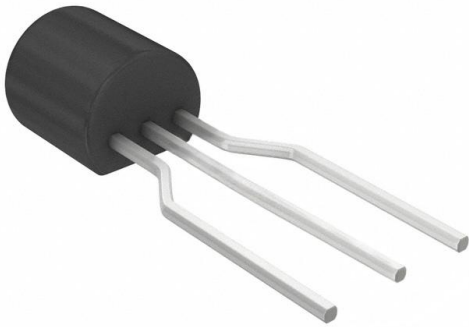


# MPSA55RLRA Datasheet

[www.digi-electronics.com](http://www.digi-electronics.com)



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	MPSA55RLRA-DG
Manufacturer	<a href="#">onsemi</a>
Manufacturer Product Number	MPSA55RLRA
Description	TRANS PNP SS GP 60V TO92
Detailed Description	Bipolar (BJT) Transistor



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.



## Purchase and inquiry

Manufacturer Product Number:

MPSA55RLRA

Series:

\*

Base Product Number:

MPSA55

Manufacturer:

onsemi

Product Status:

Obsolete

## Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

# NPN - MPSA05, MPSA06\*; PNP - MPSA55, MPSA56\*

\*Preferred Devices

## Amplifier Transistors

Voltage and Current are Negative  
for PNP Transistors



ON Semiconductor®

<http://onsemi.com>

### Features

- Pb-Free Packages are Available\*

### MAXIMUM RATINGS

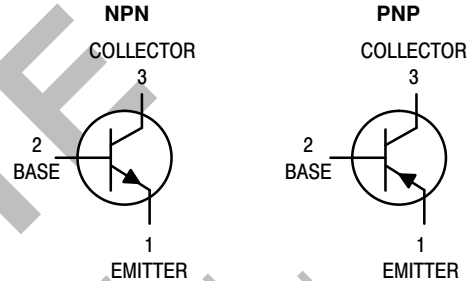
Rating	Symbol	Value	Unit
Collector - Emitter Voltage MPSA05, MPSA55 MPSA06, MPSA56	$V_{CEO}$	60 80	Vdc
Collector - Base Voltage MPSA05, MPSA55 MPSA06, MPSA56	$V_{CB0}$	60 80	Vdc
Emitter - Base Voltage	$V_{EBO}$	4.0	Vdc
Collector Current - Continuous	$I_C$	500	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	625 5.0	W mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5 12	W mW/°C
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	°C

### THERMAL CHARACTERISTICS

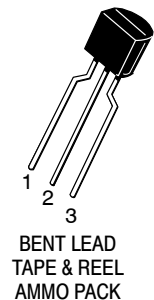
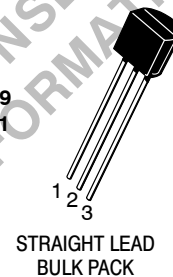
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

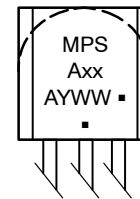
- $R_{\theta JA}$  is measured with the device soldered into a typical printed circuit board.



