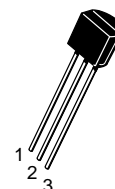
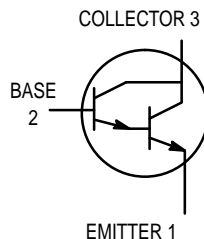


Darlington Transistor

NPN Silicon

MPSA27



CASE 29-04, STYLE 1
TO-92 (TO-226AA)

MAXIMUM RATINGS

Rating	Symbol	MPSA25	MPSA27	Unit
Collector–Emitter Voltage	V_{CES}	40	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	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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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

MPSA27**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS(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 $\leq 2.0\%$.

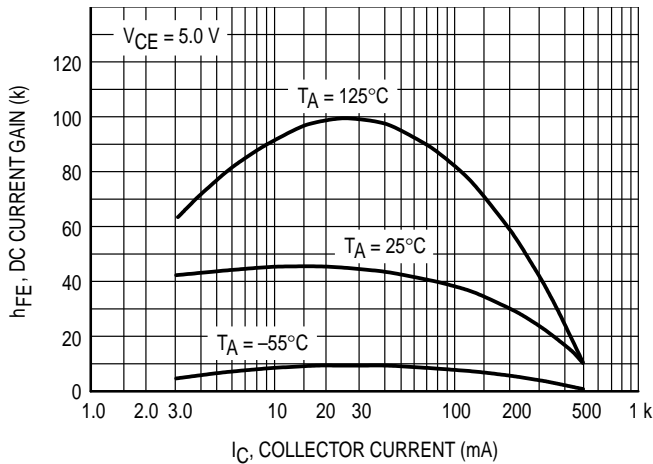


Figure 1. DC Current Gain

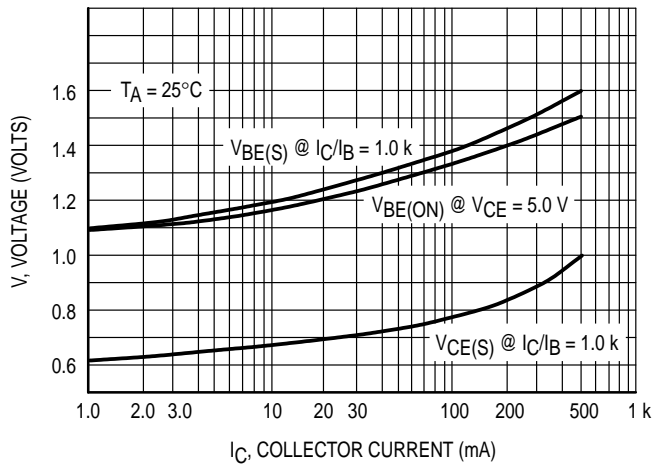


Figure 2. "ON" Voltages

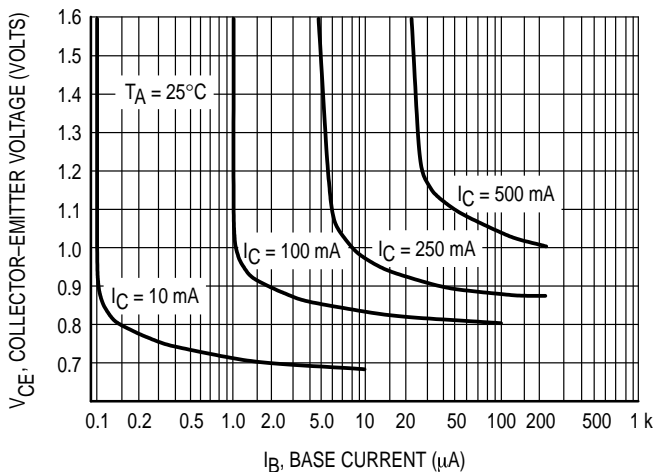


Figure 3. Collector Saturation Region

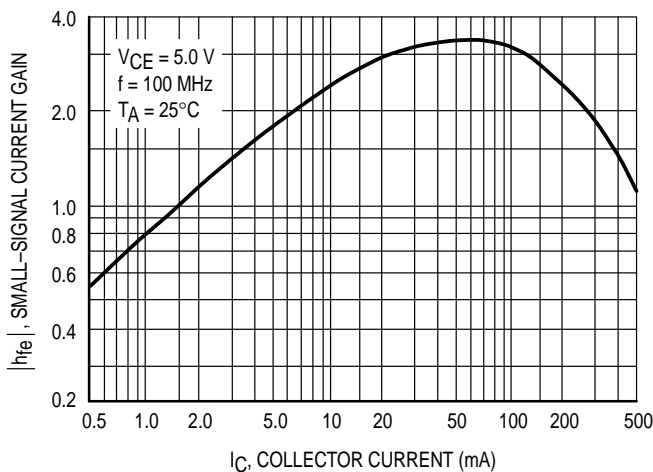


Figure 4. High Frequency Current Gain

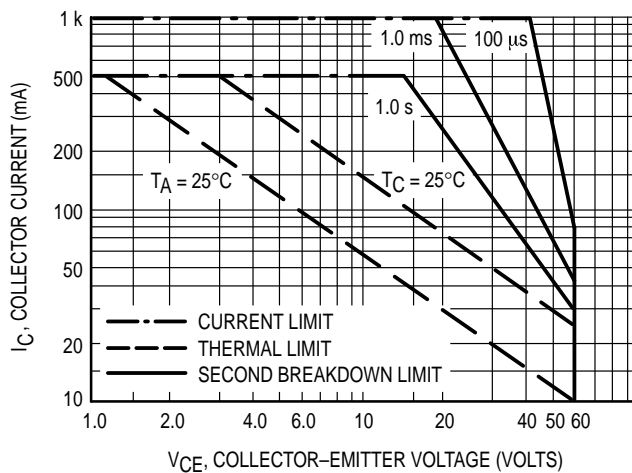
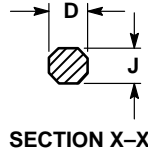
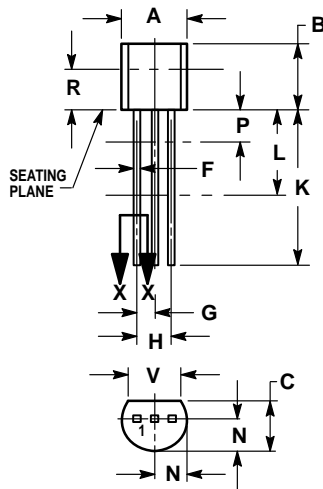


Figure 5. Active Region — Safe Operating Area

PACKAGE DIMENSIONS



**CASE 029-04
(TO-226AA)
ISSUE AD**


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K. MINIMUM 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	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
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. EMITTER
2. BASE
3. COLLECTOR

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How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447 or 602-303-5454

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, 6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-81-3521-8315

MFAX: RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609
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