

One Watt Amplifier Transistors

PNP Silicon

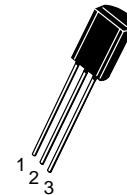
MPSW55

MPSW56

MPSW56 is a Preferred Device

MAXIMUM RATINGS

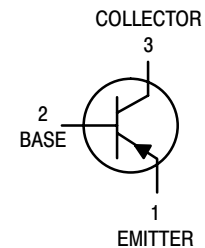
Rating	Symbol	MPSW55	MPSW56	Unit
Collector–Emitter Voltage	V_{CEO}	-60	-80	Vdc
Collector–Base Voltage	V_{CBO}	-60	-80	Vdc
Emitter–Base Voltage	V_{EBO}	-4.0		Vdc
Collector Current — Continuous	I_C	-500		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0		Watt
		8.0		mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	2.5		Watts
		20		mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		$^\circ\text{C}$



CASE 29-10, STYLE 1
TO-92 (TO-226AE)

THERMAL CHARACTERISTICS

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



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	—	Vdc
		-80	—	
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	μAdc
		—	-0.5	
Collector Cutoff Current ($V_{CB} = -40$ Vdc, $I_E = 0$) ($V_{CB} = -60$ Vdc, $I_E = 0$)	I_{CBO}	—	-0.1	μAdc
		—	-0.1	
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 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 $\leq 2.0\%$.