TO-92  
CASE 29  
STYLE 1



### MARKING DIAGRAM



xx = 05, 06, 55, or 56  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

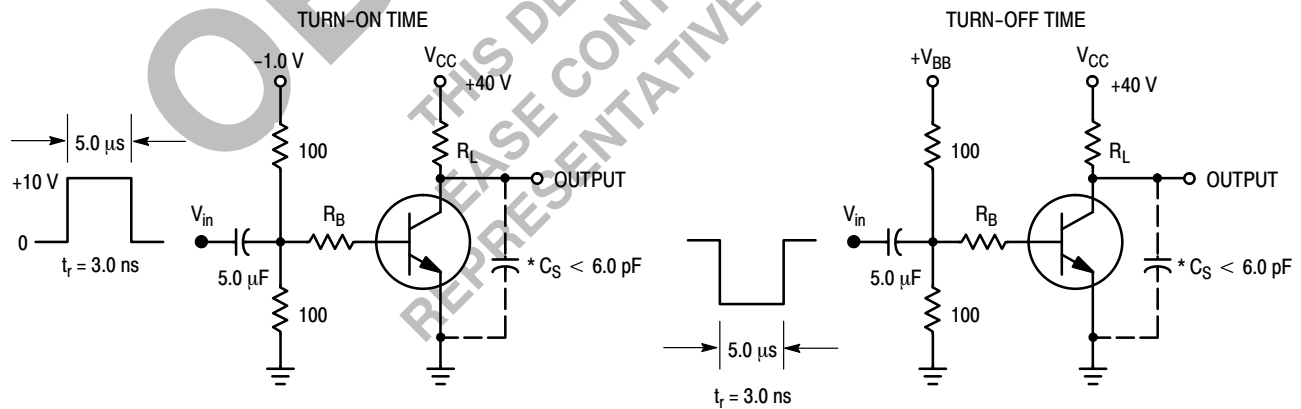
**Preferred** devices are recommended choices for future use and best overall value.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**NPN – MPSA05, MPSA06\*; PNP – MPSA55, MPSA56\*****ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector – Emitter Breakdown Voltage (Note 2) ( $I_C = 1.0\text{ mA}$ , $I_B = 0$ )	$V_{(BR)CEO}$	60 80	–	Vdc
Emitter – Base Breakdown Voltage ( $I_E = 100\ \mu\text{A}$ , $I_C = 0$ )	$V_{(BR)EBO}$	4.0	–	Vdc
Collector Cutoff Current ( $V_{CE} = 60\text{ Vdc}$ , $I_B = 0$ )	$I_{CES}$	–	0.1	$\mu\text{A}$
Collector Cutoff Current ( $V_{CB} = 60\text{ Vdc}$ , $I_E = 0$ ) ( $V_{CB} = 80\text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	– –	0.1 0.1	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>				
DC Current Gain ( $I_C = 10\text{ mA}$ , $V_{CE} = 1.0\text{ Vdc}$ ) ( $I_C = 100\text{ mA}$ , $V_{CE} = 1.0\text{ Vdc}$ )	$h_{FE}$	100 100	– –	–
Collector – Emitter Saturation Voltage ( $I_C = 100\text{ mA}$ , $I_B = 10\text{ mA}$ )	$V_{CE(sat)}$	–	0.25	Vdc
Base – Emitter On Voltage ( $I_C = 100\text{ mA}$ , $V_{CE} = 1.0\text{ Vdc}$ )	$V_{BE(on)}$	–	1.2	Vdc
<b>SMALL – SIGNAL CHARACTERISTICS</b>				
Current – Gain – Bandwidth Product (Note 3) ( $I_C = 10\text{ mA}$ , $V_{CE} = 2.0\text{ V}$ , $f = 100\text{ MHz}$ )  ( $I_C = 100\text{ mA}$ , $V_{CE} = 1.0\text{ Vdc}$ , $f = 100\text{ MHz}$ )	$f_T$	100 50	– –	MHz

2. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .  
 3.  $f_T$  is defined as the frequency at which  $|h_{fe}|$  extrapolates to unity.

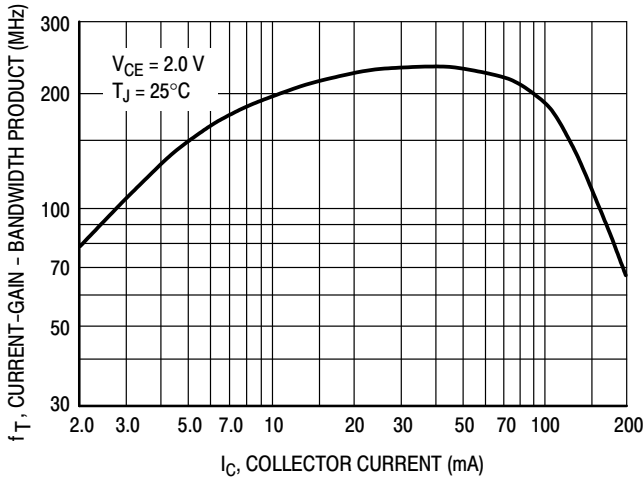


\*Total Shunt Capacitance of Test Jig and Connectors For PNP Test Circuits, Reverse All Voltage Polarities

