

One Watt Amplifier Transistors

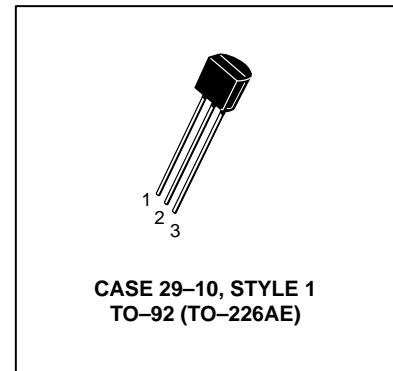
PNP Silicon

MPSW55
MPSW56*

*ON Semiconductor Preferred Device

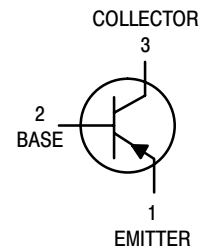
MAXIMUM RATINGS

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/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	2.5	20	Watts 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	$R_{\theta JA}$	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 ($I_E = -100$ 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, $I_B = 0$)	I_{CES}	—	-0.5 -0.5	μ Adc
Collector Cutoff Current ($V_{CB} = -40$ Vdc, $I_E = 0$) ($V_{CB} = -60$ Vdc, $I_E = 0$)	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 ON Semiconductor recommended choices for future use and best overall value.

MPSW55 MPSW56

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

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS⁽¹⁾				
DC Current Gain ($I_C = -50\text{ mAdc}$, $V_{CE} = -1.0\text{ Vdc}$) ($I_C = -250\text{ mAdc}$, $V_{CE} = -1.0\text{ Vdc}$)	h_{FE}	100 50	— —	—
Collector–Emitter Saturation Voltage ($I_C = -250\text{ mAdc}$, $I_B = -10\text{ mAdc}$)	$V_{CE(sat)}$	—	-0.5	Vdc
Base–Emitter On Voltage ($I_C = -250\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$)	$V_{BE(on)}$	—	-1.2	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current–Gain — Bandwidth Product ($I_C = -250\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 20\text{ MHz}$)	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 $\leq 2.0\%$.

