

# NPN General-Purpose Amplifier

## MPSA05



1. Emitter
2. Base
3. Collector

TO-92-3  
CASE 135AR  
Bent Lead  
Tape & Reel

### Features

- This Device is Designed for General-Purpose Amplifier Applications at Collector Currents to 300 mA
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CEO}$	Collector-Emitter Voltage	60	V
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Collector Current - Continuous	500	mA
$T_J, T_{STG}$	Junction and Storage Temperature	-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Max.	Unit
$P_D$	Total Device Dissipation	625	mW
	Derate Above $25^\circ\text{C}$	5.0	mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	83.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	200	°C/W

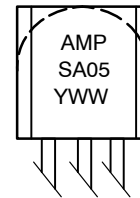
### ELECTRICAL CHARACTERISTICS

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage (Note 1)	$I_C = 1\text{ mA}, I_B = 0$	60	-	V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\ \mu\text{A}, I_C = 0$	4	-	V
$I_{CEO}$	Collector Cut-Off Current	$V_{CE} = 60\text{ V}, I_B = 0$	-	0.1	$\mu\text{A}$
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 60\text{ V}, I_E = 0$	-	0.1	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$I_C = 10\text{ mA}, V_{CE} = 1.0\text{ V}$	100	-	
		$I_C = 100\text{ mA}, V_{CE} = 1.0\text{ V}$	100	-	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$	-	0.25	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100\text{ mA}, V_{CE} = 1.0\text{ V}$	-	1.2	V
$f_T$	Current Gain - Bandwidth Product	$I_C = 10\text{ mA}, V_{CE} = 2\text{ V}, f = 100\text{ MHz}$	100	-	MHz

1. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

### MARKING DIAGRAM



- A = Assembly Location  
MPSA05 = Specific Device Code  
Y = Year  
WW = Work Week

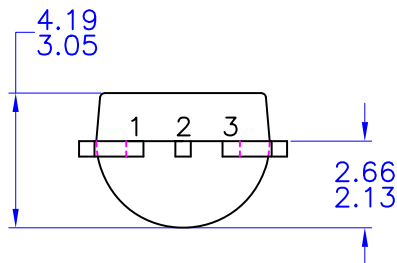
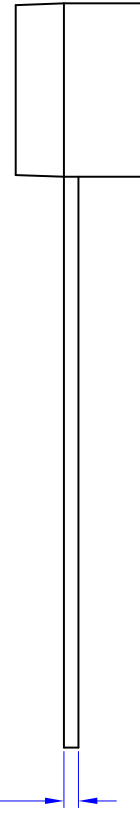
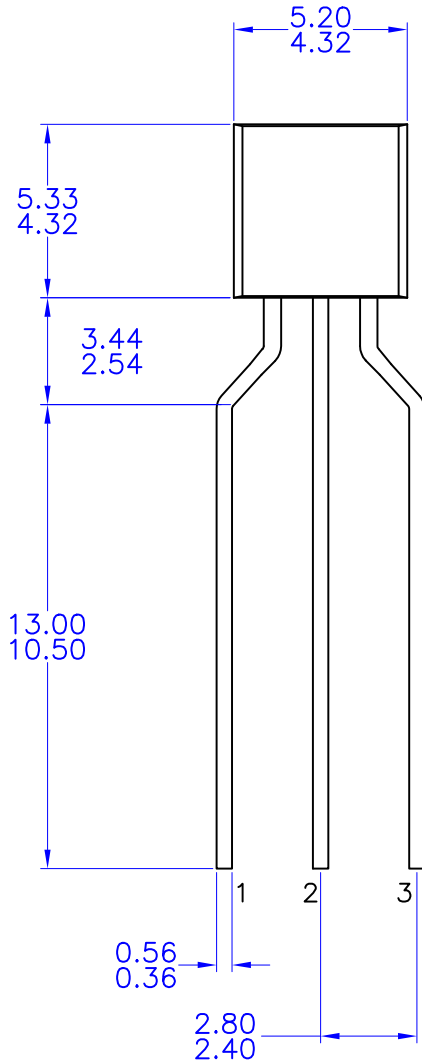
### ORDERING INFORMATION

Device	Package	Shipping†
MPSA05RA	TO-92 3L	2000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

**TO-92 3 4.83x4.76 LEADFORMED**  
CASE 135AR  
ISSUE O

DATE 30 SEP 2016



NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-1994

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