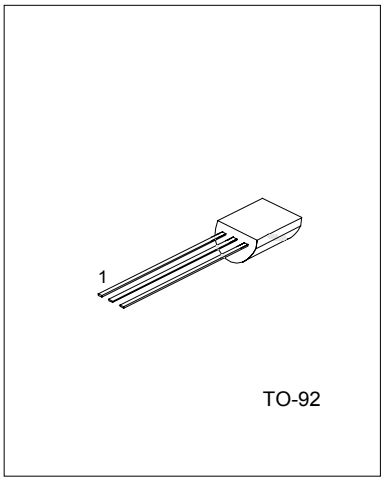
UTC MPSA05/55 AMPLIFIER TRANSISTOR

NPN MPSA05
PNP MPSA55



1: EMITTER 2: BASE 3: COLLECTOR

FEATURES

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

ABSOLUTE MAXIMUM RATINGS (T_A=25°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	Ic	500	mA
Total device dissipation, @T_A=25°C Derate above 25°C	P_D	625 5	mW mW/°C
Total device dissipation, @T_C=25°C Derate above 25°C	P_D	1500 12	mW mW/°C
Junction Temperature	T_j	-55 ~ +150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

THERMAL CHARACTERISTICS

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

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

ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
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=100μA, Ic=0	4			V
Collector cutoff current	I_{CES}	V_{CE}=60V, I_B=0			0.1	μA
Collector cutoff current	I_{CBO}	V_{CB}=60V, I_E=0			0.1	μA

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

Note 1: Pulse test: PW<=300μs, Duty Cycle<=2%

Note 2: f_T is defined as the frequency at which Ihfel extrapolates to unity.

SWITCHING TIME TEST CIRCUITS

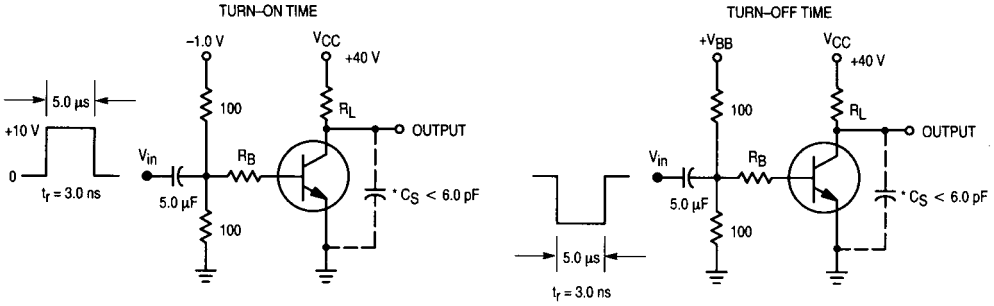


Figure 1

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

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CURRENT-GAIN BANDWIDTH PRODUCT

