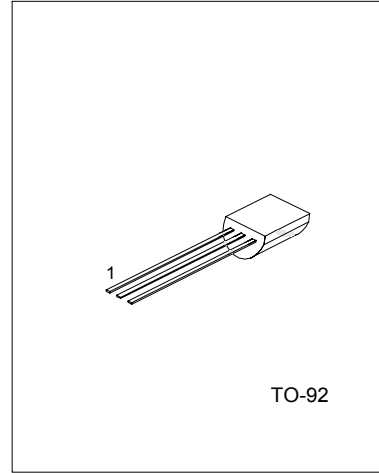


NPN MPSA05  
PNP MPSA55

FEATURES

- \*Collector-Emitter Voltage:  $V_{CE0}=60V$
- \*Collector Dissipation:  $P_D=625mW$



1: EMITTER 2: BASE 3: COLLECTOR

ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}C$ , unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Collector-base voltage	$V_{CBO}$	60	V
Collector-emitter voltage	$V_{CEO}$	60	V
Emitter-base voltage	$V_{EBO}$	4	V
Collector current - Continuous	$I_C$	500	mA
Total device dissipation, @ $T_A=25^{\circ}C$	$P_D$	625	mW
Derate above $25^{\circ}C$		5	mW/ $^{\circ}C$
Total device dissipation, @ $T_C=25^{\circ}C$	$P_D$	1500	mW
Derate above $25^{\circ}C$		12	mW/ $^{\circ}C$
Junction Temperature	$T_J$	-55 ~ +150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}C$

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX	UNIT
Thermal resistance, junction to ambient	$R_{\theta JA}$ (note)	200	$^{\circ}C/W$
Thermal resistance, junction to case	$R_{\theta JC}$	83.3	$^{\circ}C/W$

Note:  $R_{\theta JA}$  is measured with the device soldered into a typical printed circuit board.

ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}C$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Collector-emitter breakdown voltage (note 1)	$V_{(BR)CEO}$	$I_C=1.0mA, I_B=0$	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu A, I_C=0$	4			V
Collector cutoff current	$I_{CES}$	$V_{CE}=60V, I_B=0$			0.1	$\mu A$
Collector cutoff current	$I_{CBO}$	$V_{CB}=60V, I_E=0$			0.1	$\mu A$

# UTC MPSA05/55

# AMPLIFIER TRANSISTOR

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>ON CHARACTERISTICS</b>						
DC current gain	$h_{FE}$	$I_C=10\text{mA}, V_{CE}=1\text{V}$ $I_C=100\text{mA}, V_{CE}=1\text{V}$	100 100			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=100\text{mA}, I_B=10\text{mA}$			0.25	V
Base-emitter on voltage	$V_{BE(on)}$	$I_C=100\text{mA}, V_{CE}=1\text{V}$			1.2	V
<b>SMALL-SIGNAL CHARACTERISTICS</b>						
Current gain bandwidth product (note 2)	$f_T$	MPSA05: $I_C=10\text{mA}, V_{CE}=2\text{V}, f=100\text{MHz}$ MPSA55: $I_C=100\text{mA}, V_{CE}=1\text{V}, f=100\text{MHz}$	100 50			MHz MHz

Note 1: Pulse test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

Note 2:  $f_T$  is defined as the frequency at which  $|h_{fe}|$  extrapolates to unity.

## SWITCHING TIME TEST CIRCUITS

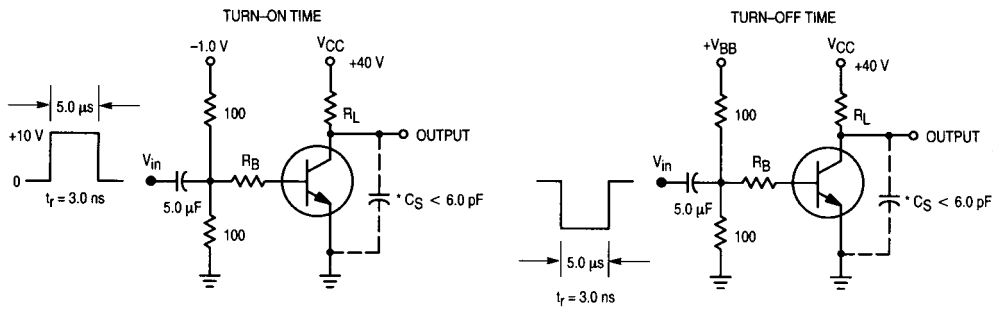


Figure 1

(Note: Total shunt capacitance of test jig and connectors for PNP test circuits, reverse all voltage polarities.)