**Figure 1. Switching Time Test Circuits**

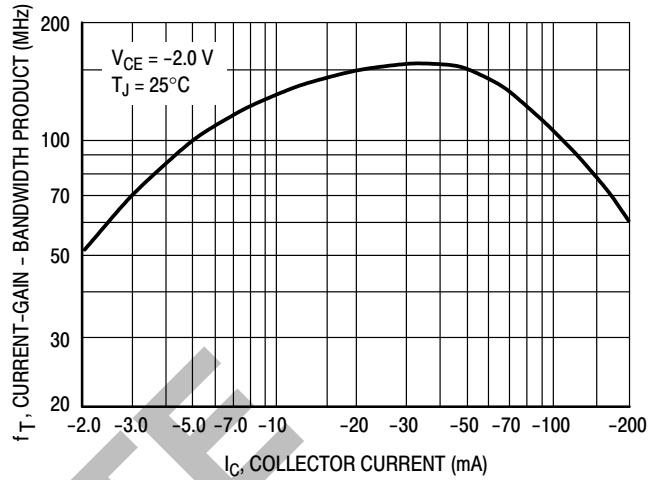
**NPN – MPSA05, MPSA06\*; PNP – MPSA55, MPSA56\***

**NPN**

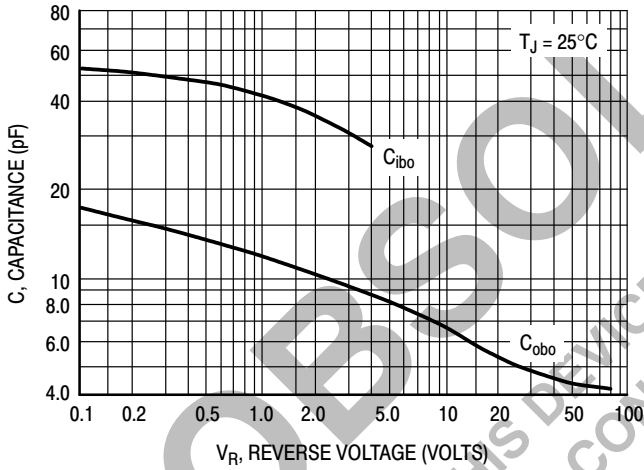


**Figure 2. MPSA05/06 Current-Gain — Bandwidth Product**

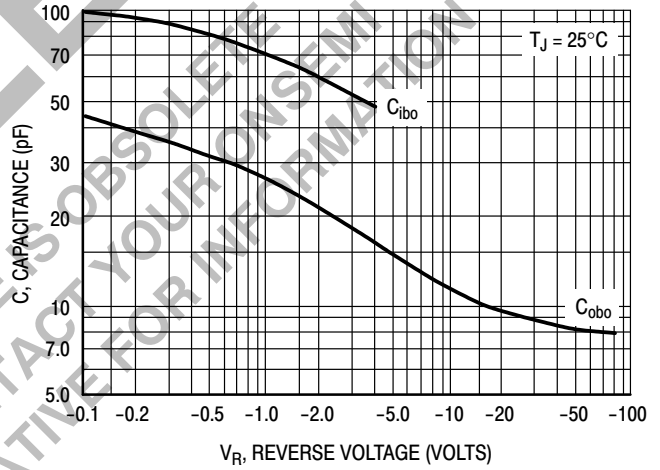
**PNP**



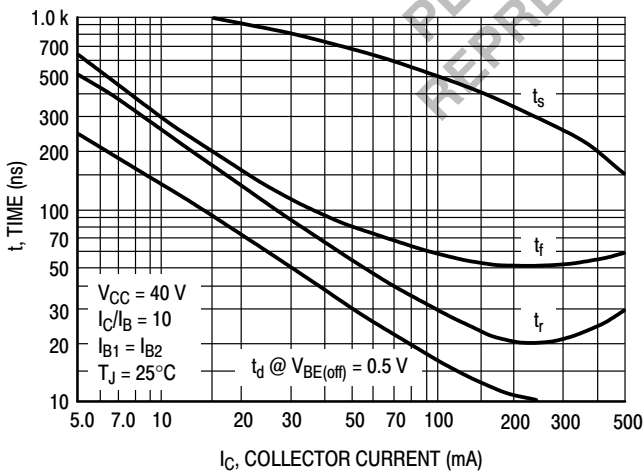
**Figure 3. MPSA55/56 Current-Gain — Bandwidth Product**



