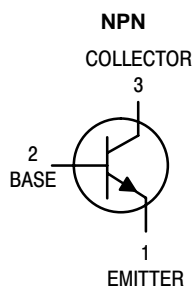


MPSA05, MPSA06, MPSA55, MPSA56

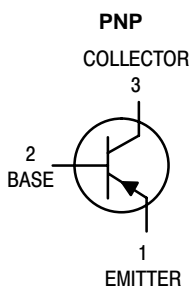
MPSA06 and MPSA56 are Preferred Devices

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_{CEO}	60 80	Vdc
Collector–Base Voltage MPSA05, MPSA55 MPSA06, MPSA56	V_{CBO}	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°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.



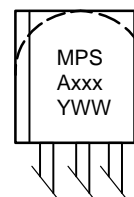
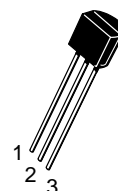
ON Semiconductor™

<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

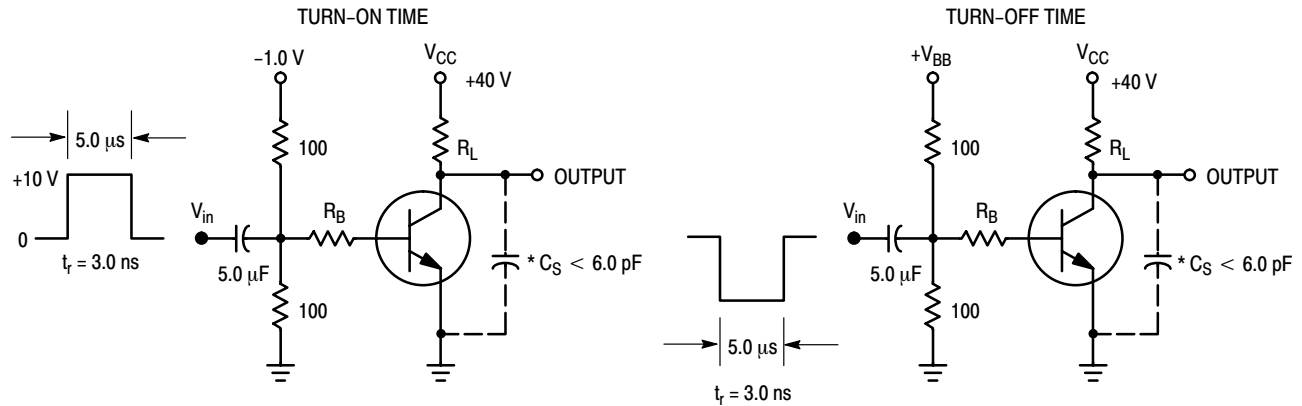
Preferred devices are recommended choices for future use and best overall value.

