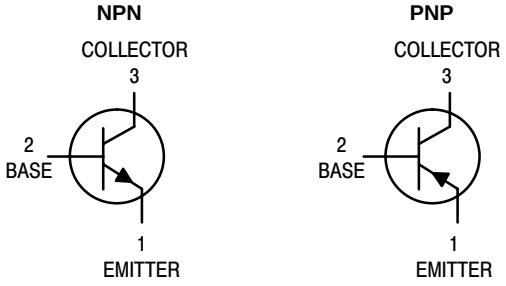
MPSA05, MPSA06, MPSA55, MPSA56

MPSA06 and MPSA56 are Preferred Devices

Amplifier Transistors

Voltage and Current are Negative for PNP Transistors



STYLE 1
MPSA05, MPSA06

STYLE 1
MPSA55, MPSA56

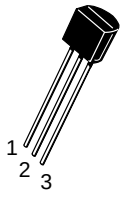
ON Semiconductor™

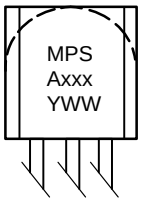
http://onsemi.com

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

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°C Derate above 25°C	P_D	 625 5.0	 mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	 1.5 12	 Watts 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	$R_{\theta JA}$ (Note 1.)	200	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W

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

ORDERING INFORMATION

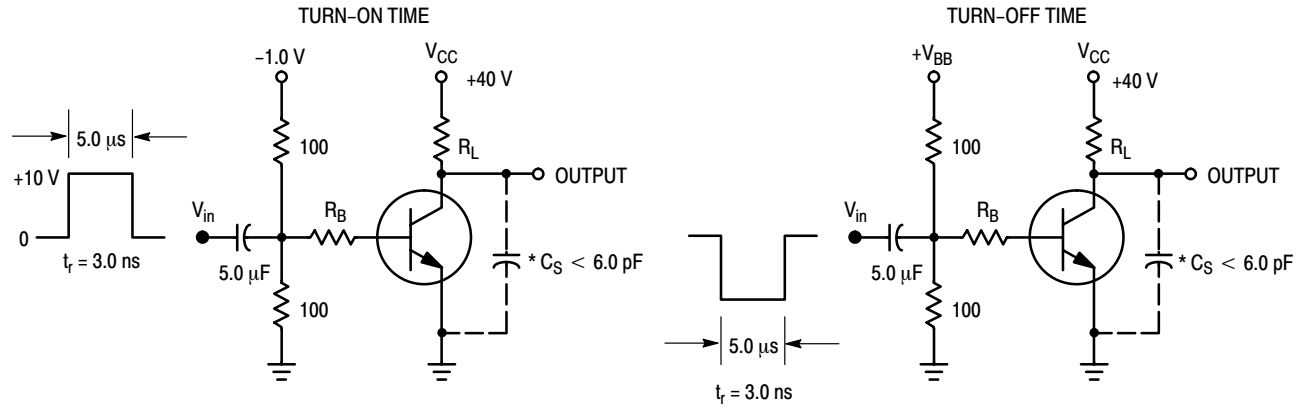
Device	Package	Shipping
MPSA05	TO−92	5000 Units/Box
MPSA05RLRA	TO−92	2000/Tape & Reel
MPSA05RLRM	TO−92	2000/Ammo Pack
MPSA06	TO−92	5000 Units/Box
MPSA06RLRA	TO−92	2000/Tape & Reel
MPSA06RLRM	TO−92	2000/Ammo Pack
MPSA06RLRP	TO−92	2000/Ammo Pack
MPSA55	TO−92	5000 Units/Box
MPSA55RLRA	TO−92	2000/Tape & 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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 2.)		$V_{(BR)CEO}$			Vdc
(I_C = 1.0 mAdc, I_B = 0)	MPSA05, MPSA55		60	−	
	MPSA06, MPSA56		80	−	
Emitter−Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)		$V_{(BR)EBO}$	4.0	−	Vdc
Collector Cutoff Current (V_{CE} = 60 Vdc, I_B = 0)		I_{CES}	−	0.1	μAdc
Collector Cutoff Current		I_{CBO}			μAdc
(V_{CB} = 60 Vdc, I_E = 0)	MPSA05, MPSA55		−	0.1	
(V_{CB} = 80 Vdc, I_E = 0)	MPSA06, MPSA56		−	0.1	
ON CHARACTERISTICS					
DC Current Gain		h_{FE}			−
(I_C = 10 mAdc, V_{CE} = 1.0 Vdc)			100	−	
(I_C = 100 mAdc, V_{CE} = 1.0 Vdc)			100	−	
Collector−Emitter Saturation Voltage		$V_{CE(sat)}$	−	0.25	Vdc
(I_C = 100 mAdc, I_B = 10 mAdc)					
Base−Emitter On Voltage		$V_{BE(on)}$	−	1.2	Vdc
(I_C = 100 mAdc, V_{CE} = 1.0 Vdc)					
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain − Bandwidth Product (Note 3.)		f_T			MHz
(I_C = 10 mA, V_{CE} = 2.0 V, f = 100 MHz)	MPSA05		100	−	
	MPSA06				
(I_C = 100 mAdc, V_{CE} = 1.0 Vdc, f = 100 MHz)	MPSA55		50	−	
	MPSA56				