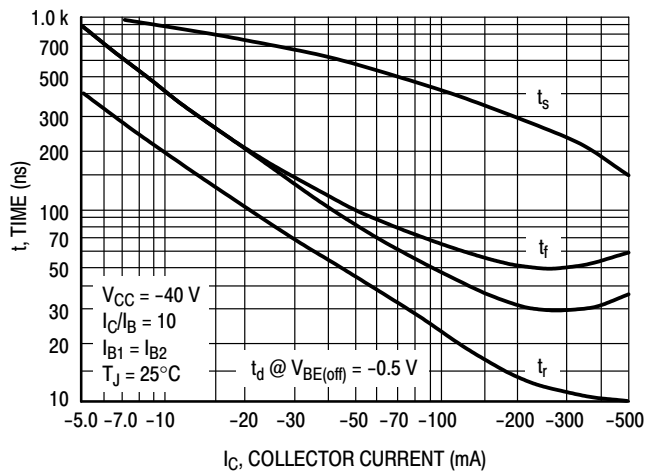
**Figure 4. MPSA05/06 Capacitance**



**Figure 5. MPSA55/56 Capacitance**

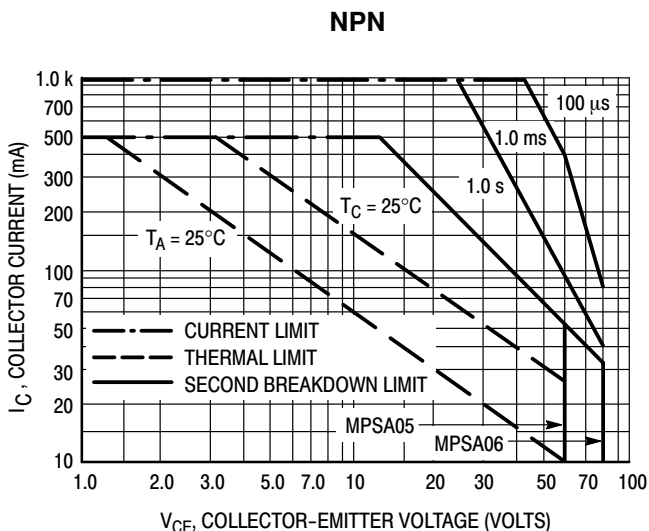


**Figure 6. MPSA05/06 Switching Time**

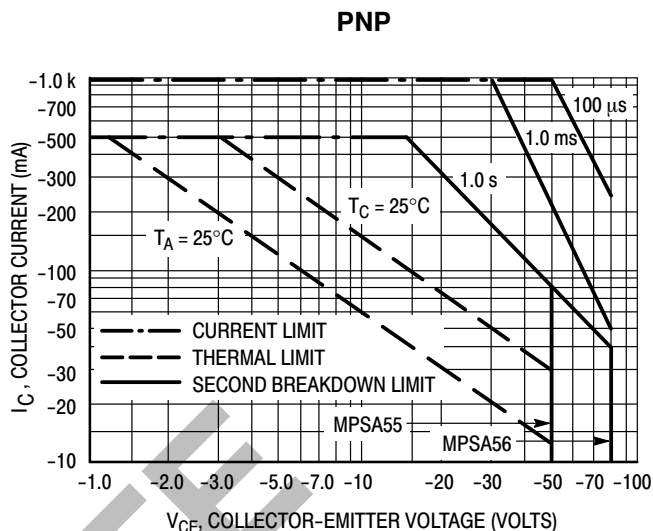


**Figure 7. MPSA55/56 Switching Time**

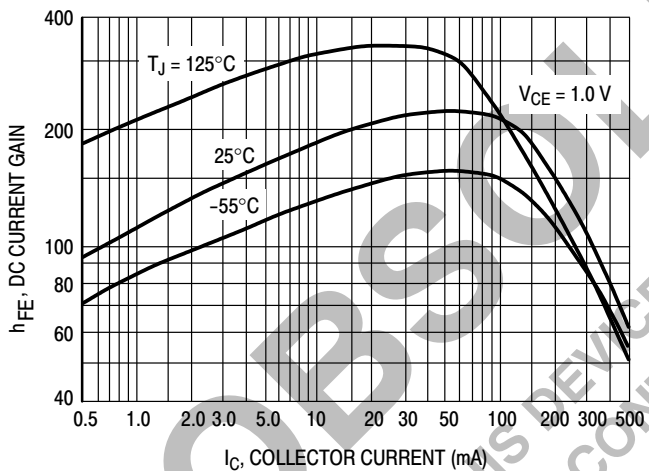