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

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

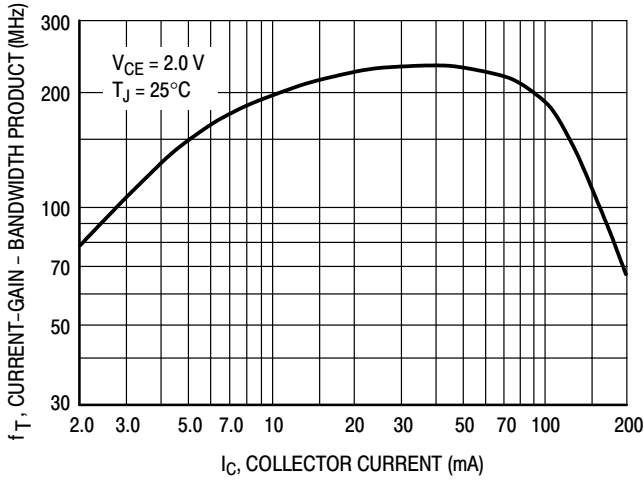


Figure 2. MPSA05/06 Current-Gain — Bandwidth Product

PNP

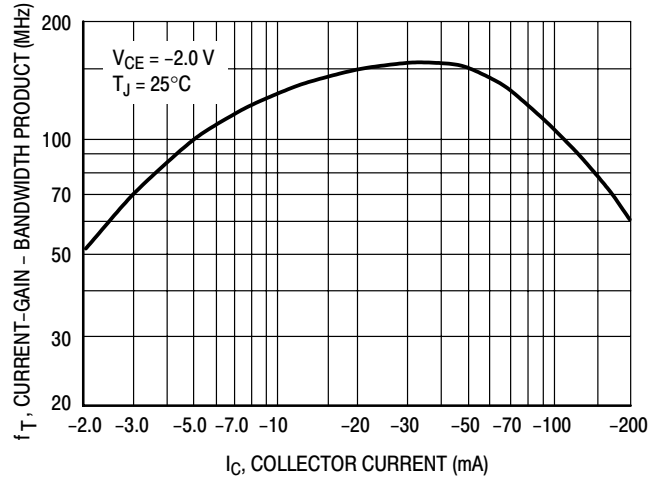


Figure 3. MPSA55/56 Current-Gain — Bandwidth Product

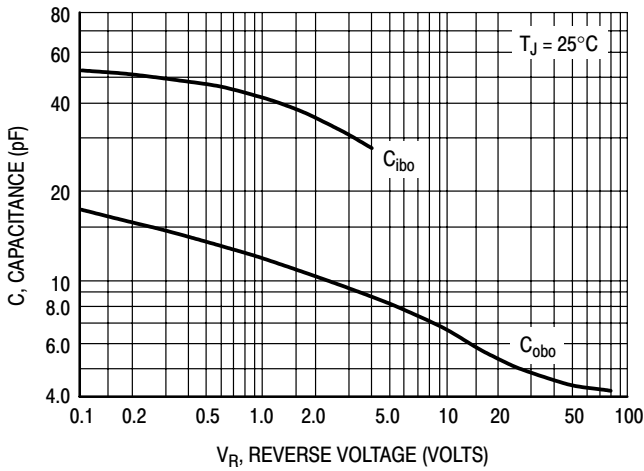


Figure 4. MPSA05/06 Capacitance

