MPSA44

Preferred Device

High Voltage Transistor

NPN Silicon

ON Semiconductor®

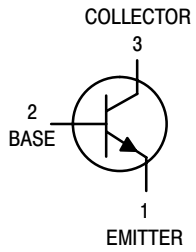
http://onsemi.com

MAXIMUM RATINGS

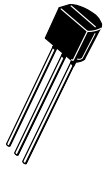
Rating	Symbol	Value	Unit
Collector−Emitter Voltage	V_{CEO}	400	Vdc
Collector−Base Voltage	V_{CBO}	500	Vdc
Emitter−Base Voltage	V_{EBO}	6.0	Vdc
Collector Current − Continuous	I_C	300	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	625 5.0	mW mW/°C
Total Device Dissipation @ T_C = 25°C 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

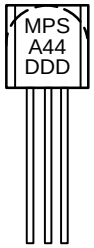
THERMAL CHARACTERISTICS

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



MARKING DIAGRAM





TO−92 (TO−226AA)
CASE 29−11
Style 1

MPSA44= Specific Device Cod
DDD = Date Code

ORDERING INFORMATION

Device	Package	Shipping
MPSA44	TO−92	5000 Units / Bag
MPSA44RLRA	TO−92	2000 / Tape & Reel
MPSA44RL1	TO−92	2000 / Tape & Reel

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 1) (I_C = 1.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	400	−	Vdc
Collector−Emitter Breakdown Voltage (I_C = 100 μAdc, V_{BE} = 0)	$V_{(BR)CES}$	500	−	Vdc
Collector−Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	$V_{(BR)CBO}$	500	−	Vdc
Emitter−Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	6.0	−	Vdc
Collector Cutoff Current (V_{CB} = 400 Vdc, I_E = 0)	I_{CBO}	−	0.1	μAdc
Collector Cutoff Current (V_{CE} = 400 Vdc, V_{BE} = 0)	I_{CES}	−	500	nAdc
Emitter Cutoff Current (V_{EB} = 4.0 Vdc, I_C = 0)	I_{EBO}	−	0.1	μAdc
ON CHARACTERISTICS (Note 1)				
DC Current Gain (Note 1) (I_C = 1.0 mAdc, V_{CE} = 10 Vdc) (I_C = 10 mAdc, V_{CE} = 10 Vdc) (I_C = 50 mAdc, V_{CE} = 10 Vdc) (I_C = 100 mAdc, V_{CE} = 10 Vdc)	h_{FE}	 40 50 45 40	 − 200 − −	−
Collector−Emitter Saturation Voltage (Note 1) (I_C = 1.0 mAdc, I_B = 0.1 mAdc) (I_C = 10 mAdc, I_B = 1.0 mAdc) (I_C = 50 mAdc, I_B = 5.0 mAdc)	$V_{CE(sat)}$	 − − −	 0.4 0.5 0.75	Vdc
Base−Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)	$V_{BE(sat)}$	−	0.75	Vdc
SMALL−SIGNAL CHARACTERISTICS				
Output Capacitance (V_{CB} = 20 Vdc, I_E = 0, f = 1.0 MHz)	C_{obo}	−	7.0	pF
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)	C_{ibo}	−	130	pF
Small−Signal Current Gain (I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 20 MHz)	h_{fe}	1.0	−	−

