

MPSA27

Darlington Transistor

NPN Silicon

Features

- Pb-Free Packages are Available*

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/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	°C

THERMAL CHARACTERISTICS

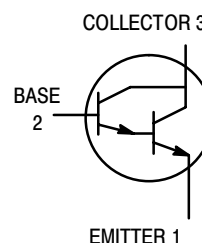
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	°C/W

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

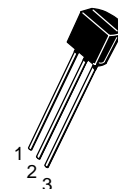


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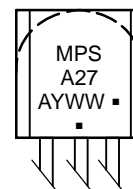
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MARKING DIAGRAM



TO-92
CASE 29-11
STYLE 1



MPSA27 = Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MPSA27	TO-92	5000 Units/Box
MPSA27G	TO-92 (Pb-Free)	5000 Units/Box
MPSA27RLRA	TO-92	2000/Tape & Reel
MPSA27RLRAG	TO-92 (Pb-Free)	2000/Tape & Reel
MPSA27RLRM	TO-92	2000/Ammo Pack
MPSA27RLRMG	TO-92 (Pb-Free)	2000/Ammo Pack

†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.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage ($I_C = 100\ \mu\text{A}$, $V_{BE} = 0$)	$V_{(BR)CES}$	60	–	–	Vdc
Collector–Base Breakdown Voltage ($I_C = 100\ \mu\text{A}$, $I_E = 0$)	$V_{(BR)CBO}$	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	nA _{dc}
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	nA _{dc}
Emitter Cutoff Current ($V_{EB} = 10\ \text{Vdc}$)	I_{EBO}	–	–	100	nA _{dc}
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 ($I_C = 100\ \text{mA}$, $I_B = 0.1\ \text{mA}$)	$V_{CE(sat)}$	–	–	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 $\leq 2.0\%$.

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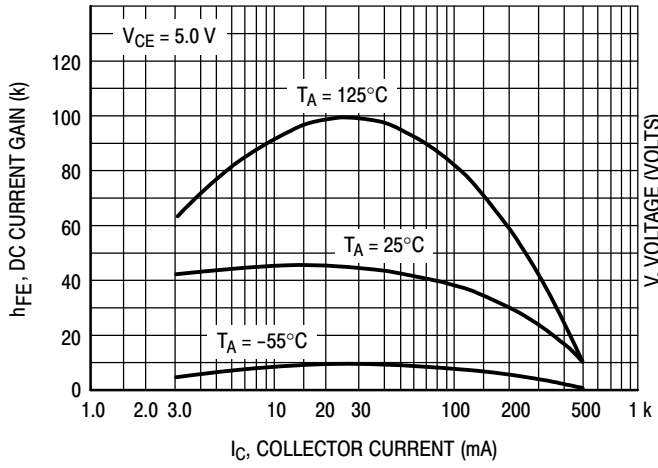