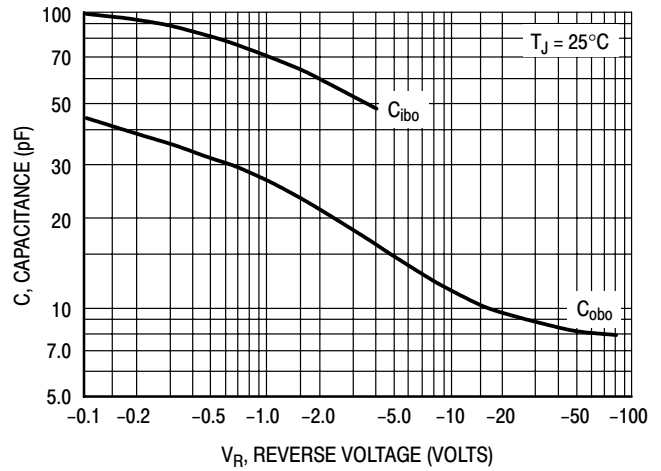


Figure 5. MPSA55/56 Capacitance

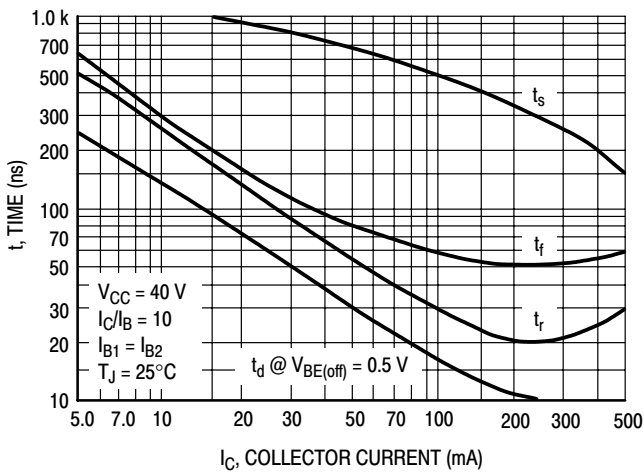


Figure 6. MPSA05/06 Switching Time

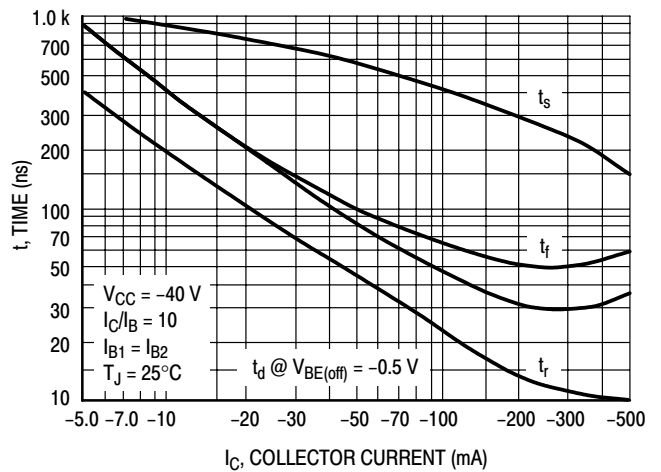


Figure 7. MPSA55/56 Switching Time

MPSA05, MPSA06, MPSA55, MPSA56

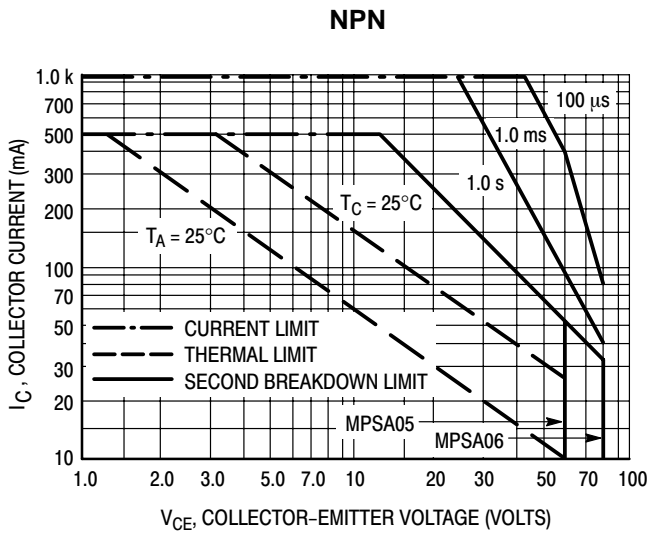


Figure 8. MPSA05/06 Active-Region Safe Operating Area

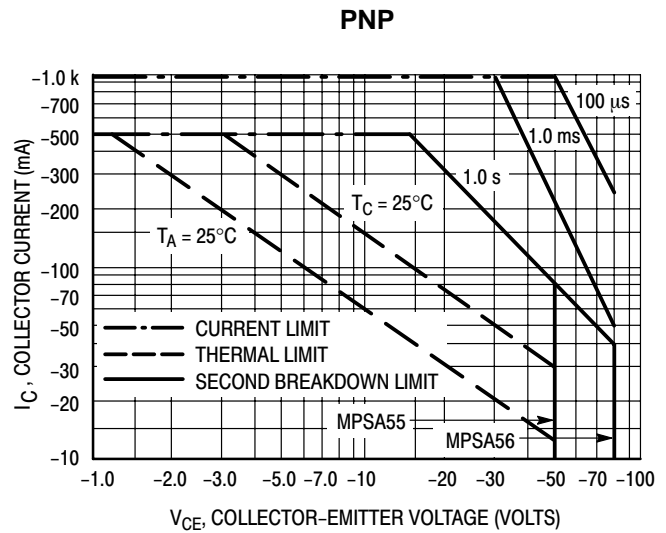


