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MPSA27

Darlington Transistor

NPN Silicon

Features

- These are Pb-Free Devices*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CES}	60	Vdc
Emitter-Base Voltage	V_{EBO}	10	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/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

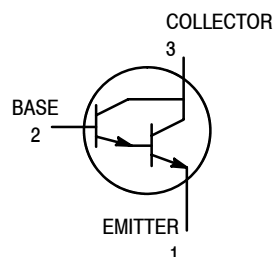
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$

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.

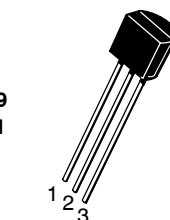


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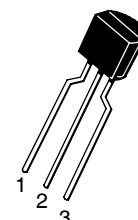
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TO-92
CASE 29
STYLE 1

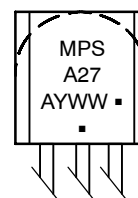


STRAIGHT LEAD
BULK PACK



BENT LEAD
TAPE & REEL
AMMO PACK

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
■ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MPSA27G	TO-92 (Pb-Free)	5000 Units/Bulk
MPSA27RLRA	TO-92	2000/Tape & Reel
MPSA27RLRAG	TO-92 (Pb-Free)	2000/Tape & Reel

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

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

MPSA27

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 100\ \mu\text{Adc}$, $V_{BE} = 0$)	$V_{(BR)CES}$	60	-	-	Vdc
Collector-Base Breakdown Voltage ($I_C = 100\ \mu\text{Adc}$, $I_E = 0$)	$V_{(BR)CBO}$	60	-	-	Vdc
Collector Cutoff Current ($V_{CB} = 30\ \text{V}$, $I_E = 0$) ($V_{CB} = 40\ \text{V}$, $I_E = 0$) ($V_{CB} = 50\ \text{V}$, $I_E = 0$)	I_{CBO}	-	-	100	nAdc
Collector Cutoff Current ($V_{CE} = 30\ \text{V}$, $V_{BE} = 0$) ($V_{CE} = 40\ \text{V}$, $V_{BE} = 0$) ($V_{CE} = 50\ \text{V}$, $V_{BE} = 0$)	I_{CES}	-	-	500	nAdc
Emitter Cutoff Current ($V_{EB} = 10\ \text{Vdc}$)	I_{EBO}	-	-	100	nAdc
ON CHARACTERISTICS (Note 1)					
DC Current Gain ($I_C = 10\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$) ($I_C = 100\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$)	h_{FE}	10,000 10,000	- -	- -	-
Collector-Emitter Saturation Voltage ($I_C = 100\ \text{mA}$, $I_B = 0.1\ \text{mAdc}$)	$V_{CE(sat)}$	-	-	1.5	Vdc
Base-Emitter On Voltage ($I_C = 100\ \text{mA}$, $V_{CE} = 5.0\ \text{Vdc}$)	$V_{BE(on)}$	-	-	2.0	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Small Signal Current Gain ($I_C = 10\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$, $f = 100\ \text{MHz}$)	h_{fe}	1.25	2.4	-	-

