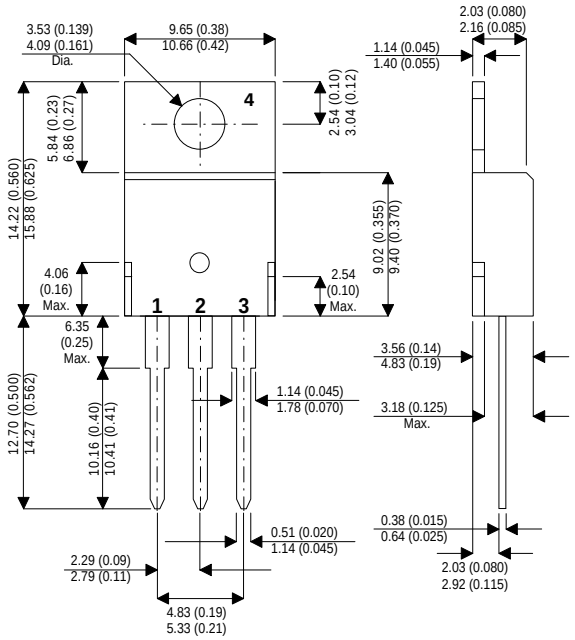
MAGNA TEC

PNP SM3177A
NPN SM3178A

COMPLEMENTARY SILICON POWER TRANSISTORS

For use as high frequency drivers in audio amplifiers.

MECHANICAL DATA
Dimensions in mm



TO–220AB

Pin 1 – Base Pin 2 – Collector Pin 3 – Emitter
Back Metal is Collector.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{CBO}	Collector – Base Voltage	240V
V_{CEO}	Collector – Emitter Voltage (I_B = 0)	160V
V_{EBO}	Emitter – Base Voltage	5V
I_C	Collector Current	8A
$I_{C(PK)}$	Peak Collector Current	16A
I_B	Base Current	2A
P_D	Total Dissipation at T_C = 25°C	60W
	Derate above 25 °C	0.48°C/W
P_D	Total Dissipation at T_A = 25°C	2W
	Derate above 25 °C	0.016°C/W
T_{stg}	Operating and Storage Temperature Range	–65 to 150°C

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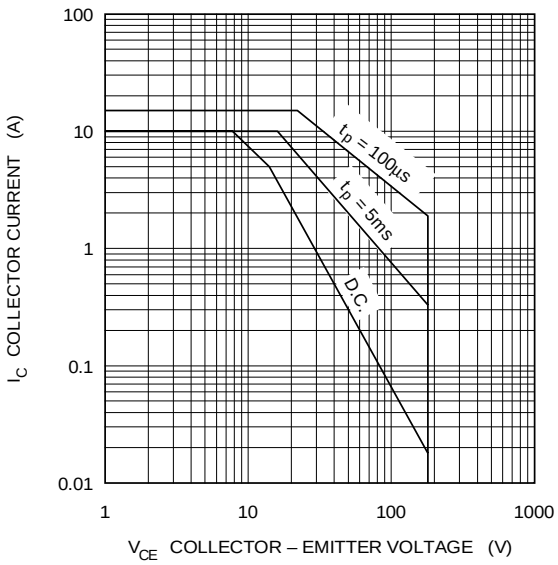
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
	OFF CHARACTERISTICS						
$V_{CEO(sus)}$*	Collector – Emitter Sustaining Voltage	I_C = 10mA	I_B = 0	160			V
I_{CEO}	Collector – Emitter Cut–Off Current	V_{CE} = 160V	I_B = 0			0.1	mA
I_{CBO}	Collector – Base Cut–Off Current	V_{CE} = 240V	I_E = 0			10	µA
I_{EBO}	Emitter Cut–Off Current	V_{BE} = 5V	I_C = 0			10	
	ON CHARACTERISTICS						
h_{FE}*	DC Current Gain	I_C = 100mA	V_{CE} = 2V	40			—
		I_C = 2A	V_{CE} = 2V	40			
		I_C = 3A	V_{CE} = 2V	40			
		I_C = 4A	V_{CE} = 2V	20			
Linearity*	h_{FE} vs h_{FE} Ratio	h_{FE} @ I_C = 1 to 3A			2:1		—
$V_{CE(sat)}$*	Collector – Emitter Saturation Voltage	I_C = 1A	I_B = 100mA			0.4	V
		I_C = 3A	I_B = 300mA			0.5	
$V_{BE(on)}$*	Base – Emitter On Voltage	I_C = 1A	V_{CE} = 2V			1.0	V
		I_C = 3A	V_{CE} = 2V			1.0	
	DYNAMIC CHARACTERISTICS						
f_T	Current Gain – Bandwidth Product $f_T = \|h_{fe}\| \cdot F_{test}$	I_C = 500mA f_{test} = 10MHz	V_{CE} = 10V	30			MHz
	THERMAL CHARACTERISTICS						
$R_{\theta JC}$	Thermal Resistance Junction – Case					2.5	°C/W
$R_{\theta JA}$	Thermal Resistance Junction – Ambient					62.5	

* Pulse test t_p = 300µs , $\delta \leq 2\%$.