Figure 9. MPSA55/56 Active-Region Safe Operating Area

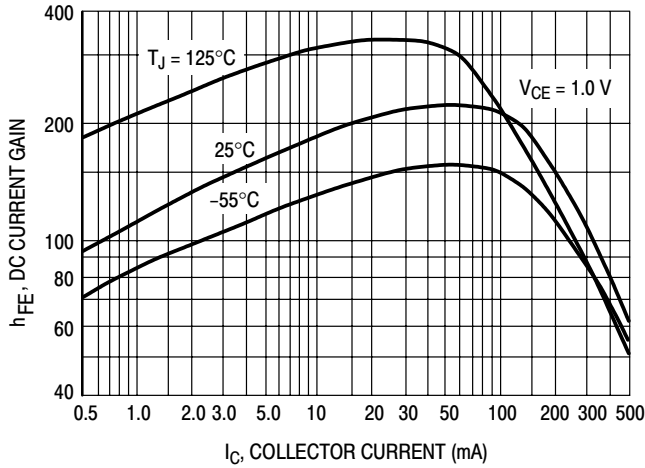


Figure 10. MPSA05/06 DC Current Gain

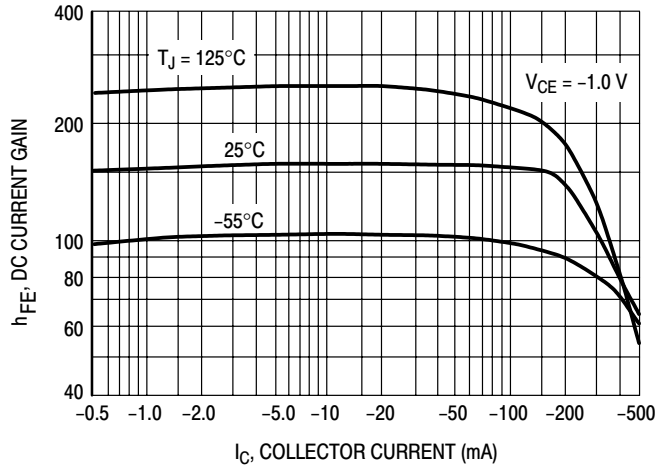


Figure 11. MPSA55/56 DC Current Gain

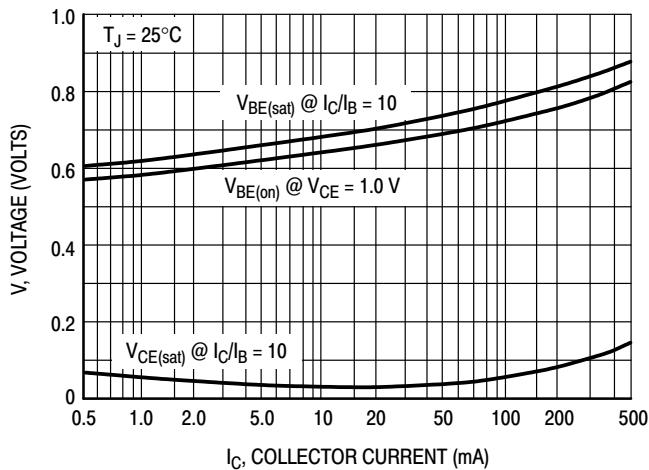


Figure 12. MPSA05/06 "ON" Voltages

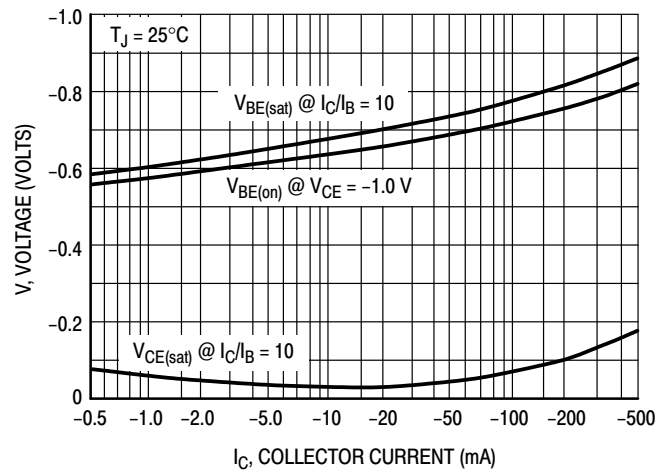


Figure 13. MPSA55/56 "ON" Voltages

MPSA05, MPSA06, MPSA55, MPSA56