## MPSA05

## MPSA55

## CURRENT-GAIN BANDWIDTH PRODUCT

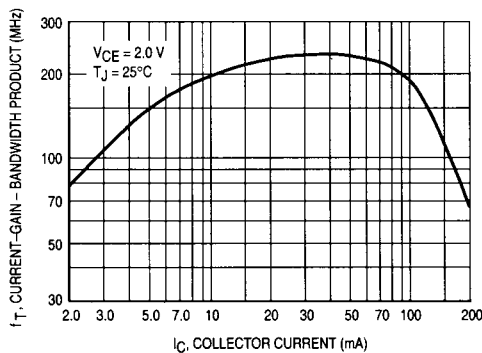


Figure 2

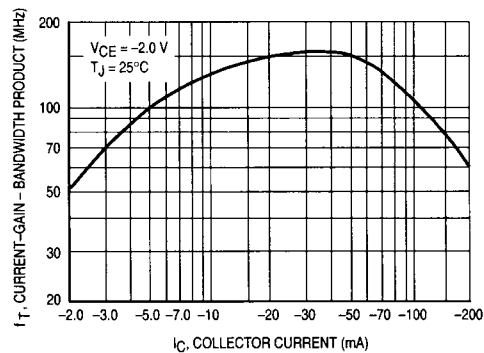


Figure 3

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CAPACITANCE

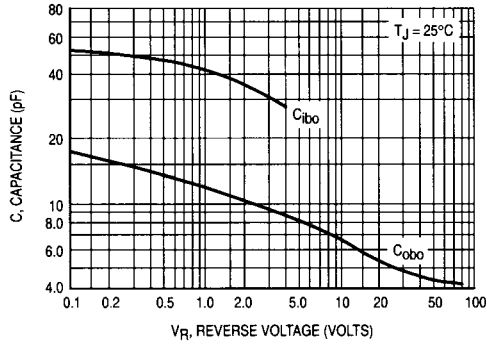


Figure 4

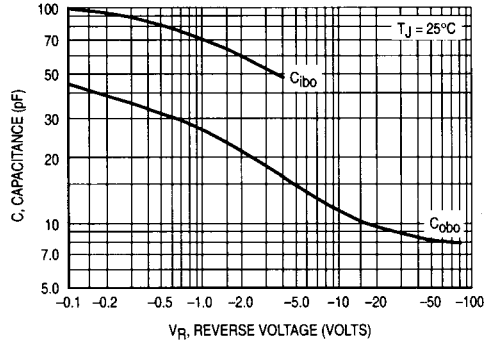


Figure 5

SWITCHING TIME

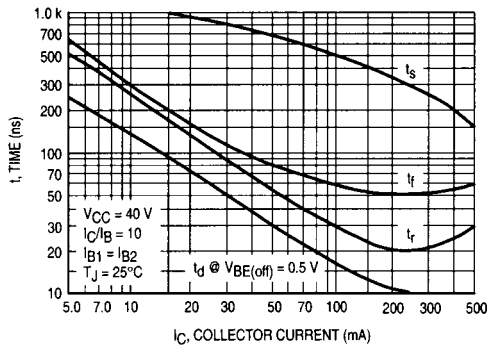


Figure 6

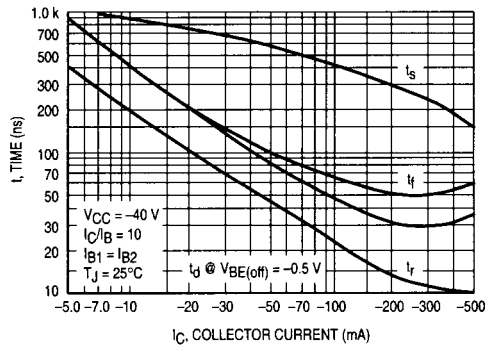


Figure 7