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

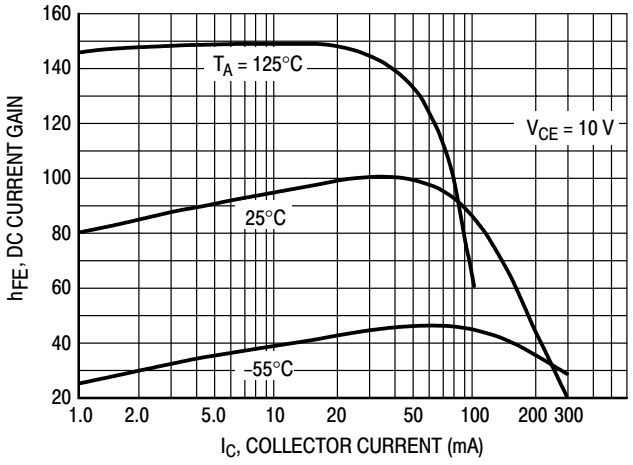


Figure 1. DC Current Gain

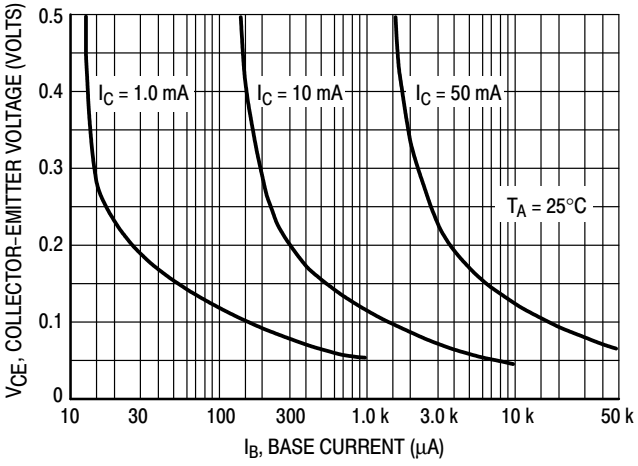


Figure 2. Collector Saturation Region

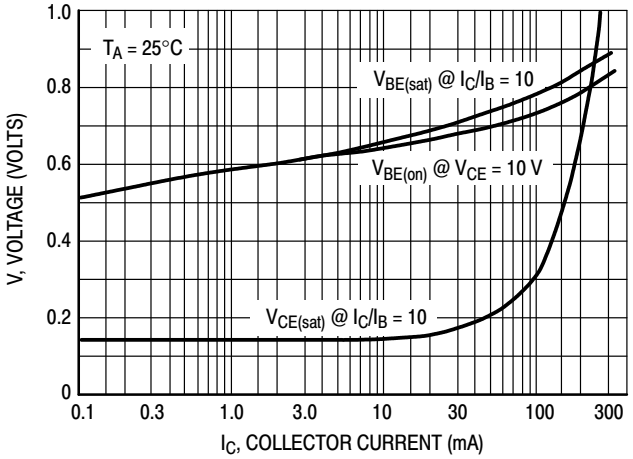


Figure 3. “On” Voltages

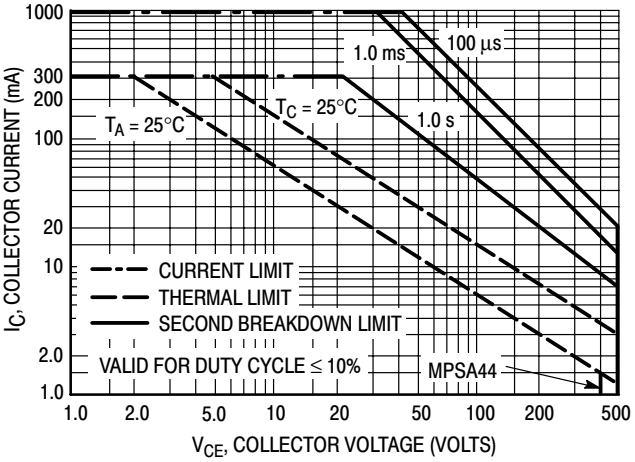


Figure 4. Active Region − Safe Operating Area

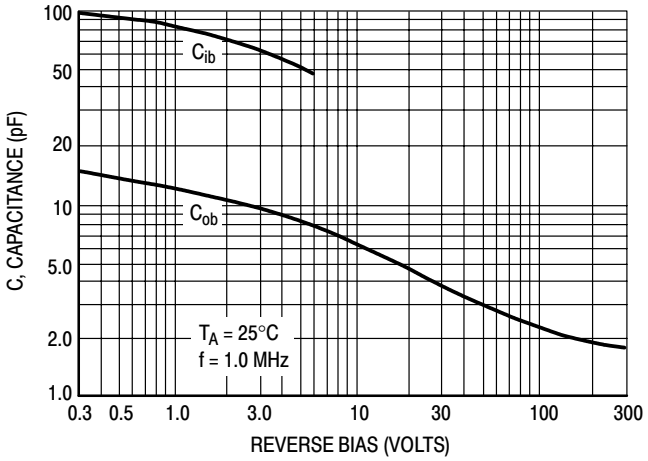


Figure 5. Capacitance

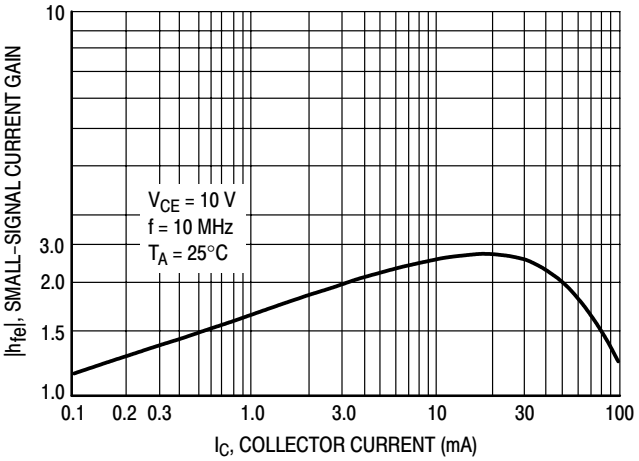


Figure 6. High Frequency Current Gain