**NPN – MPSA05, MPSA06\*; PNP – MPSA55, MPSA56\***



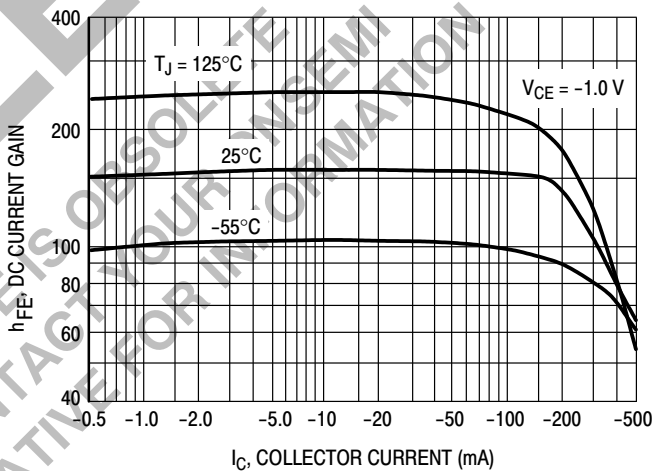
**Figure 8. MPSA05/06 Active-Region Safe Operating Area**



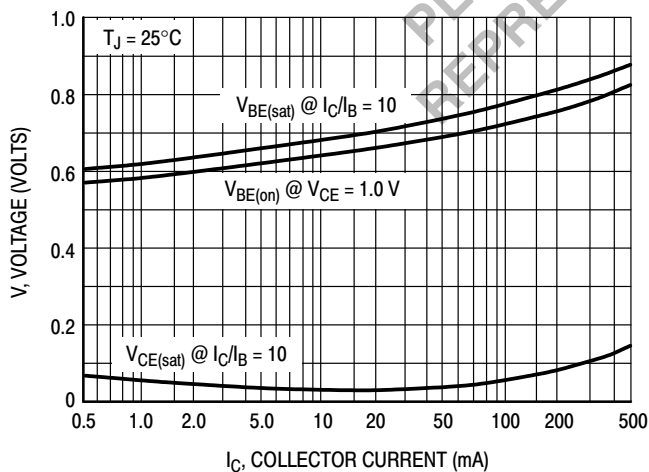
**Figure 9. MPSA55/56 Active-Region Safe Operating Area**



