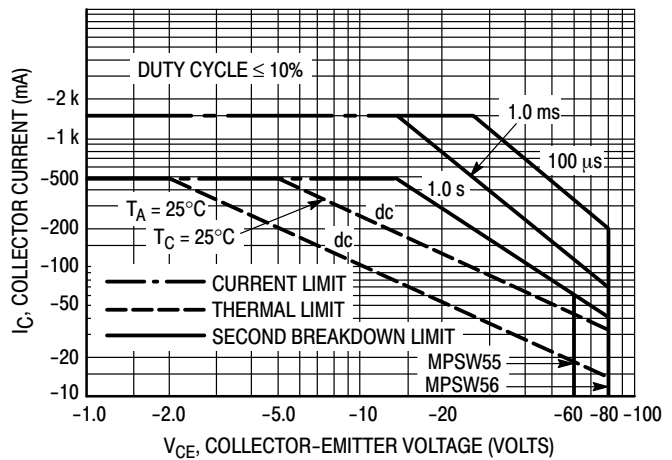
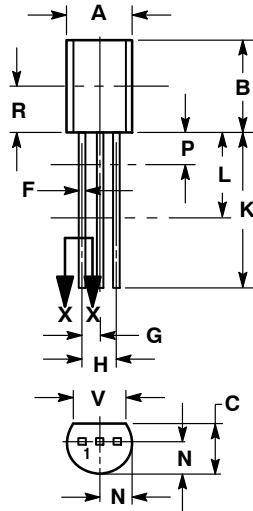


Figure 7. Active Region — Safe Operating Area

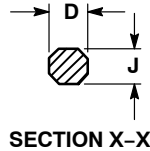
MPSW55, MPSW56

PACKAGE DIMENSIONS

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



STRAIGHT LEAD
BULK PACK

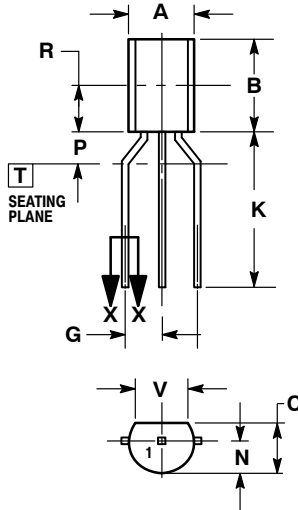


NOTES:

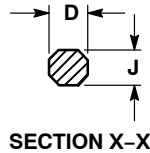
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2. CONTROLLING DIMENSION: INCHES.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN DIMENSIONS P AND L. DIMENSIONS D AND J APPLY BETWEEN DIMENSIONS L AND K MINIMUM. THE LEAD DIMENSIONS ARE UNCONTROLLED IN DIMENSION 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:

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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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