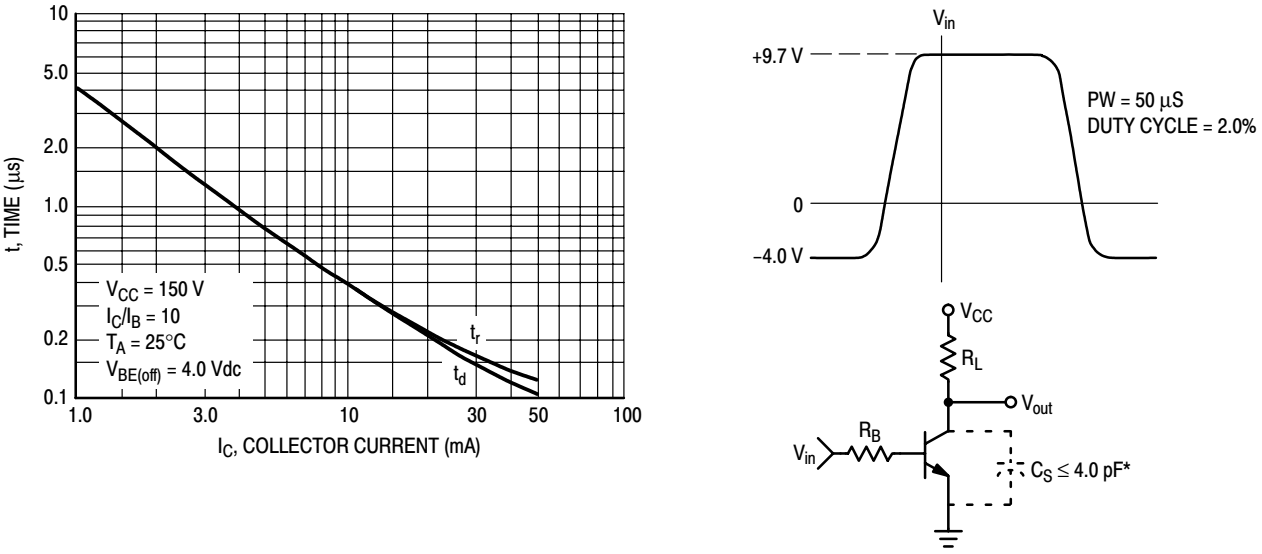


Figure 7. Turn−On Switching Times and Test Circuit

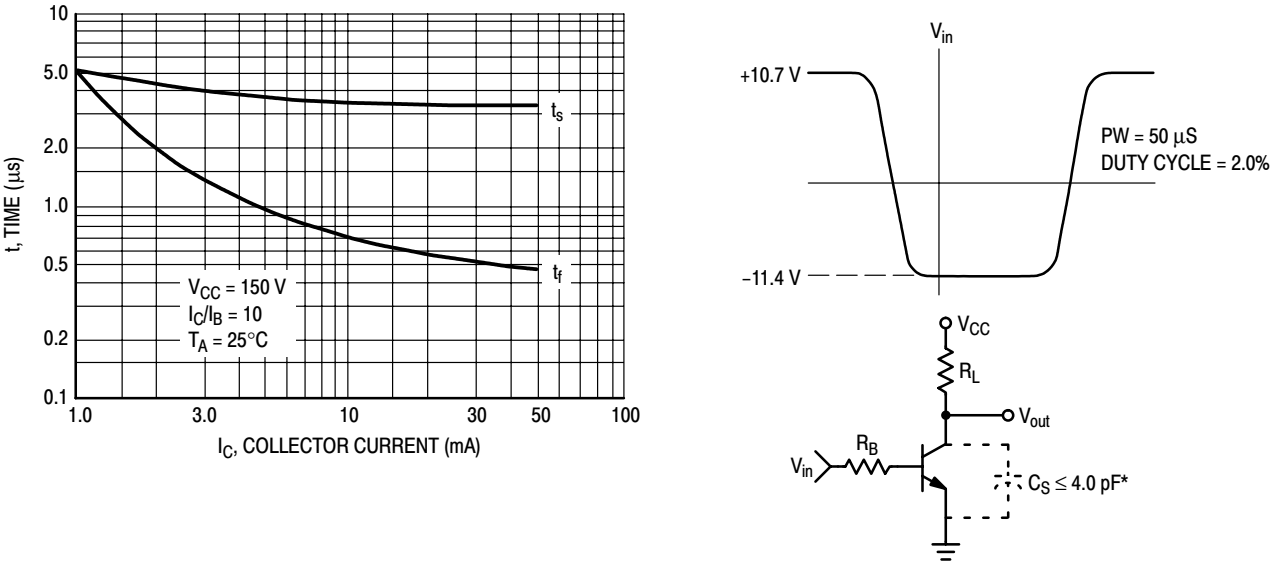
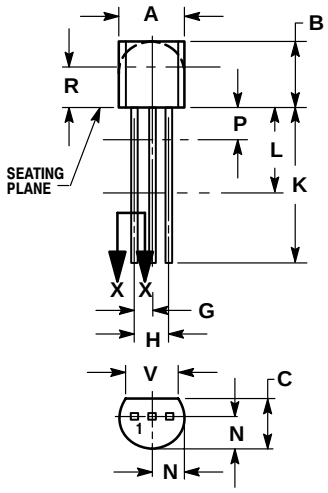


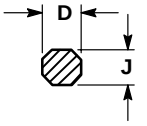
Figure 8. Turn−Off Switching Times and Test Circuit

*Total Shunt Capacitance or Test Jig and Connectors.

PACKAGE DIMENSIONS

TO−92 (TO−226)
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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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