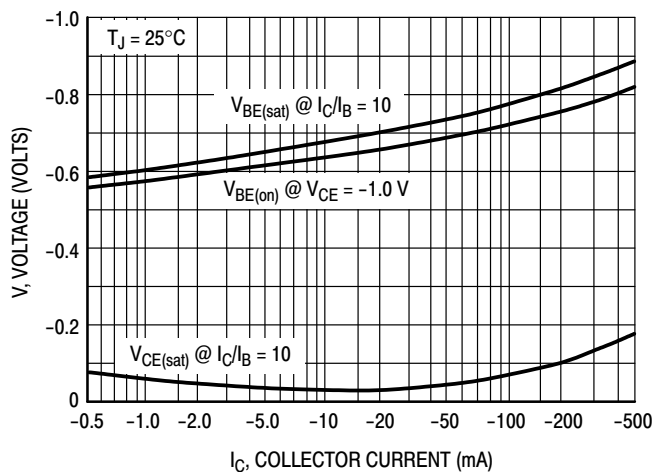
**Figure 10. MPSA05/06 DC Current Gain**



**Figure 11. MPSA55/56 DC Current Gain**

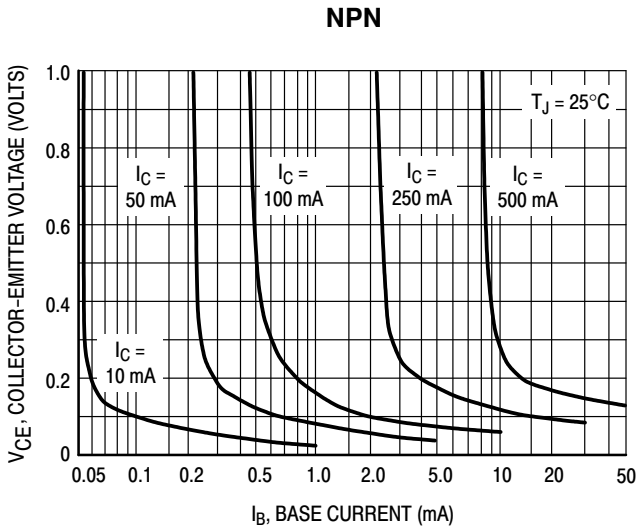


**Figure 12. MPSA05/06 "ON" Voltages**

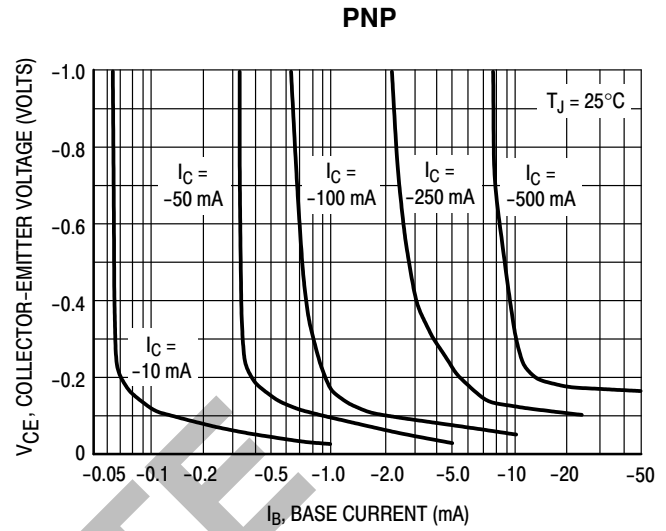


