

MAXIMUM RATINGS

Rating	Symbol	MPSW42	MPSW43	Unit
Collector-Emitter Voltage	V_{CEO}	300	200	Vdc
Collector-Base Voltage	V_{CBO}	300	200	Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Collector Current — Continuous	I_C	500		mA _{dc}
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 8.0		Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	2.5 20		Watts 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 Case	$R_{\theta JC}$	50	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	$^\circ\text{C/W}$

MPSW42 MPSW43

CASE 29-03, STYLE 1
TO-92 (TO-226AE)

HIGH VOLTAGE
TRANSISTOR

NPN SILICON

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(1) ($I_C = 1.0$ mA _{dc} , $I_B = 0$)	MPSW42 MPSW43	$V_{(BR)CEO}$	300 200	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 100$ μ A _{dc} , $I_E = 0$)	MPSW42 MPSW43	$V_{(BR)CBO}$	300 200	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100$ μ A _{dc} , $I_C = 0$)		$V_{(BR)EBO}$	6.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 200$ Vdc, $I_E = 0$) ($V_{CB} = 160$ Vdc, $I_E = 0$)	MPSW42 MPSW43	I_{CBO}	— —	0.1 0.1	μ A _{dc}
Emitter Cutoff Current ($V_{EB} = 6.0$ Vdc, $I_C = 0$) ($V_{EB} = 4.0$ Vdc, $I_C = 0$)	MPSW42 MPSW43	I_{EBO}	— —	0.1 0.1	μ A _{dc}

ON CHARACTERISTICS

DC Current Gain ($I_C = 1.0$ mA _{dc} , $V_{CE} = 10$ Vdc) ($I_C = 10$ mA _{dc} , $V_{CE} = 10$ Vdc) ($I_C = 30$ mA _{dc} , $V_{CE} = 10$ Vdc)	Both Types Both Types MPSW42 MPSW43	h_{FE}	25 40 40 40	— — — —	—
Collector-Emitter Saturation Voltage ($I_C = 20$ mA _{dc} , $I_B = 2.0$ mA _{dc})	MPSW42 MPSW43	$V_{CE(sat)}$	— —	0.5 0.5	Vdc
Base-Emitter Saturation Voltage ($I_C = 20$ mA _{dc} , $I_B = 2.0$ mA _{dc})		$V_{BE(sat)}$	—	0.9	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 10$ mA _{dc} , $V_{CE} = 20$ Vdc, $f = 20$ MHz)		f_T	50	—	MHz
Collector-Base Capacitance ($V_{CB} = 20$ Vdc, $I_E = 0$, $f = 1.0$ MHz)	MPSW42 MPSW43	C_{cb}	— —	3.0 4.0	pF

(1) Pulse Test: Pulse Width ≤ 300 μ s, Duty Cycle $\leq 2.0\%$.

FIGURE 1 — D.C. CURRENT GAIN

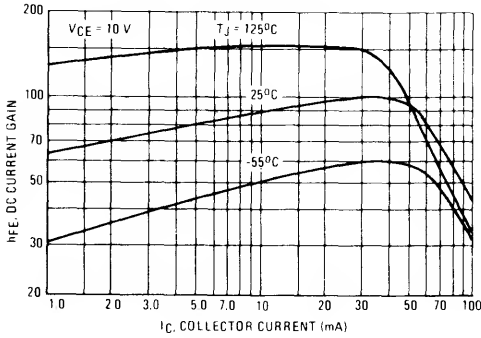


FIGURE 2 — COLLECTOR SATURATION REGION

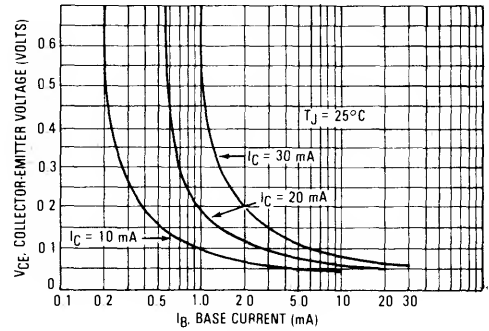


FIGURE 3 — ON VOLTAGES

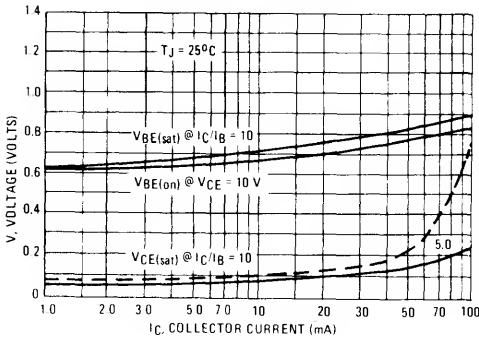


FIGURE 4 — TEMPERATURE COEFFICIENTS

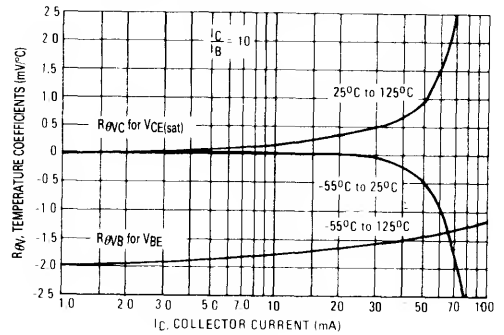


FIGURE 5 — CAPACITANCE

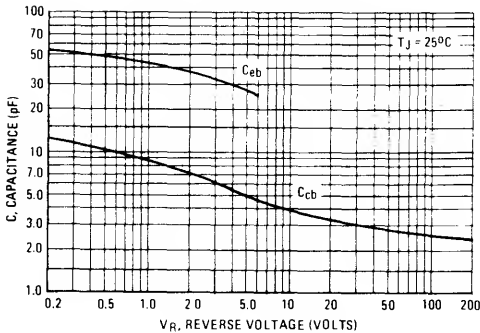


FIGURE 6 — CURRENT GAIN - BANDWIDTH PRODUCT

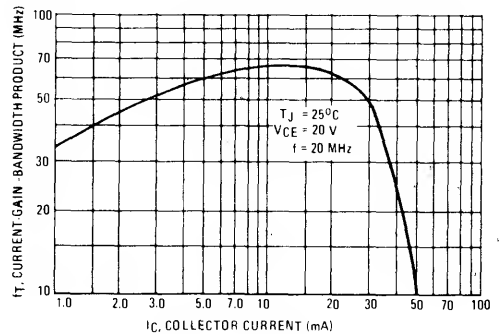


FIGURE 7 — ACTIVE REGION SAFE OPERATING AREA