1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

MPSA27

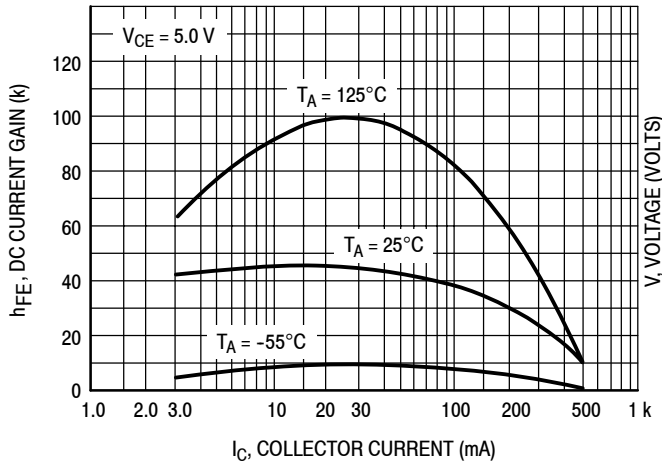


Figure 1. DC Current Gain

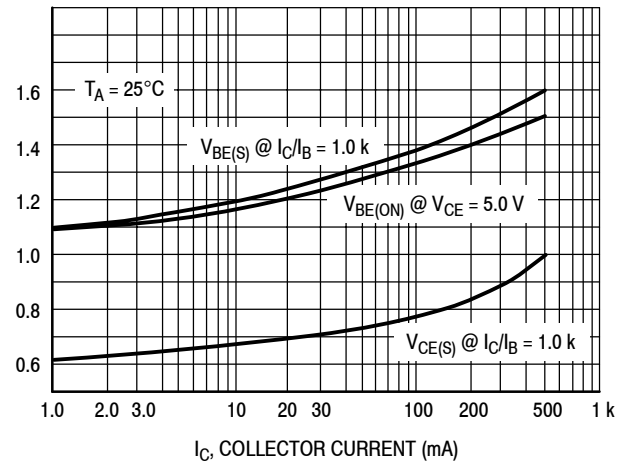


Figure 2. "ON" Voltages

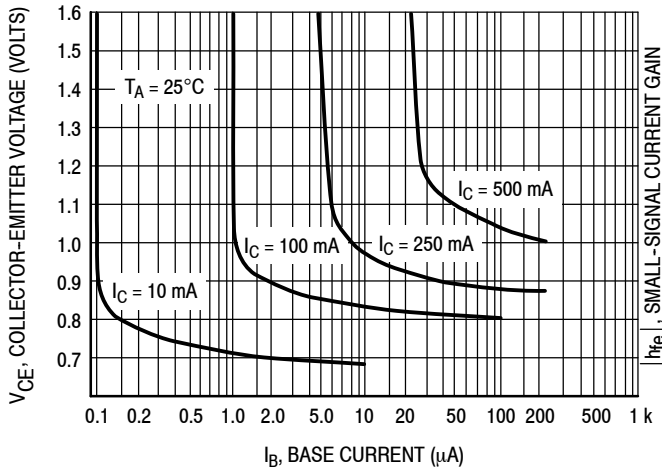


Figure 3. Collector Saturation Region

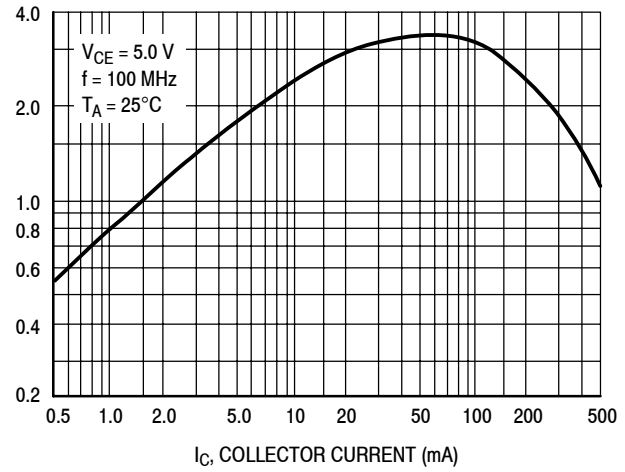


Figure 4. High Frequency Current Gain

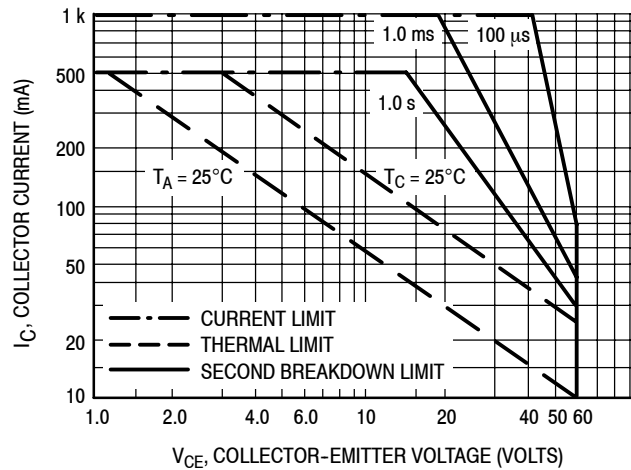
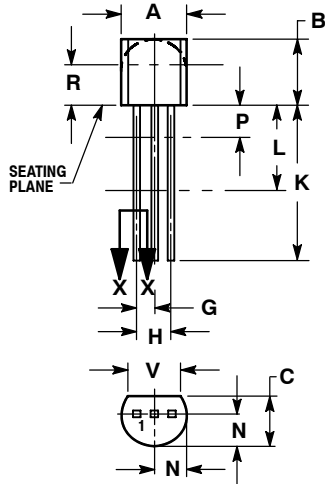


Figure 5. Active Region - Safe Operating Area

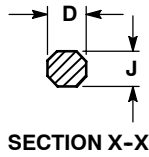
MPSA27

PACKAGE DIMENSIONS

TO-92 (TO-226)
CASE 29-11
ISSUE AM



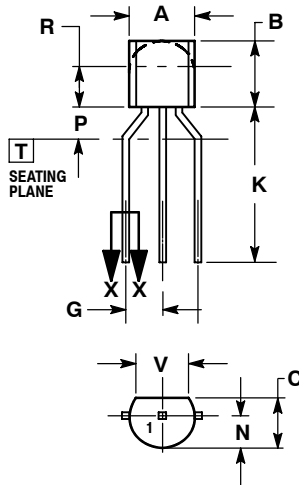
STRAIGHT LEAD
BULK PACK



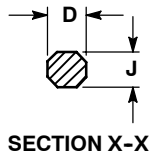
NOTES:

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



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:

- PIN 1. EMITTER
2. BASE
3. COLLECTOR

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