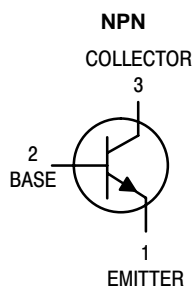


MPSA05, MPSA06, MPSA55, MPSA56

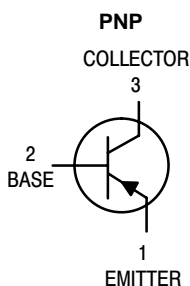
MPSA06 and MPSA56 are Preferred Devices

Amplifier Transistors

Voltage and Current are Negative for PNP Transistors



STYLE 1
MPSA05, MPSA06



STYLE 1
MPSA55, MPSA56

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|----------------|----------------|-------------------------------|
| Collector–Emitter Voltage MPSA05, MPSA55 MPSA06, MPSA56 | V_{CE0} | 60 80 | Vdc |
| Collector–Base Voltage MPSA05, MPSA55 MPSA06, MPSA56 | V_{CB0} | 60 80 | Vdc |
| Emitter–Base Voltage | V_{EB0} | 4.0 | Vdc |
| Collector Current – Continuous | I_C | 500 | mAdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 625 5.0 | mW mW/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.5 12 | Watts mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

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

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



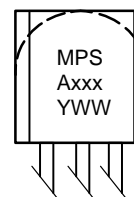
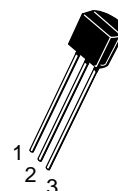
ON Semiconductor™

<http://onsemi.com>

NPN
MPSA05, MPSA06
PNP
MPSA55, MPSA56

MARKING DIAGRAM

TO-92
CASE 29
STYLE 1



MPSA = Specific Device Code
xxx = 05, 06, 55 or 56
Y = Year
WW = Work Week

ORDERING INFORMATION

| Device | Package | Shipping |
|------------|---------|------------------|
| MPSA05 | TO-92 | 5000 Units/Box |
| MPSA05RLRA | TO-92 | 2000/Tape & Reel |
| MPSA05RLRM | TO-92 | 2000/Ammo Pack |
| MPSA06 | TO-92 | 5000 Units/Box |
| MPSA06RLRA | TO-92 | 2000/Tape & Reel |
| MPSA06RLRM | TO-92 | 2000/Ammo Pack |
| MPSA06RLRP | TO-92 | 2000/Ammo Pack |
| MPSA55 | TO-92 | 5000 Units/Box |
| MPSA55RLRA | TO-92 | 2000/Tape & Reel |
| MPSA56 | TO-92 | 5000 Units/Box |
| MPSA56RLRA | TO-92 | 2000/Tape & Reel |
| MPSA56RLRM | TO-92 | 2000/Ammo Pack |
| MPSA56RLRP | TO-92 | 2000/Ammo Pack |

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

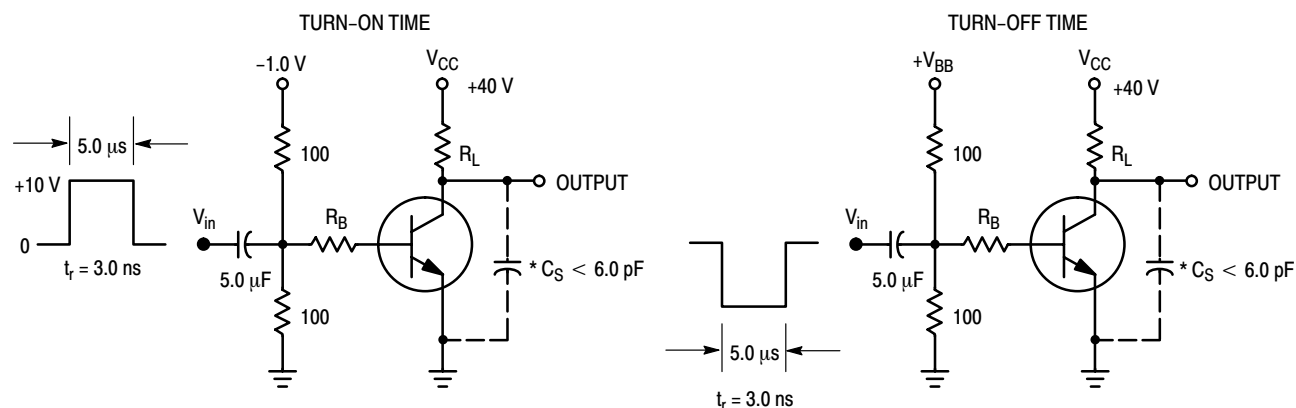
MPSA05, MPSA06, MPSA55, MPSA56

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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