ACTIVE-REGION SAFE OPERATING AREA

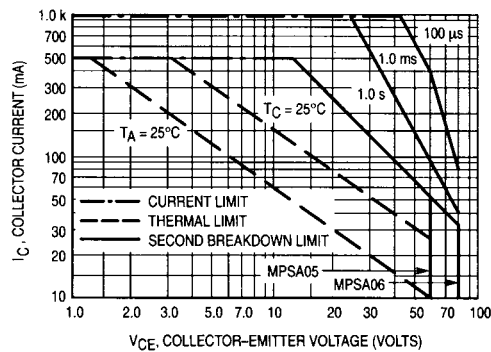


Figure 8

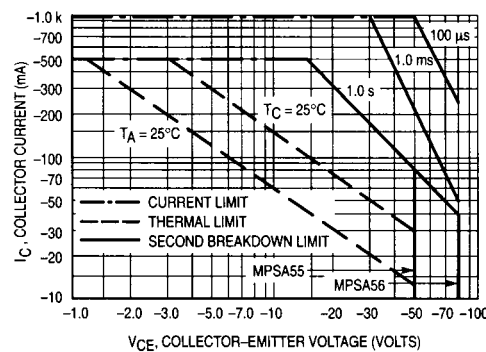


Figure 9

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DC CURRENT GAIN

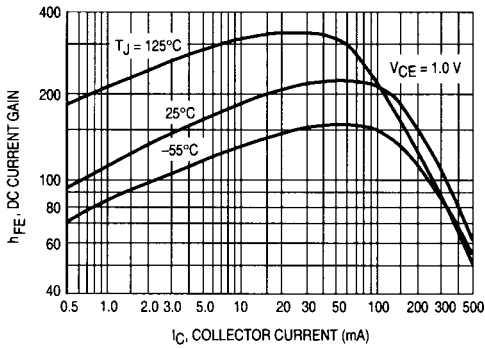


Figure 10

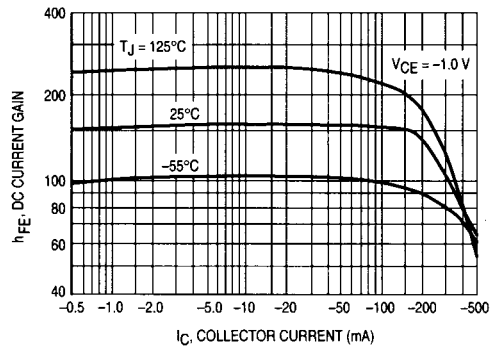


Figure 11

“ON” VOLTAGES

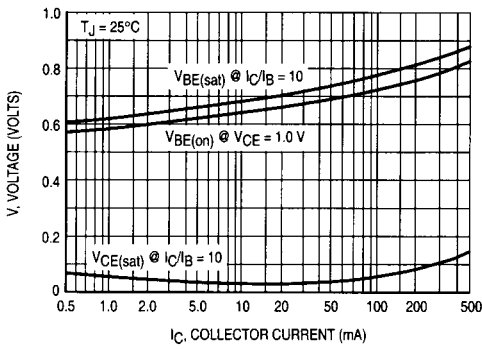


Figure 12

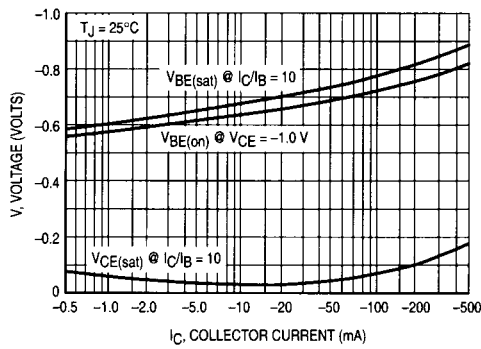


Figure 13