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 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

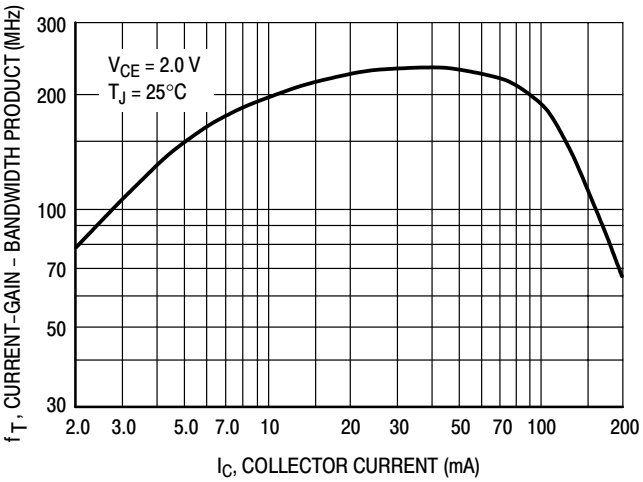


Figure 2. MPSA05/06 Current−Gain — Bandwidth Product

PNP

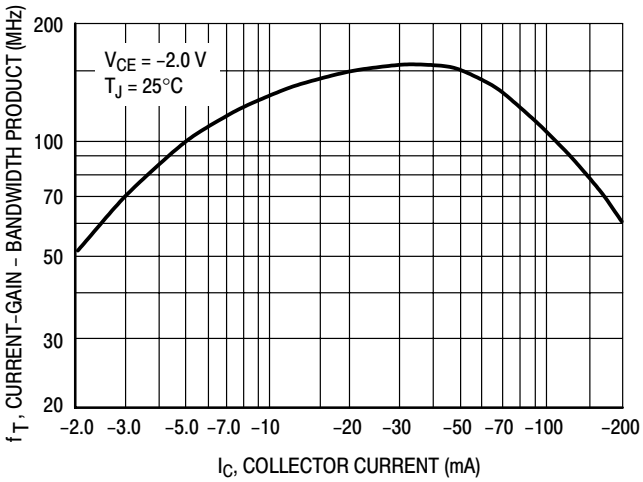


Figure 3. MPSA55/56 Current−Gain — Bandwidth Product

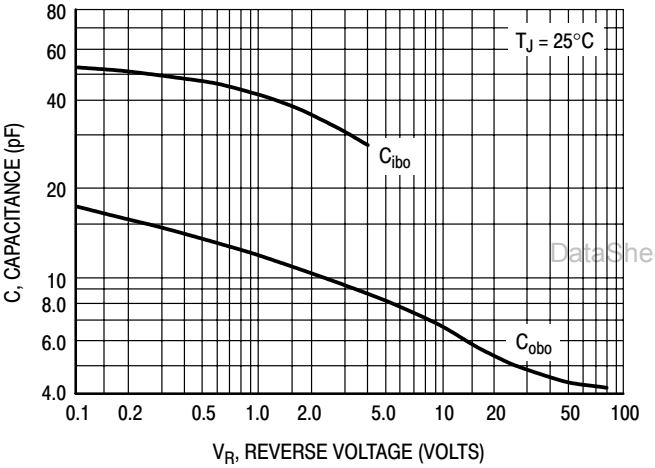


Figure 4. MPSA05/06 Capacitance