MPSA05, MPSA06, MPSA55, MPSA56

NPN

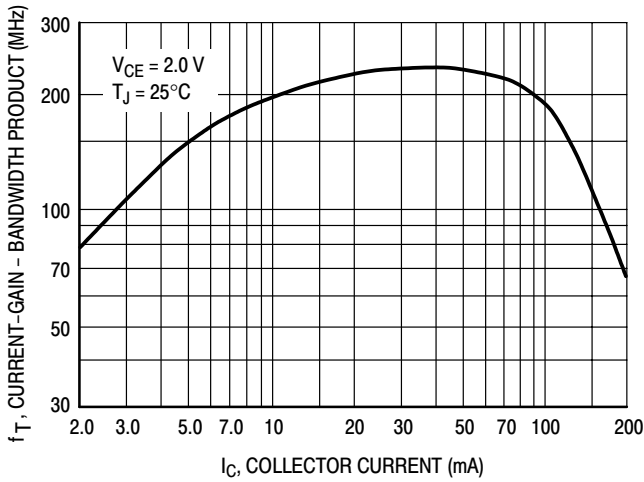


Figure 2. MPSA05/06 Current-Gain — Bandwidth Product

PNP

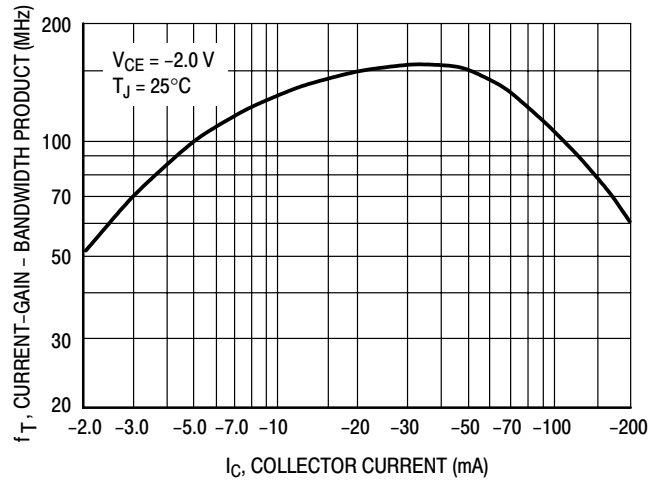


Figure 3. MPSA55/56 Current-Gain — Bandwidth Product

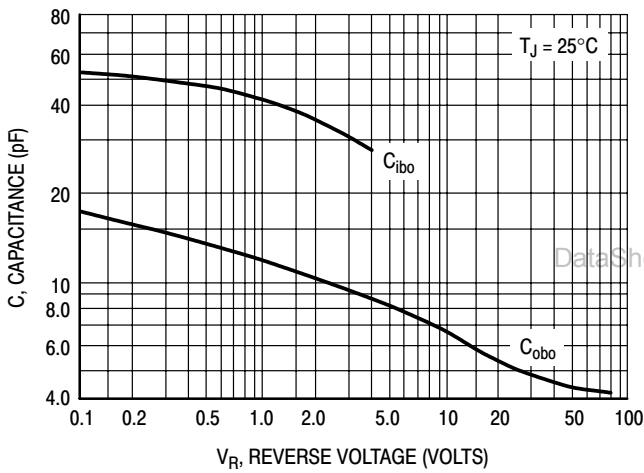


Figure 4. MPSA05/06 Capacitance

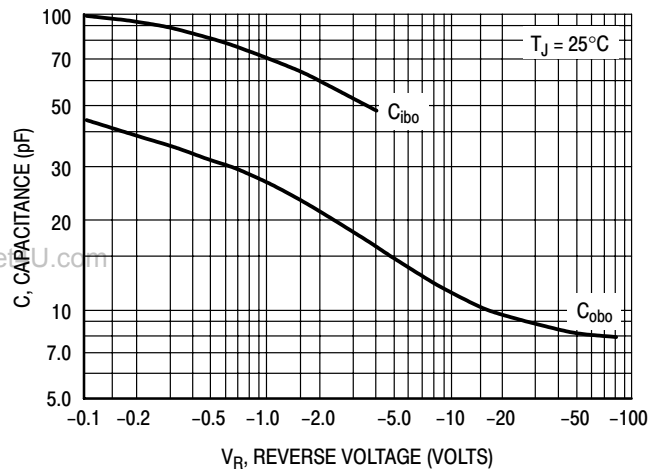


Figure 5. MPSA55/56 Capacitance

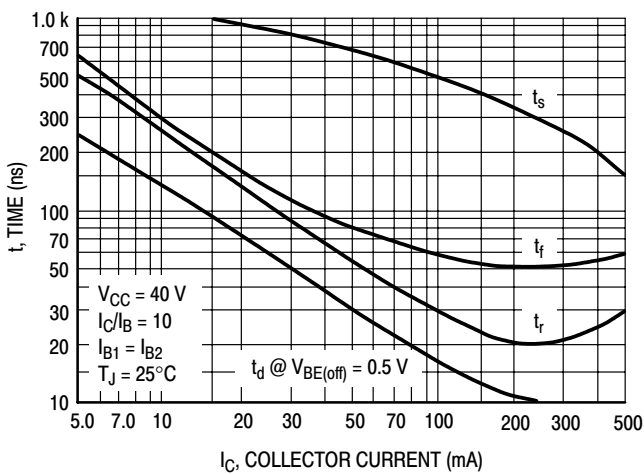