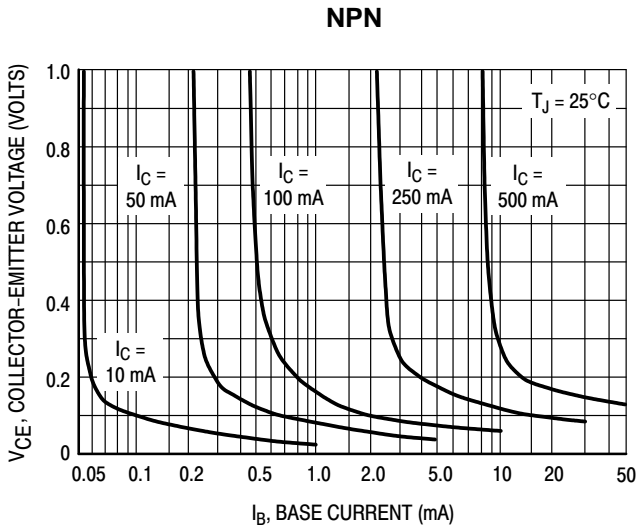


Figure 14. MPSA05/06 Collector Saturation Region

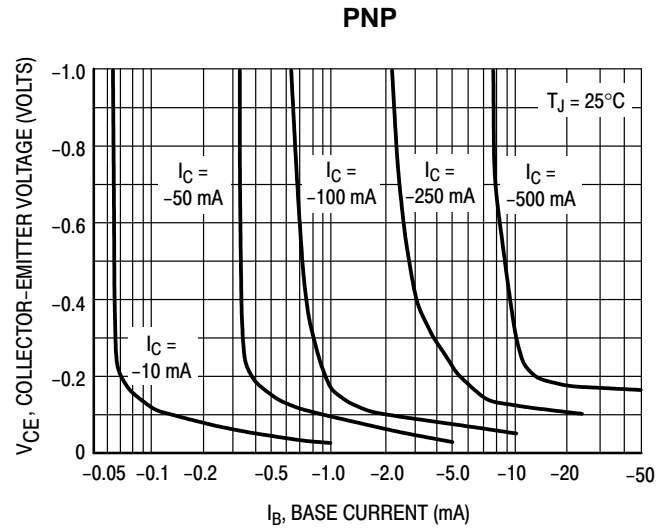


Figure 15. MPSA55/56 Collector Saturation Region

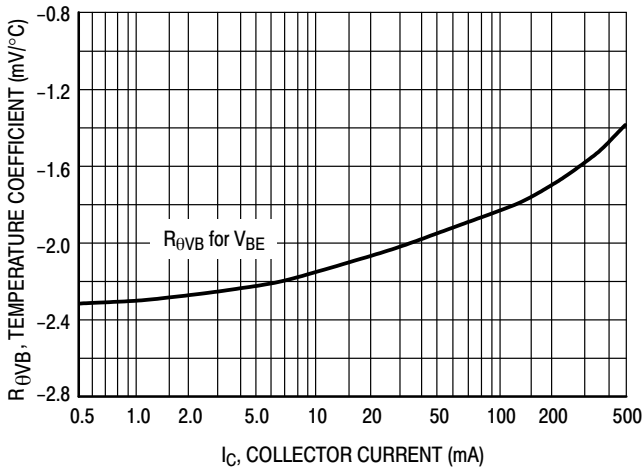


Figure 16. MPSA05/06 Base-Emitter Temperature Coefficient

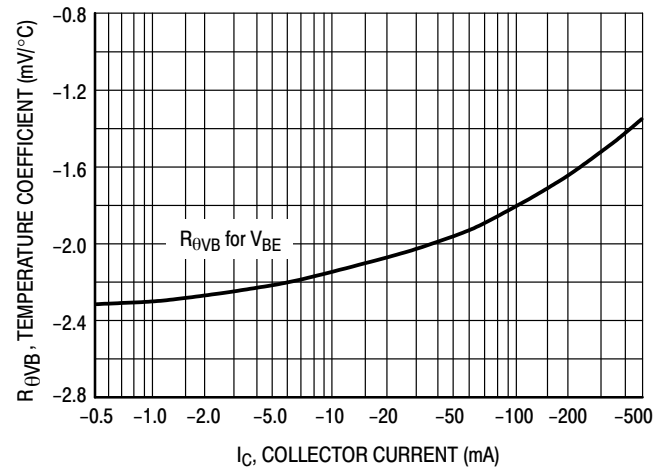


Figure 17. MPSA55/56 Base-Emitter Temperature Coefficient