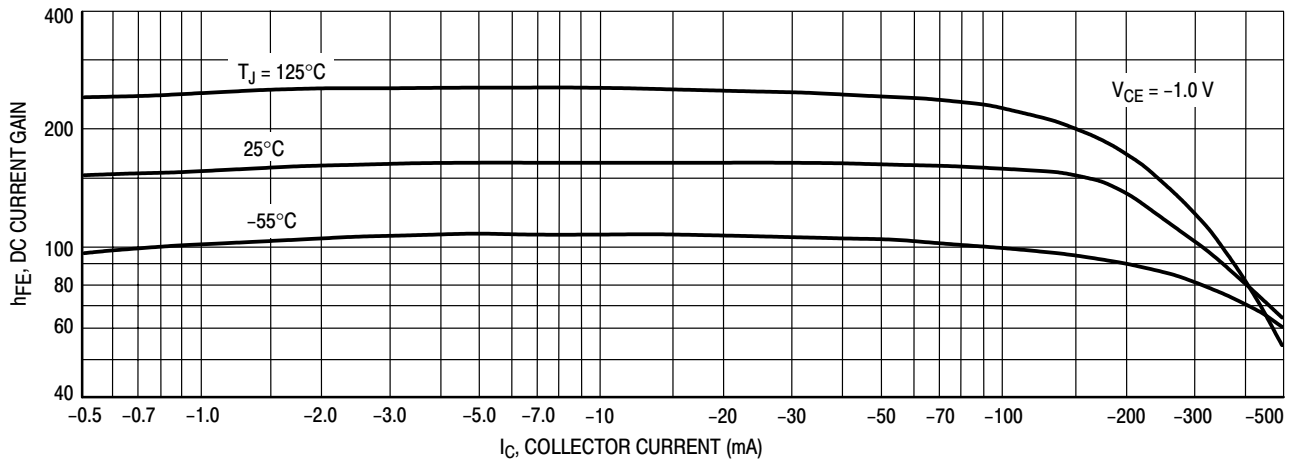


Figure 1. DC Current Gain

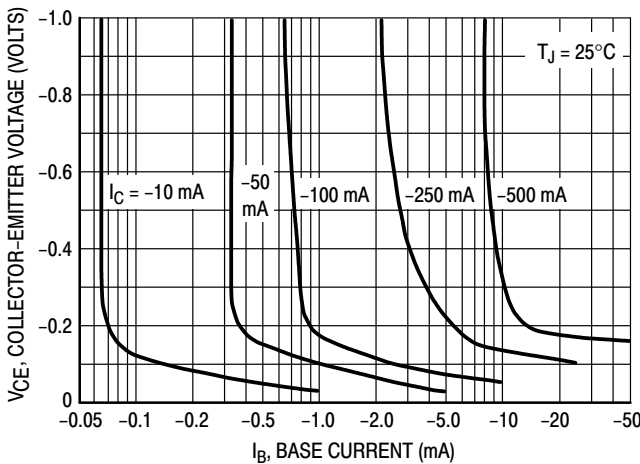


Figure 2. Collector Saturation Region

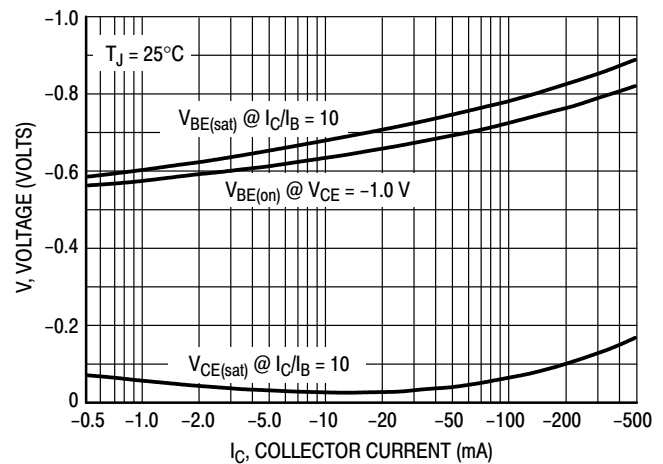


Figure 3. "On" Voltages

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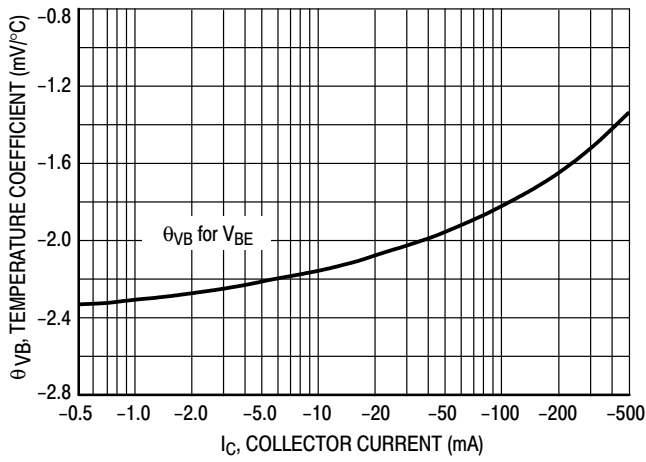