FORWARD BIAS SAFE OPERATING AREA



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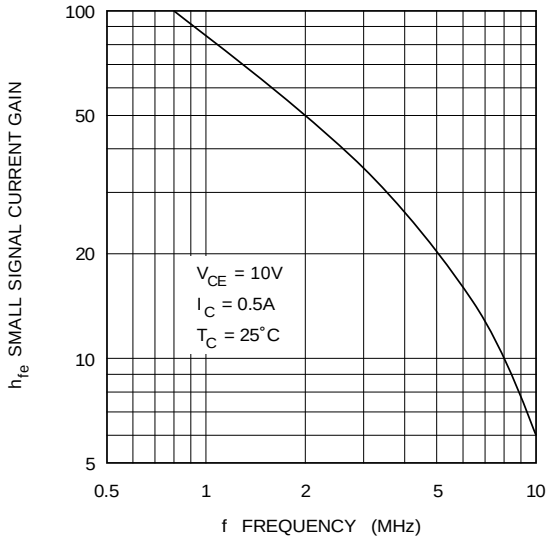
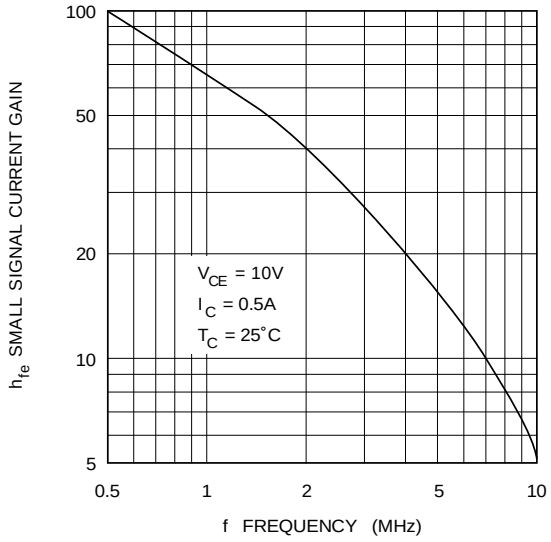
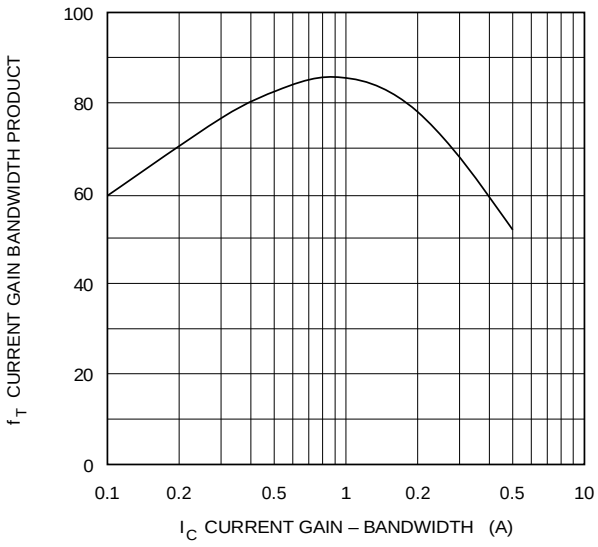
SMALL SIGNAL CURRENT GAIN – SM3177A



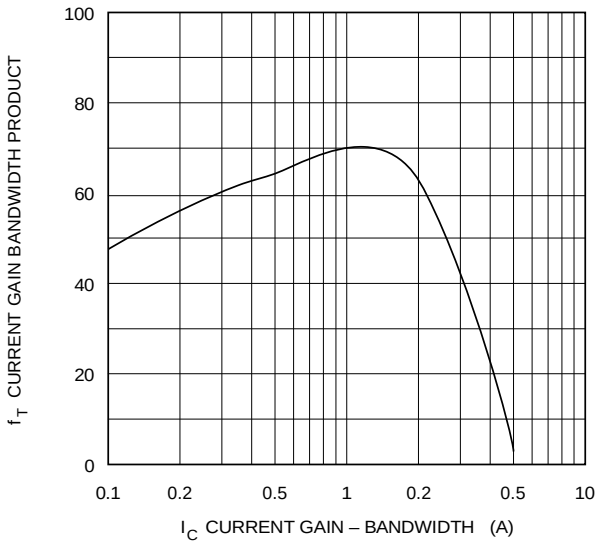
SMALL SIGNAL CURRENT GAIN – SM3178A



CURRENT GAIN BANDWIDTH PRODUCT SM3177A



CURRENT GAIN BANDWIDTH PRODUCT SM3178A



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