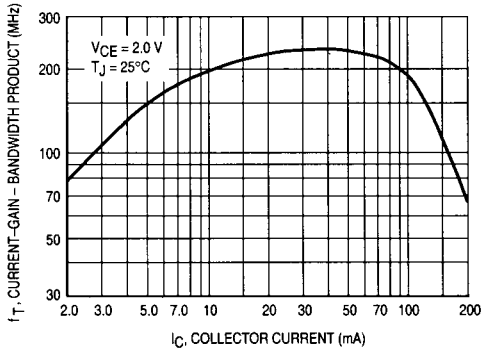

Figure 2

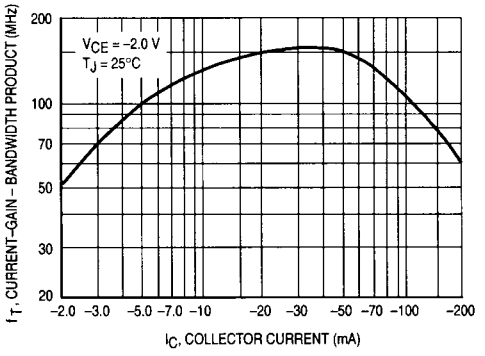

Figure 3

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CAPACITANCE

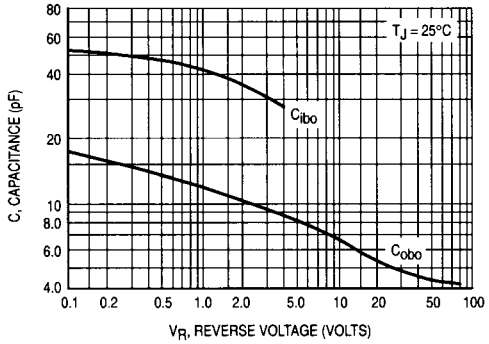

Figure 4

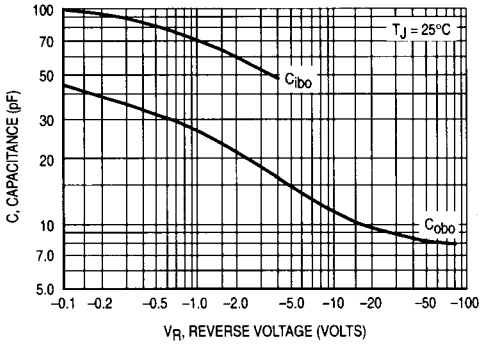

Figure 5

SWITCHING TIME

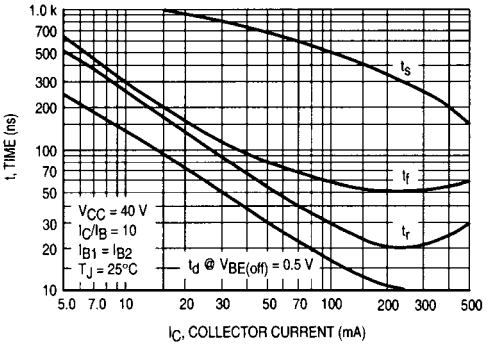

Figure 6

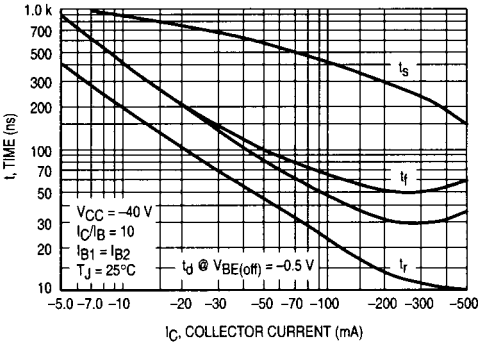

Figure 7

ACTIVE-REGION SAFE OPERATING AREA

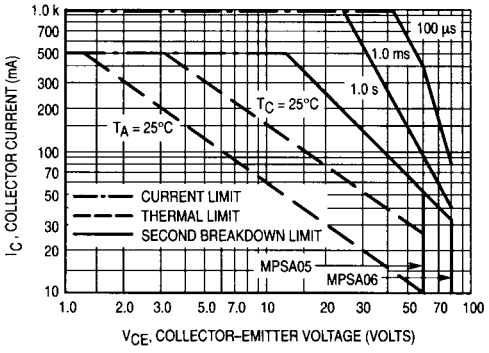

Figure 8

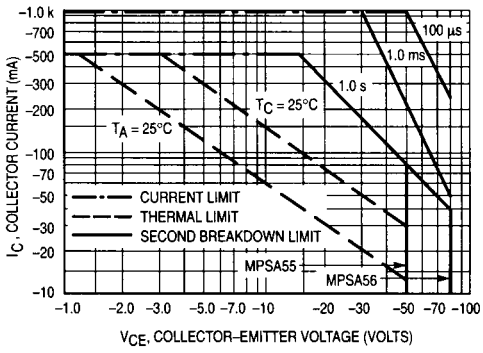

Figure 9

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DC CURRENT GAIN