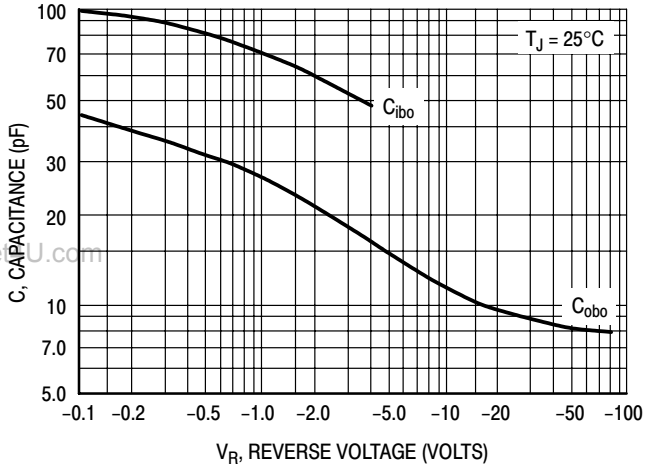


Figure 5. MPSA55/56 Capacitance

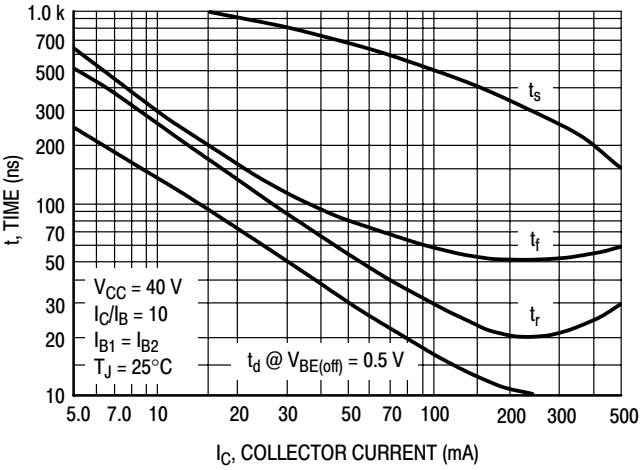


Figure 6. MPSA05/06 Switching Time

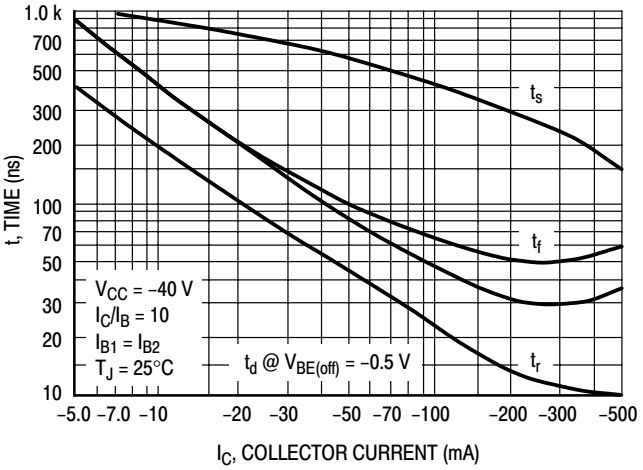


Figure 7. MPSA55/56 Switching Time

NPN

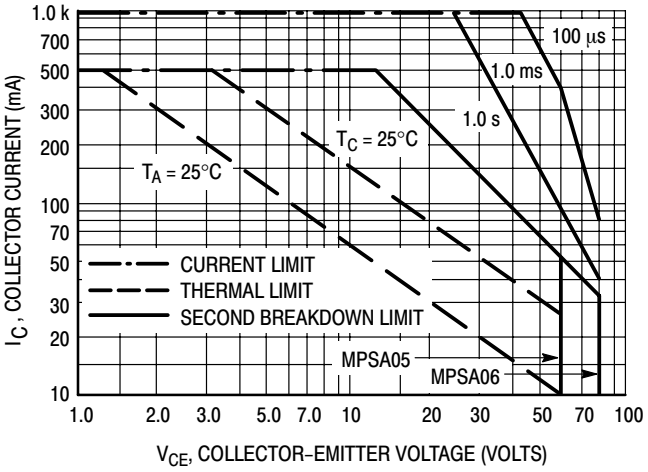


Figure 8. MPSA05/06 Active−Region Safe Operating Area

PNP

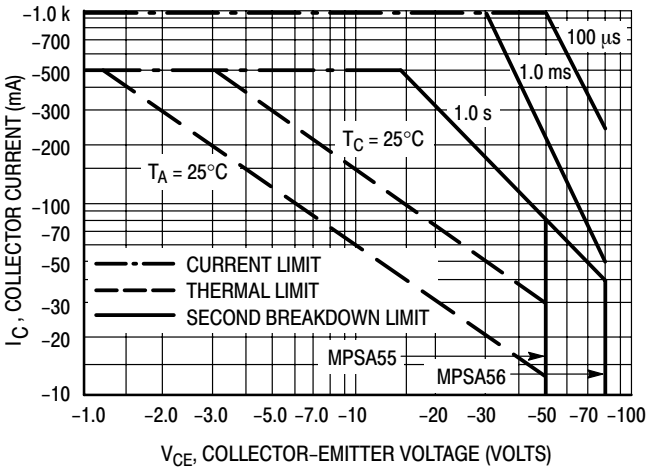


Figure 9. MPSA55/56 Active−Region Safe Operating Area