Figure 6. MPSA05/06 Switching Time

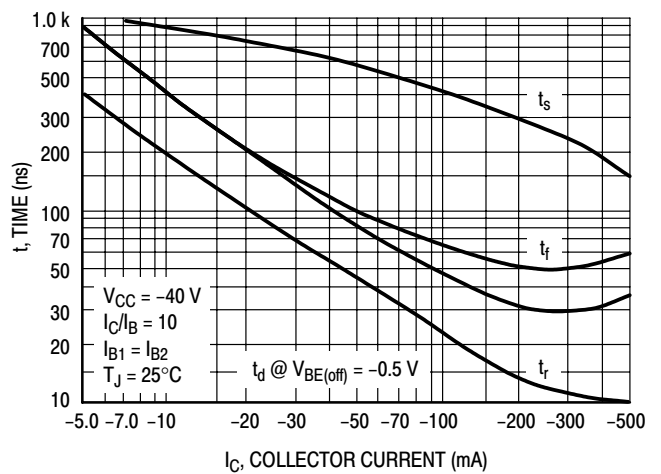


Figure 7. MPSA55/56 Switching Time

MPSA05, MPSA06, MPSA55, MPSA56

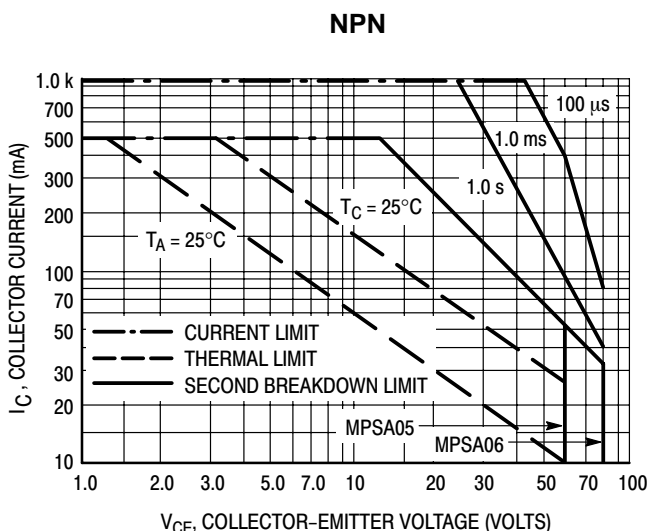


Figure 8. MPSA05/06 Active-Region Safe Operating Area

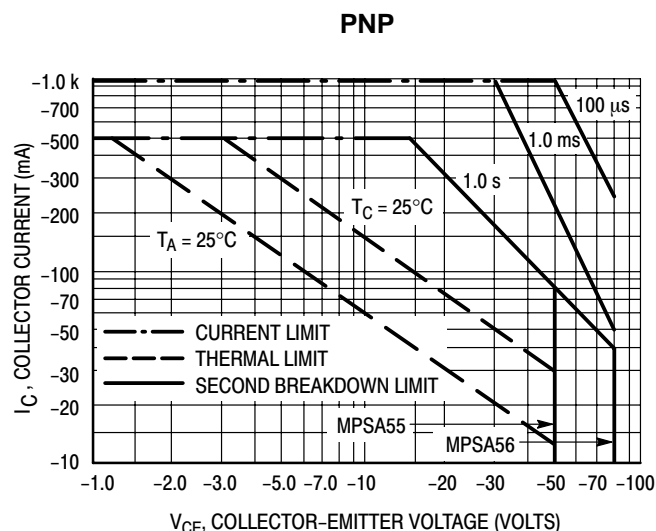


Figure 9. MPSA55/56 Active-Region Safe Operating Area

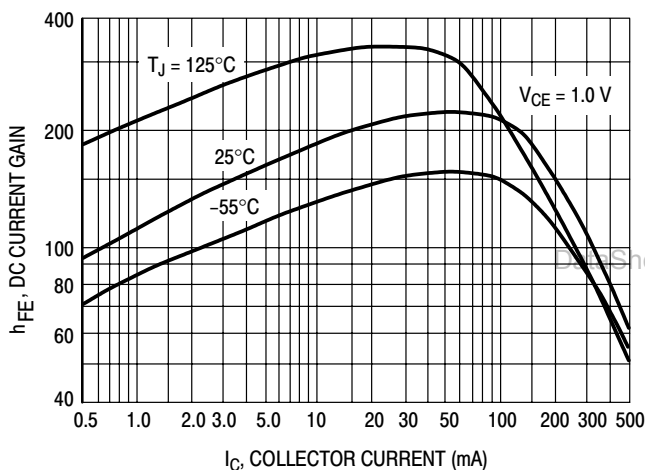


Figure 10. MPSA05/06 DC Current Gain