**Figure 13. MPSA55/56 "ON" Voltages**

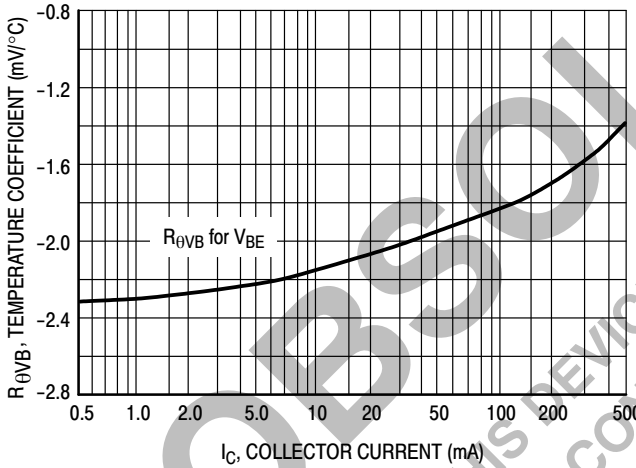
**NPN – MPSA05, MPSA06\*; PNP – MPSA55, MPSA56\***



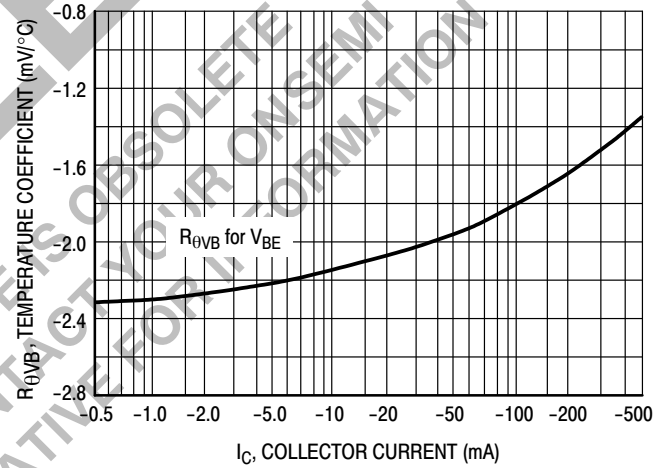
**Figure 14. MPSA05/06 Collector Saturation Region**



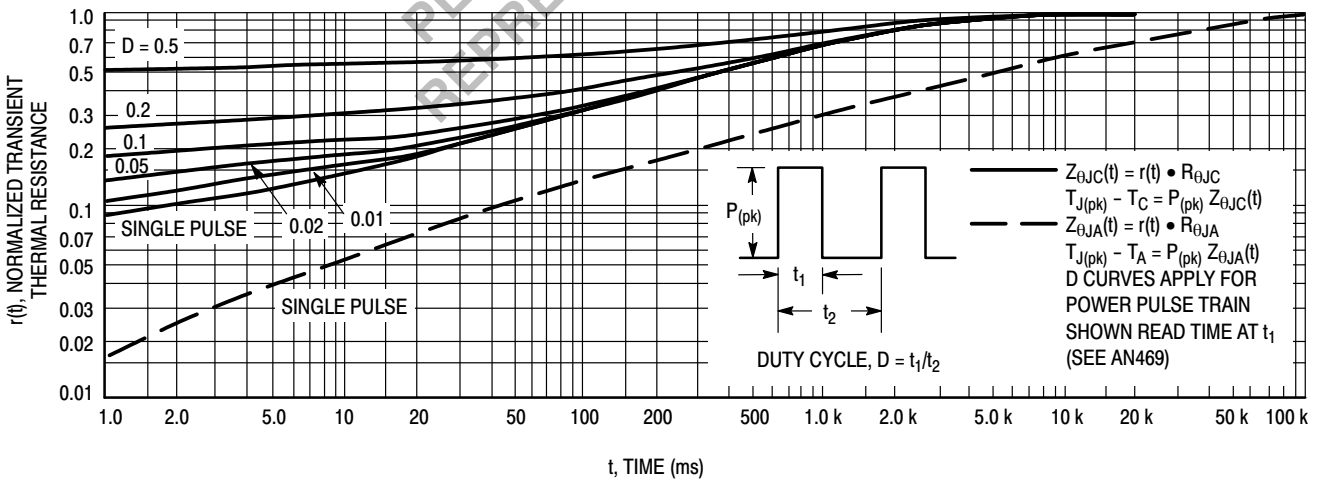
**Figure 15. MPSA55/56 Collector Saturation Region**