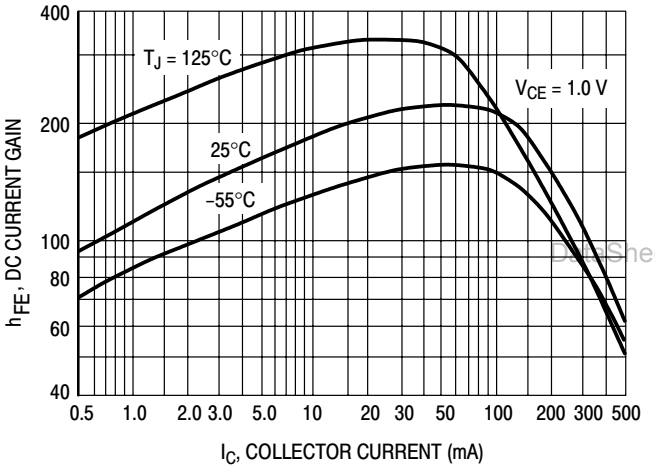


Figure 10. MPSA05/06 DC Current Gain

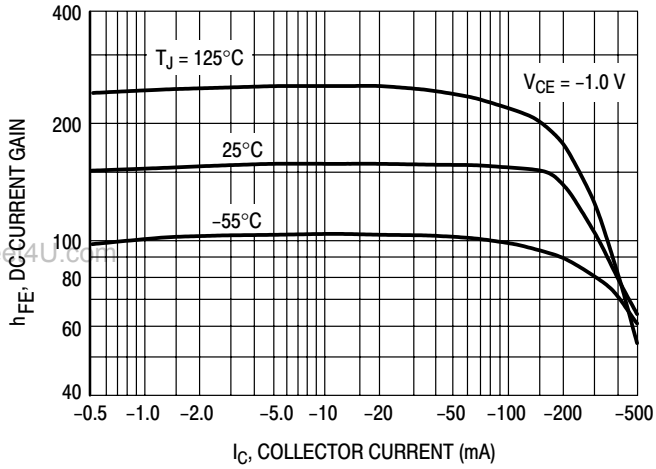


Figure 11. MPSA55/56 DC Current Gain

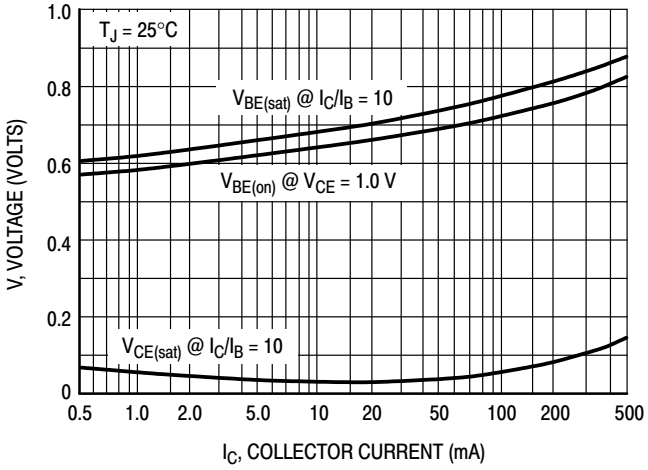


Figure 12. MPSA05/06 “ON” Voltages

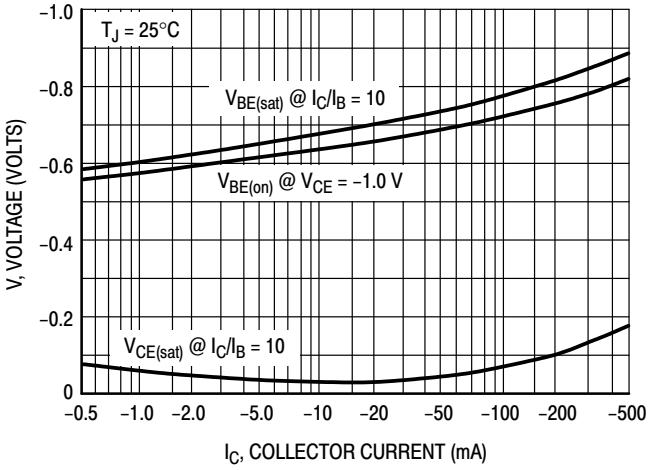


Figure 13. MPSA55/56 “ON” Voltages

NPN

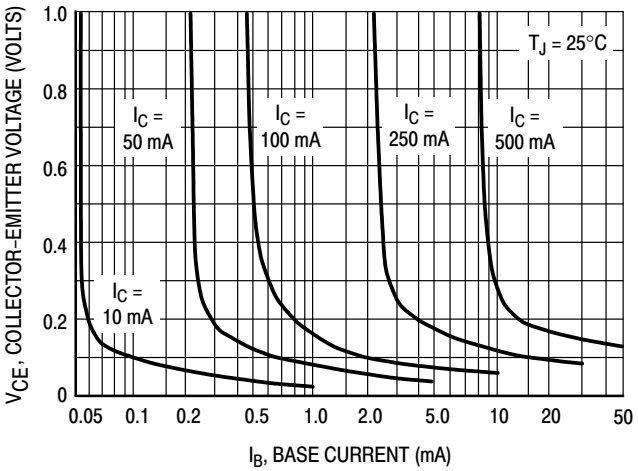