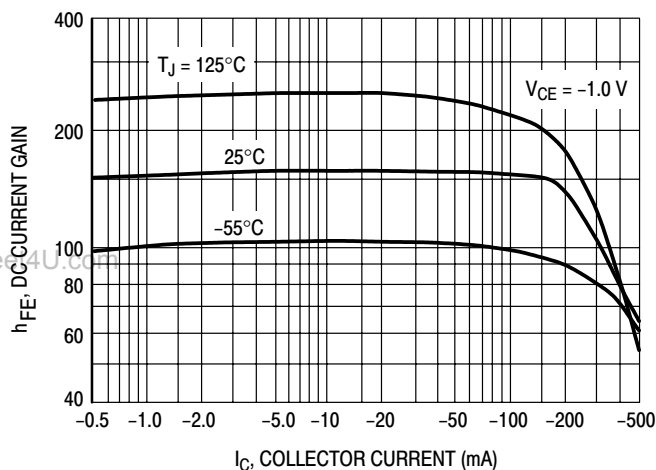


Figure 11. MPSA55/56 DC Current Gain

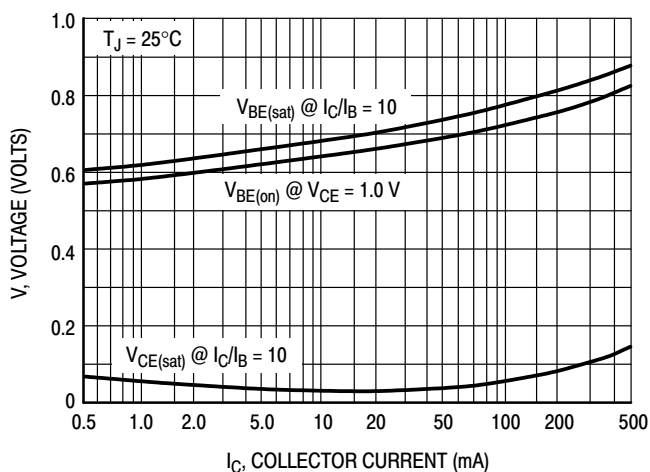


Figure 12. MPSA05/06 "ON" Voltages

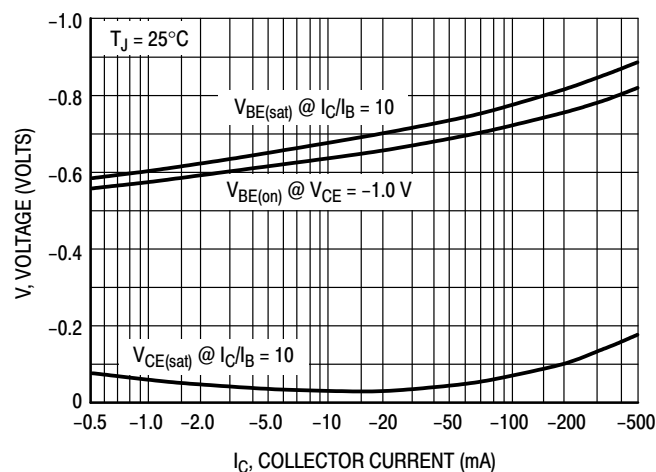


Figure 13. MPSA55/56 "ON" Voltages

MPSA05, MPSA06, MPSA55, MPSA56

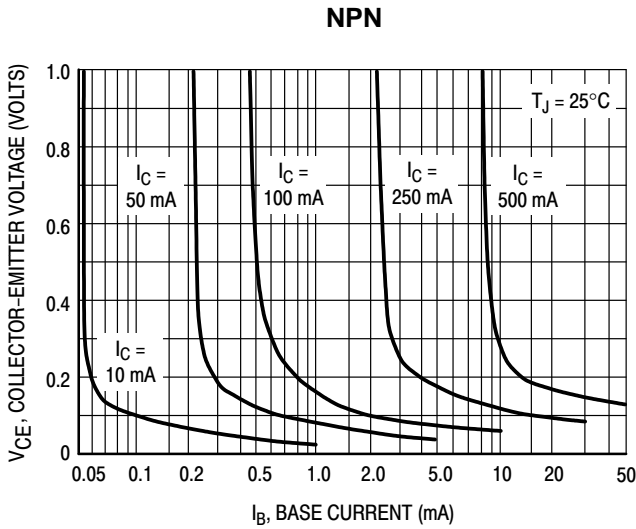


Figure 14. MPSA05/06 Collector Saturation Region

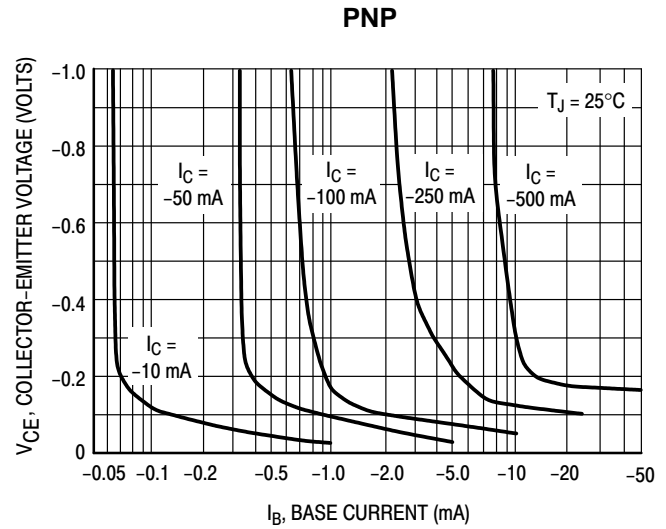


Figure 15. MPSA55/56 Collector Saturation Region