Figure 1. DC Current Gain

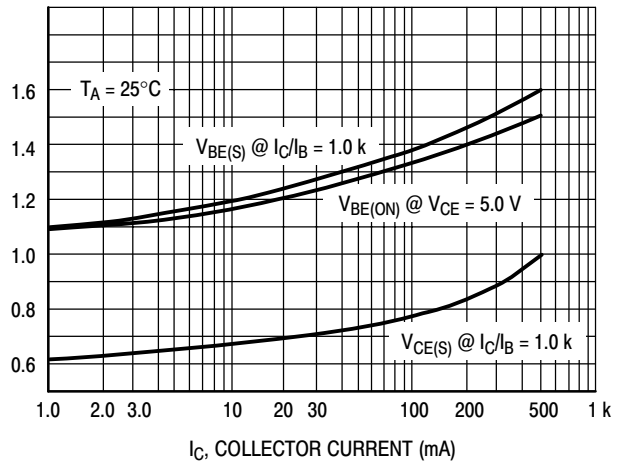


Figure 2. "ON" Voltages

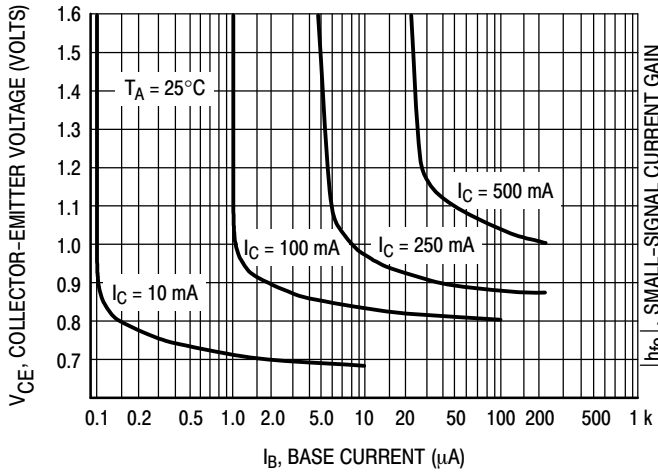


Figure 3. Collector Saturation Region

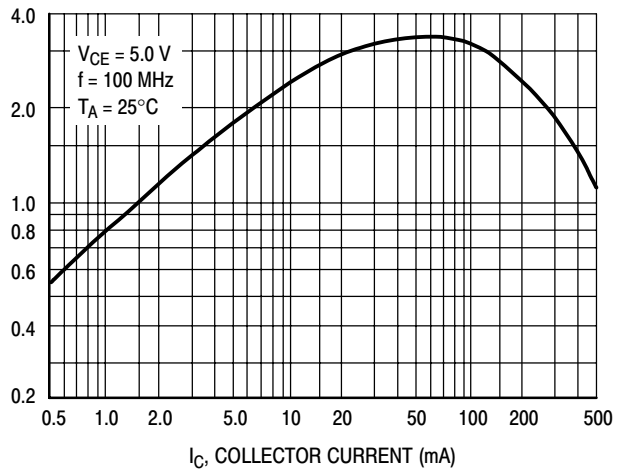


Figure 4. High Frequency Current Gain

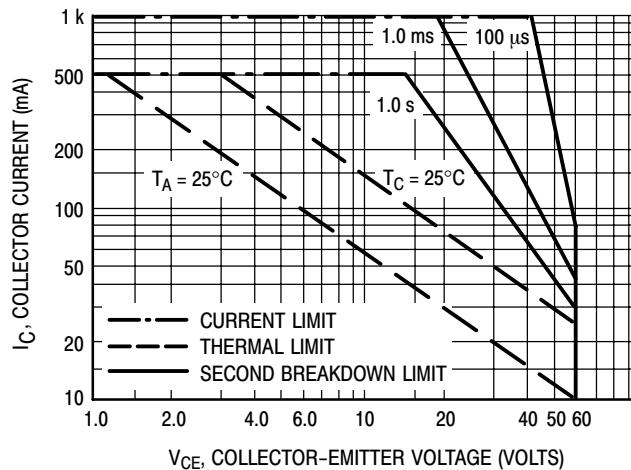
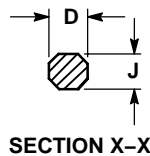
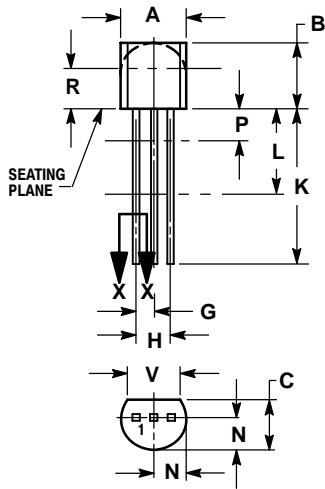


Figure 5. Active Region - Safe Operating Area

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PACKAGE DIMENSIONS

TO-92 (TO-226)
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:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

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