Figure 14. MPSA05/06 Collector Saturation Region

PNP

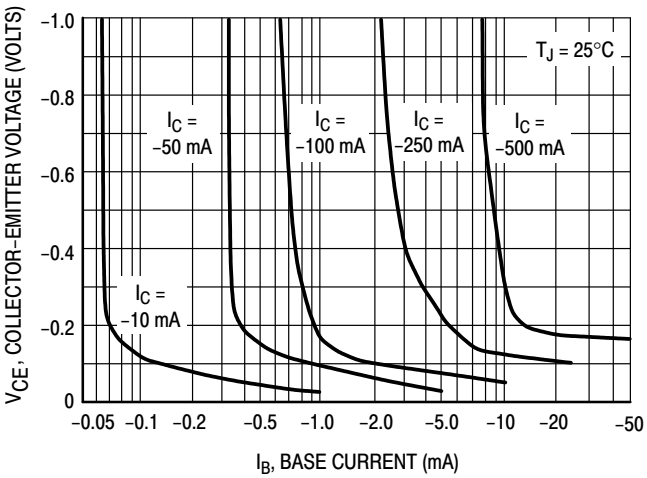


Figure 15. MPSA55/56 Collector Saturation Region

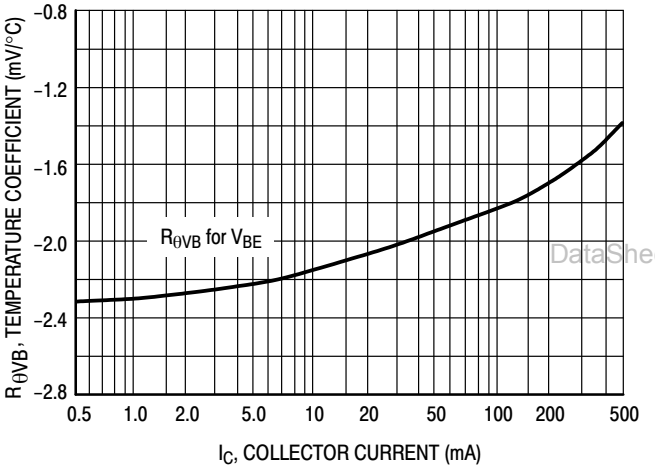


Figure 16. MPSA05/06 Base−Emitter Temperature Coefficient

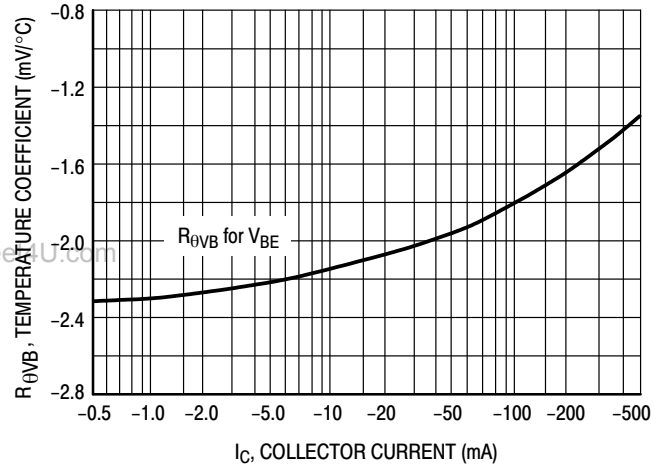


Figure 17. MPSA55/56 Base−Emitter Temperature Coefficient

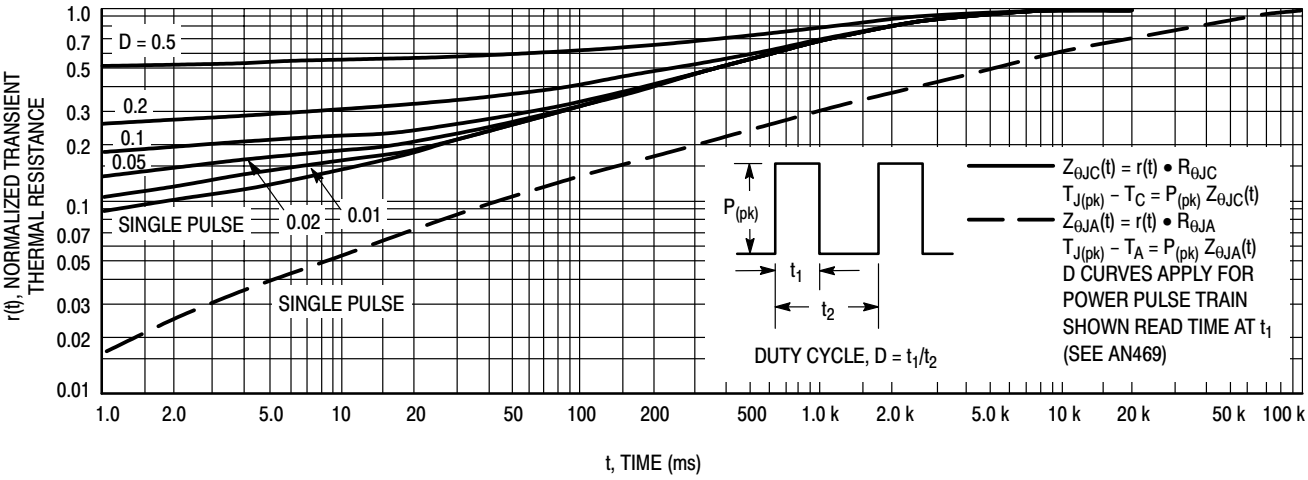
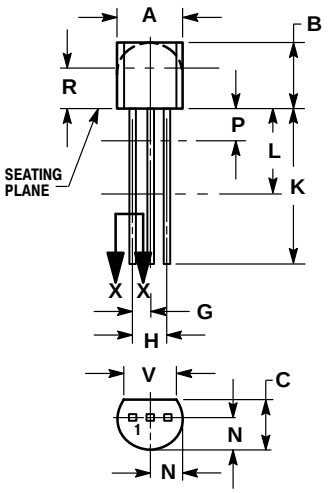
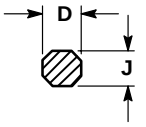


Figure 18. MPSA05, MPSA06, MPSA55 and MPSA56 Thermal Response

PACKAGE DIMENSIONS

TO−92
TO−226AA
CASE 29−11
ISSUE AL





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.

	INCHES		MILLIMETERS	
DIM	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

PUBLICATION ORDERING INFORMATION

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