Figure 4. Base-Emitter Temperature Coefficient

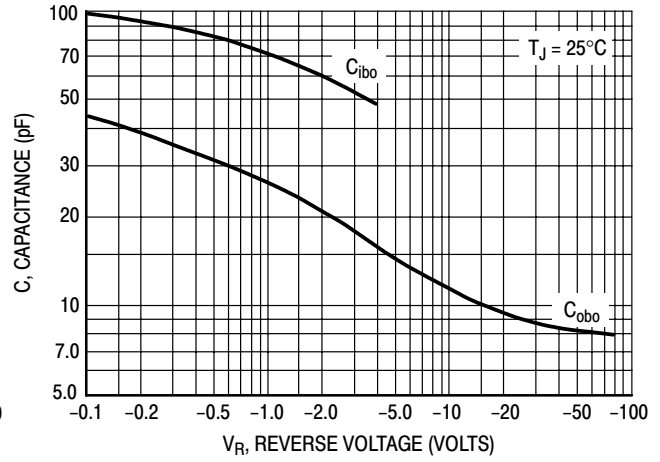


Figure 5. Capacitance

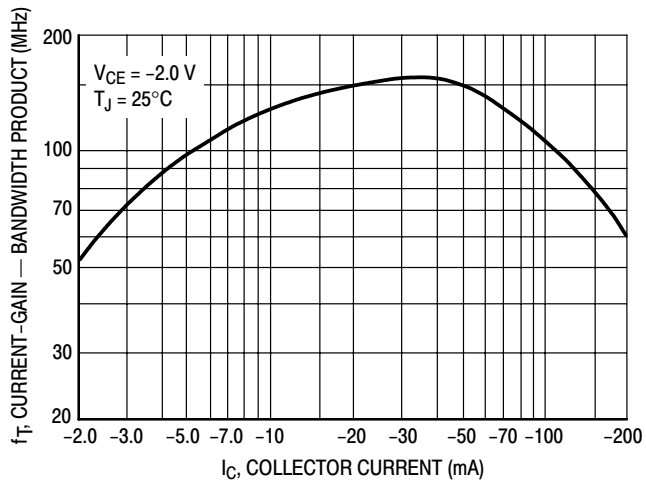


Figure 6. Current-Gain — Bandwidth Product

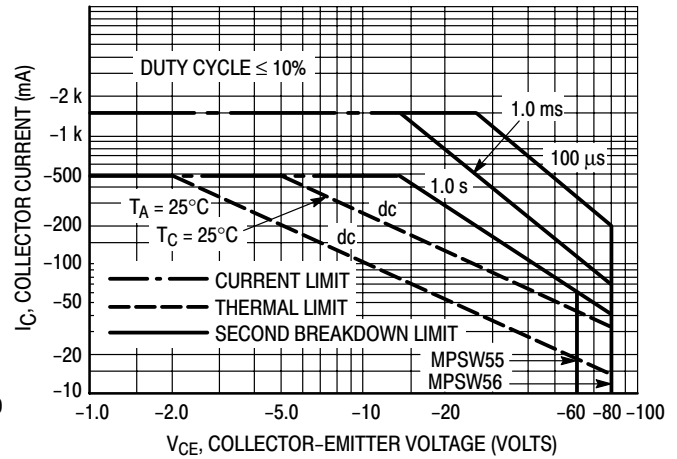
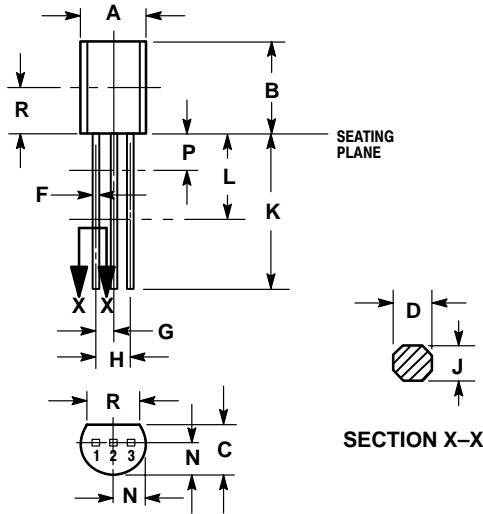


Figure 7. Active Region — Safe Operating Area

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PACKAGE DIMENSIONS

TO-92 (TO-226) CASE 29-10 ISSUE AL



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	0.021	0.457	0.533
F	0.016	0.019	0.407	0.482
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	---

STYLE 1:

1. EMITTER
2. BASE
3. COLLECTOR

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JAPAN: ON Semiconductor, Japan Customer Focus Center

4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan 141-0031
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