COLLECTOR SATURATION REGION

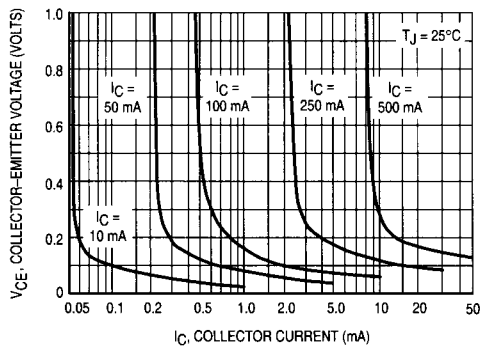


Figure 14

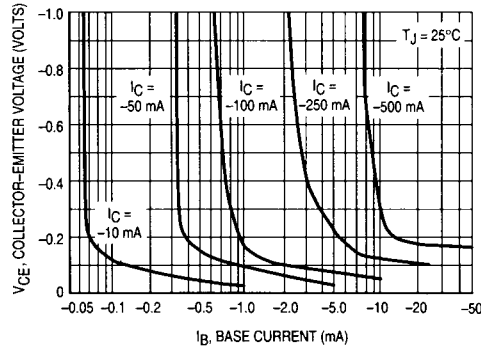


Figure 15

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BASE-EMITTER TEMPERATURE COEFFICIENT

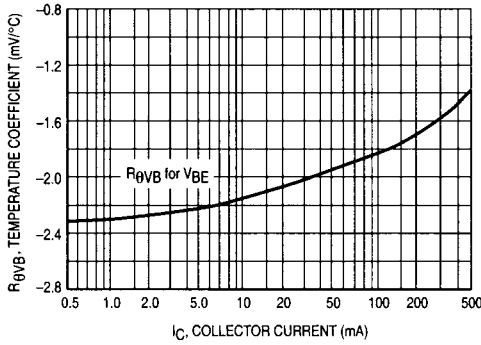


Figure 16

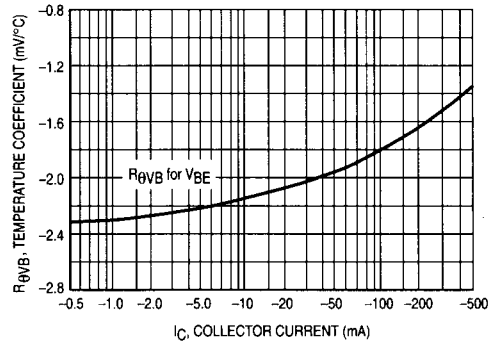


Figure 17

THERMAL RESPONSE

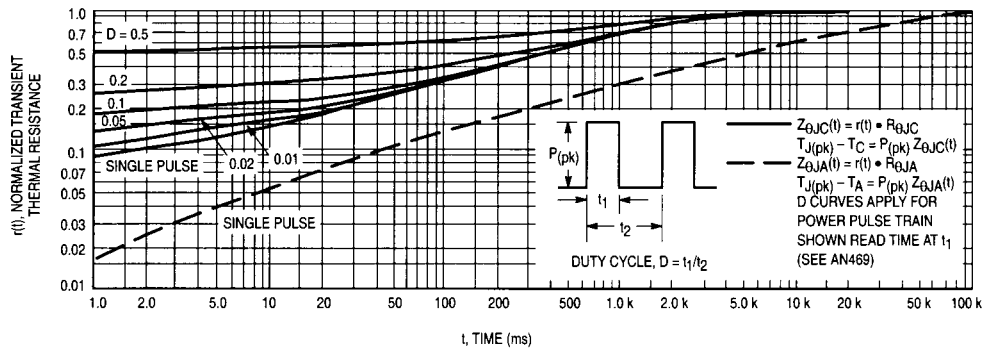


Figure 18

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