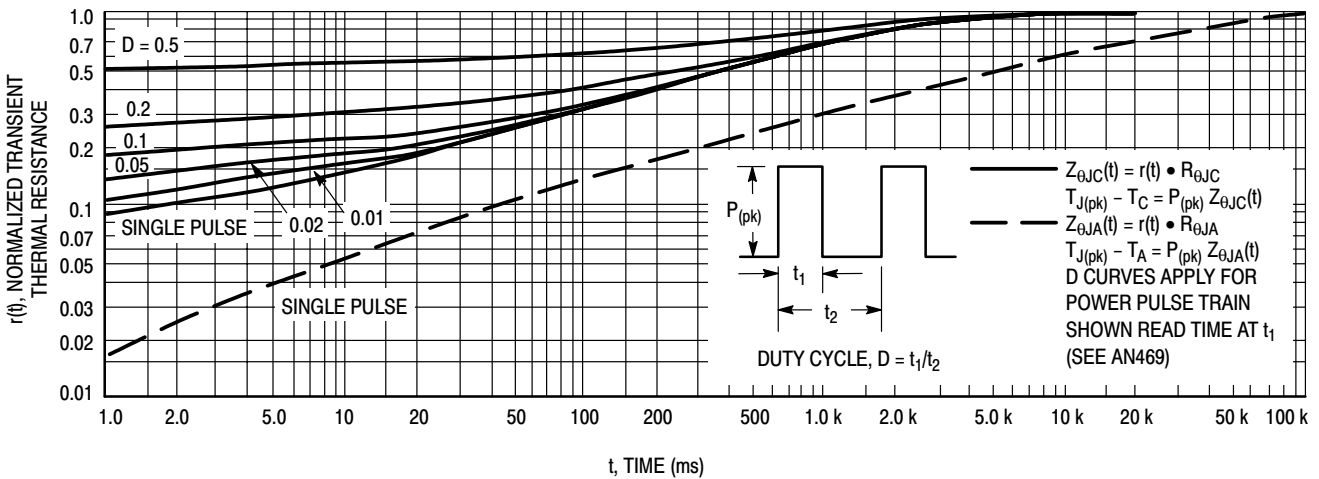
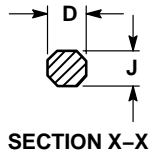
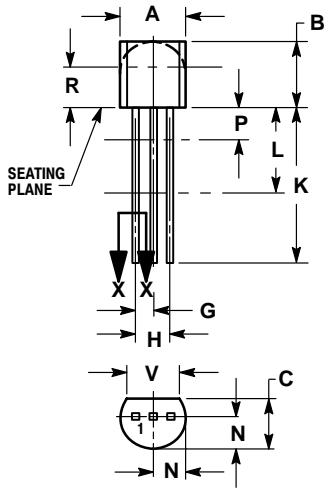


Figure 18. MPSA05, MPSA06, MPSA55 and MPSA56 Thermal Response

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
2. BASE
3. COLLECTOR

STYLE 14:

- PIN 1. EMITTER
2. COLLECTOR
3. BASE

Notes

MPSA05, MPSA06, MPSA55, MPSA56

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