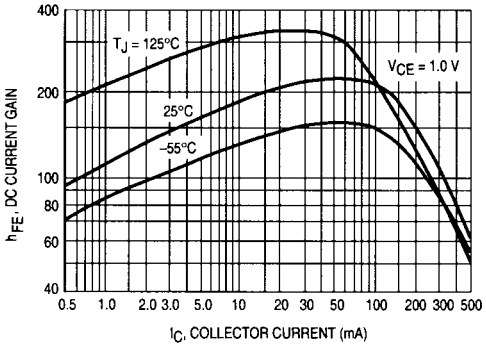

Figure 10

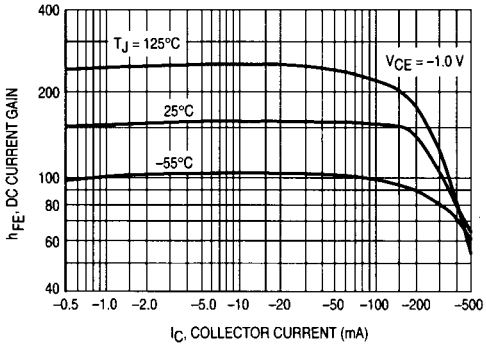

Figure 11

"ON" VOLTAGES

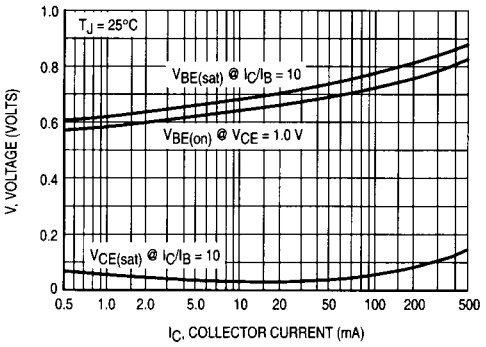

Figure 12

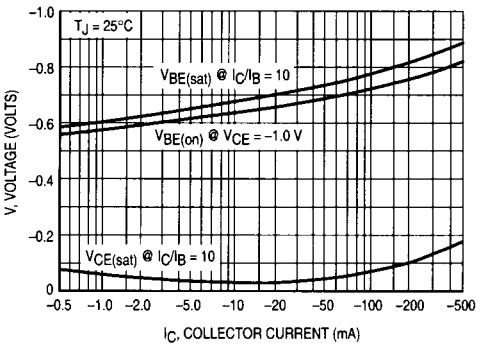

Figure 13

COLLECTOR SATURATION REGION

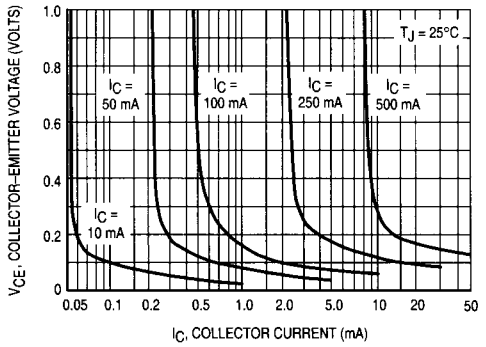

Figure 14

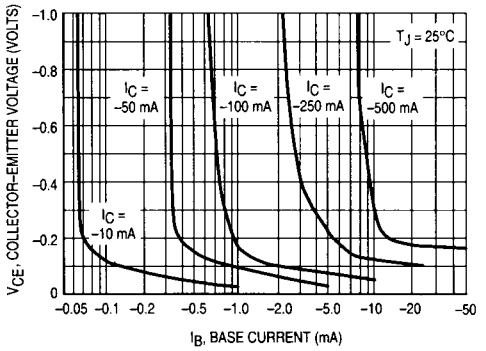

Figure 15

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BASE-EMITTER TEMPERATURE COEFFICIENT

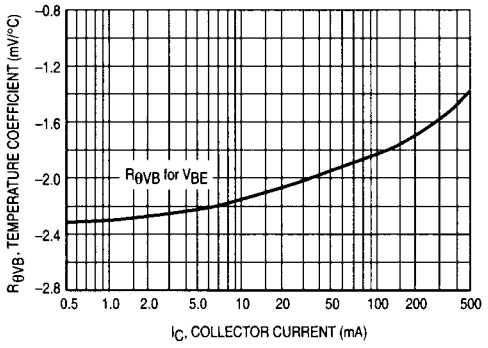

Figure 16

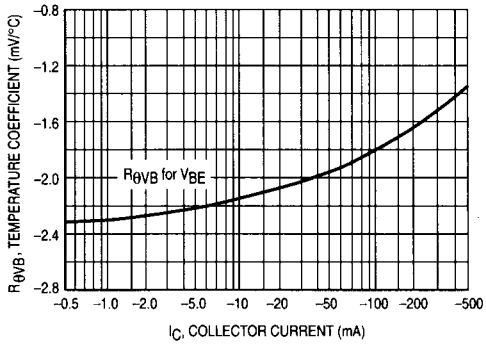

Figure 17

THERMAL RESPONSE

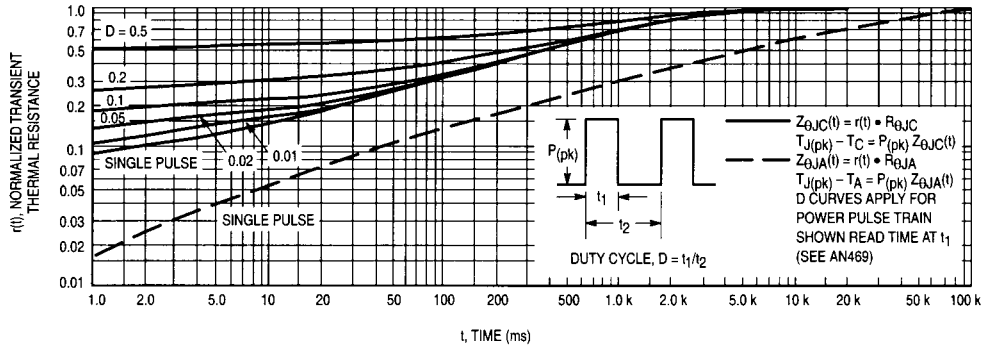

Figure 18