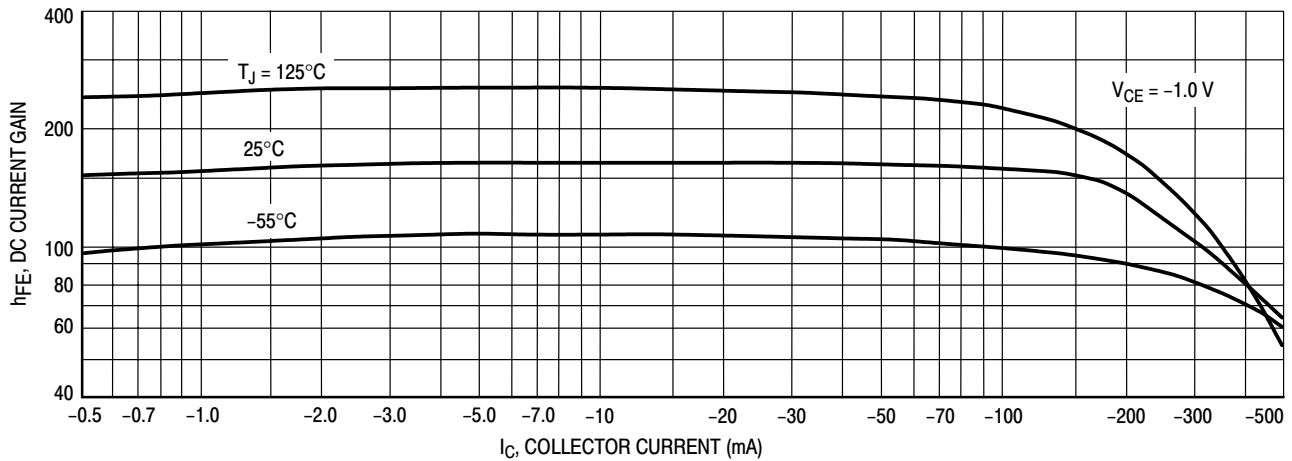


Figure 1. DC Current Gain

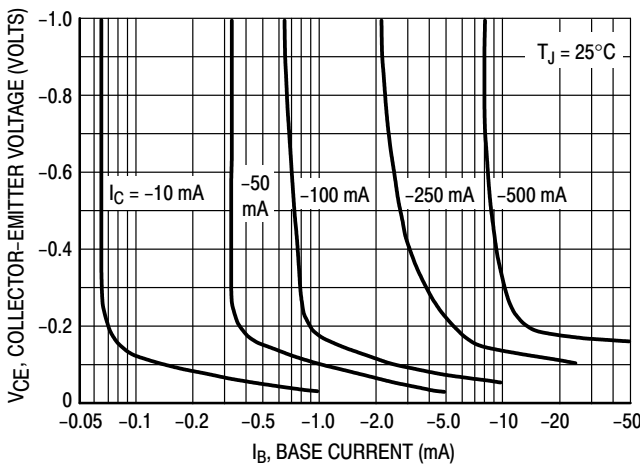


Figure 2. Collector Saturation Region

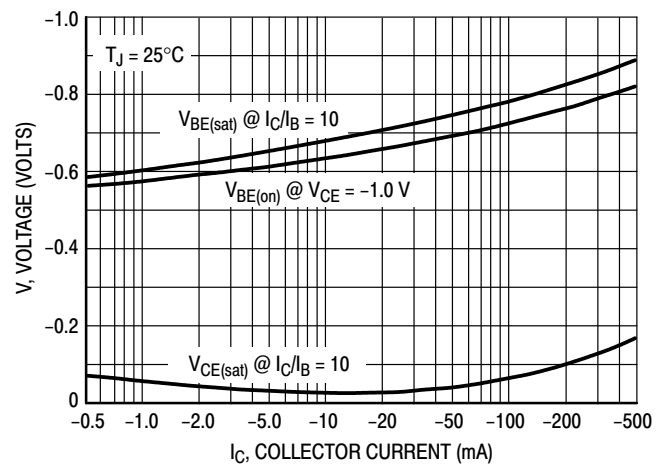


Figure 3. "On" Voltages

MPSW55 MPSW56

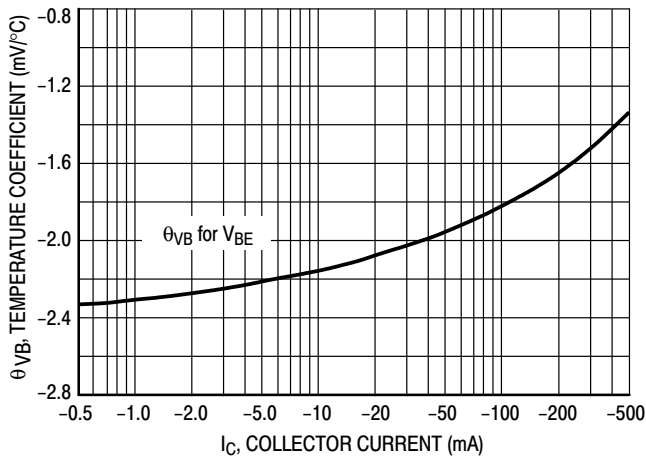


Figure 4. Base-Emitter Temperature Coefficient

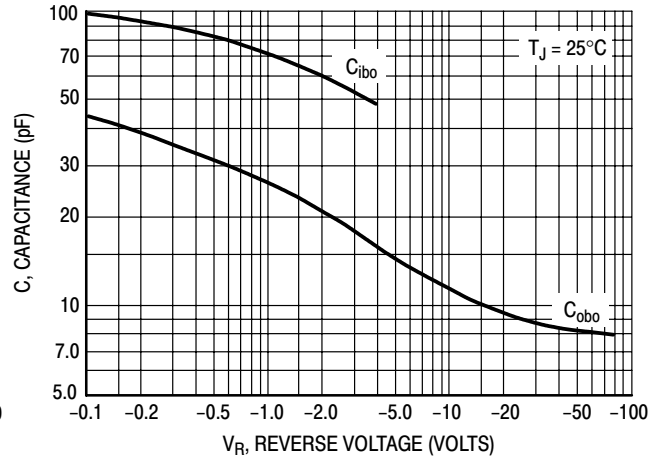


Figure 5. Capacitance

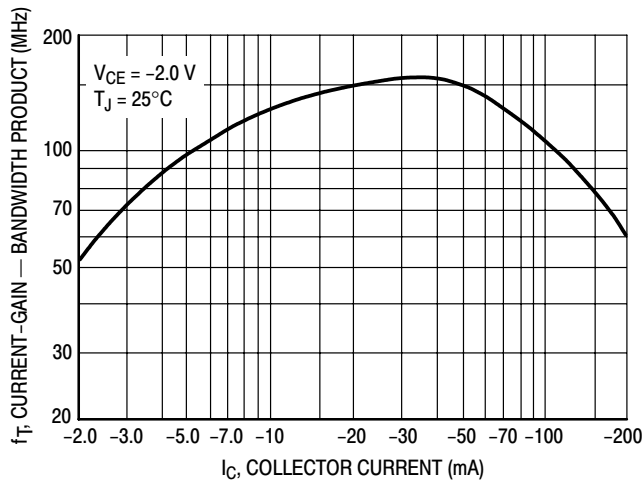


Figure 6. Current-Gain — Bandwidth Product

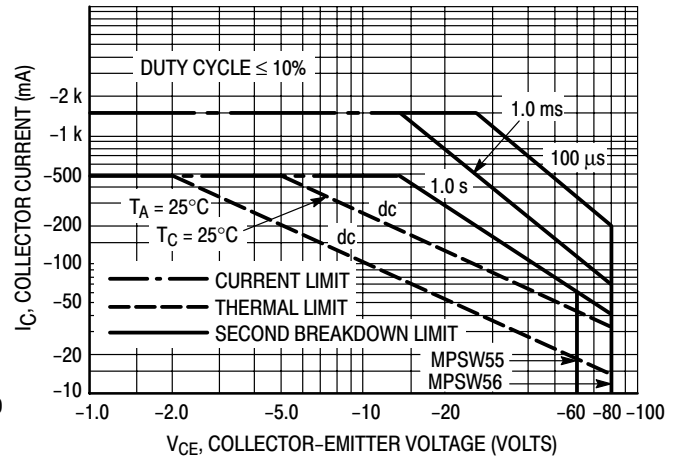


Figure 7. Active Region — Safe Operating Area