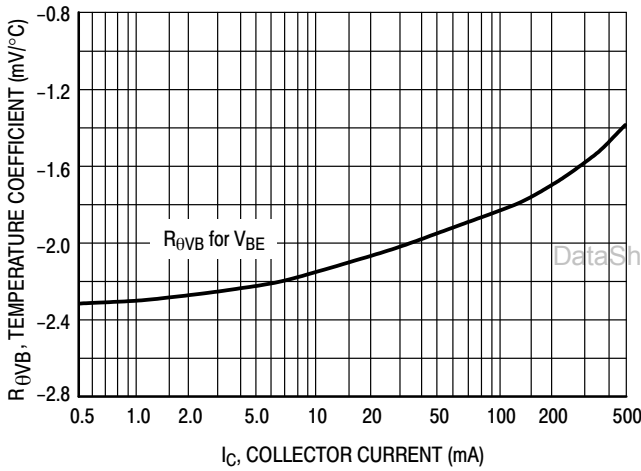


Figure 16. MPSA05/06 Base-Emitter Temperature Coefficient

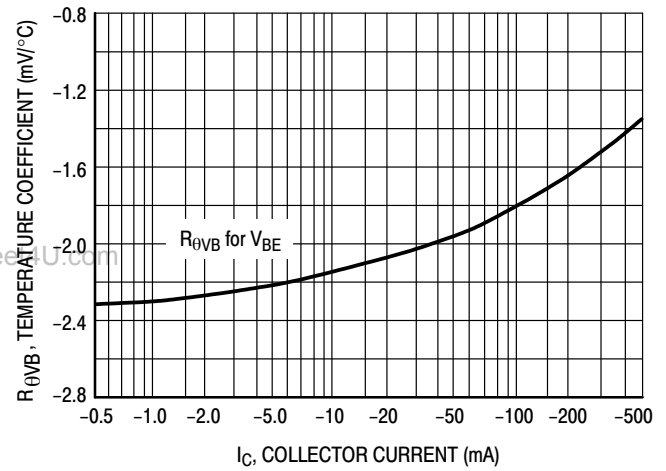


Figure 17. MPSA55/56 Base-Emitter Temperature Coefficient

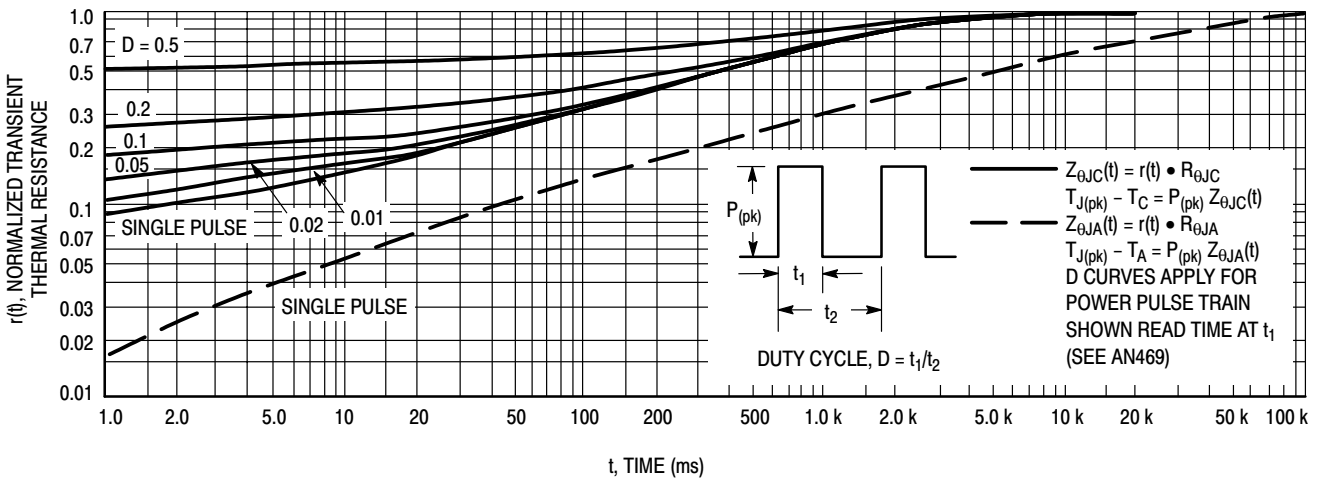
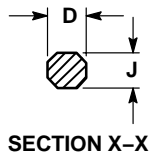
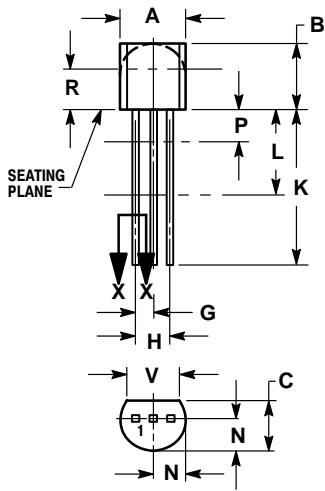


Figure 18. MPSA05, MPSA06, MPSA55 and MPSA56 Thermal Response

MPSA05, MPSA06, MPSA55, MPSA56

PACKAGE DIMENSIONS

TO-92
TO-226AA
CASE 29-11
ISSUE AL



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 | --- |

STYLE 1:

- PIN 1. EMITTER
- BASE
- COLLECTOR

STYLE 14:

- PIN 1. EMITTER
- COLLECTOR
- BASE

Notes


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DataShee

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MPSA05, MPSA06, MPSA55, MPSA56

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