**Figure 16. MPSA05/06 Base-Emitter Temperature Coefficient**



**Figure 17. MPSA55/56 Base-Emitter Temperature Coefficient**



**Figure 18. MPSA05, MPSA06, MPSA55 and MPSA56 Thermal Response**

**NPN – MPSA05, MPSA06\*; PNP – MPSA55, MPSA56\*****ORDERING INFORMATION**

Device	Package	Shipping†
MPSA05	TO-92	5000 Units / Bulk
MPSA05G	TO-92 (Pb-Free)	5000 Units / Bulk
MPSA05RLRA	TO-92	2000 / Tape & Reel
MPSA05RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA05RLRM	TO-92	2000 / Ammo Pack
MPSA05RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA06	TO-92	5000 Units / Bulk
MPSA06G	TO-92 (Pb-Free)	5000 Units / Bulk
MPSA06RL1G	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA06RLG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA06RLRA	TO-92	2000 / Tape & Reel
MPSA06RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA06RLRM	TO-92	2000 / Ammo Pack
MPSA06RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA06RLRP	TO-92	2000 / Ammo Pack
MPSA06RLRPG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA55G	TO-92 (Pb-Free)	5000 Units / Bulk
MPSA55RLRA	TO-92	2000 / Tape & Reel
MPSA55RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA56	TO-92	5000 Units / Bulk
MPSA56G	TO-92 (Pb-Free)	5000 Units / Bulk
MPSA56RLRA	TO-92	2000 / Tape & Reel
MPSA56RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA56RLRM	TO-92	2000 / Ammo Pack
MPSA56RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA56RLRP	TO-92	2000 / Ammo Pack
MPSA56RLRPG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA56ZL1	TO-92	2000 / Ammo Pack
MPSA56ZL1G	TO-92 (Pb-Free)	2000 / Ammo Pack

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.



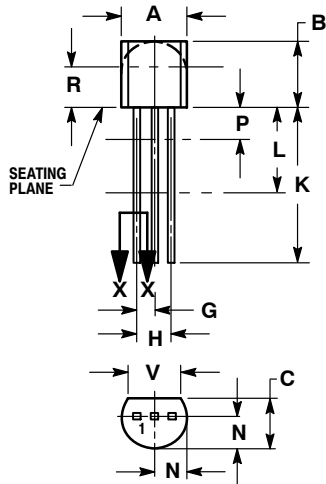
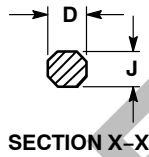
## NPN – MPSA05, MPSA06\*; PNP – MPSA55, MPSA56\*

## PACKAGE DIMENSIONS

## TO-92 (TO-226)

CASE 29-11

ISSUE AM

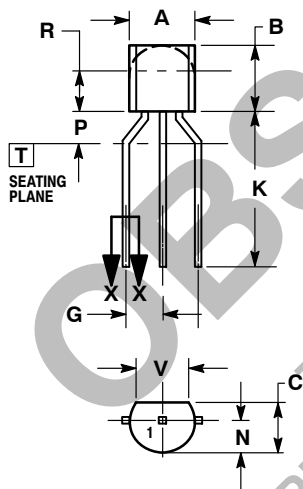
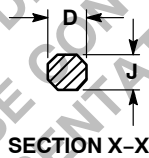
STRAIGHT LEAD  
BULK PACK

SECTION X-X

## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

BENT LEAD  
TAPE & REEL  
AMMO PACK

SECTION X-X


## NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

## STYLE 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

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