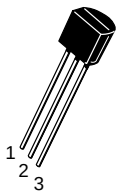
Darlington Transistors
NPN Silicon

2N6426*
2N6427

*ON Semiconductor Preferred Device

MAXIMUM RATINGS

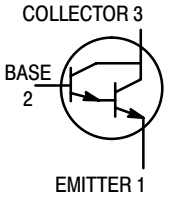
Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	40	Vdc
Collector–Base Voltage	V_{CBO}	40	Vdc
Emitter–Base Voltage	V_{EBO}	12	Vdc
Collector Current — Continuous	I_C	500	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	625 5.0	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate 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



CASE 29–04, STYLE 1
TO–92 (TO–226AA)

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



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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (1) (I_C = 10 mAdc, V_{BE} = 0)	$V_{(BR)CEO}$	40	—	—	Vdc
Collector–Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	$V_{(BR)CBO}$	40	—	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	12	—	—	Vdc
Collector Cutoff Current (V_{CE} = 25 Vdc, I_B = 0)	I_{CES}	—	—	1.0	μAdc
Collector Cutoff Current (V_{CB}= 30 Vdc, I_E = 0)	I_{CBO}	—	—	50	nAdc
Emitter Cutoff Current (V_{EB}= 10 Vdc, I_C = 0)	I_{EBO}	—	—	50	nAdc

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

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

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS						
DC Current Gain(1)		h_{FE}				—
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc)	2N6426		20,000	—	200,000	
	2N6427		10,000	—	100,000	
(I_C = 100 mAdc, V_{CE} = 5.0 Vdc)	2N6426		30,000	—	300,000	
	2N6427		20,000	—	200,000	
(I_C = 500 mAdc, V_{CE} = 5.0 Vdc)	2N6426		20,000	—	200,000	
	2N6427		14,000	—	140,000	
Collector–Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 50 mAdc, I_B = 0.5 mAdc)			—	0.71	1.2	
(I_C = 500 mAdc, I_B = 0.5 mAdc			—	0.9	1.5	
Base–Emitter Saturation Voltage (I_C = 500 mAdc, I_B = 0.5 mAdc)		$V_{BE(sat)}$	—	1.52	2.0	Vdc
Base–Emitter On Voltage (I_C = 50 mAdc, V_{CE} = 5.0 Vdc)		$V_{BE(on)}$	—	1.24	1.75	Vdc
SMALL–SIGNAL CHARACTERISTICS						
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		C_{obo}	—	5.4	7.0	pF
Input Capacitance (V_{EB} = 1.0 Vdc, I_C = 0, f = 1.0 MHz)		C_{ibo}	—	10	15	pF
Input Impedance		h_{ie}				kΩ
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)	2N6426		100	—	2000	
	2N6427		50	—	1000	
Small–Signal Current Gain		h_{fe}				—
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)	2N6426		20,000	—	—	
	2N6427		10,000	—	—	
Current–Gain — High Frequency		$\|h_{fe}\|$				—
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)	2N6426		1.5	2.4	—	
	2N6427		1.3	2.4	—	
Output Admittance (I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)		h_{oe}	—	—	1000	μmhos
Noise Figure (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, R_S = 100 kΩ, f = 1.0 kHz)		NF	—	3.0	10	dB

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

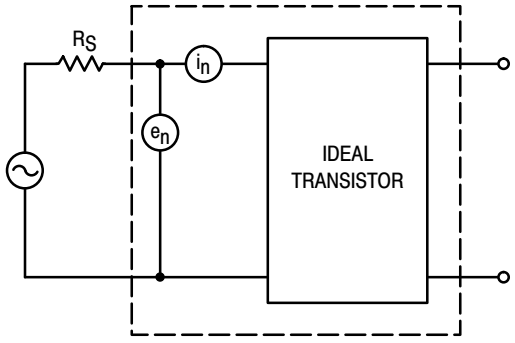


Figure 1. Transistor Noise Model

NOISE CHARACTERISTICS

(V_{CE} = 5.0 Vdc, T_A = 25°C)

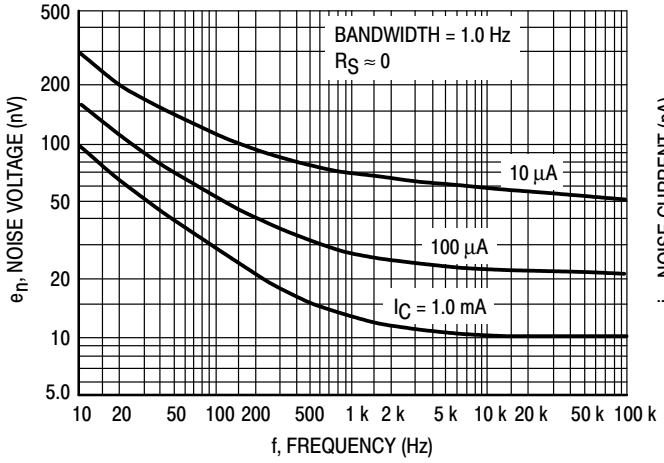


Figure 2. Noise Voltage

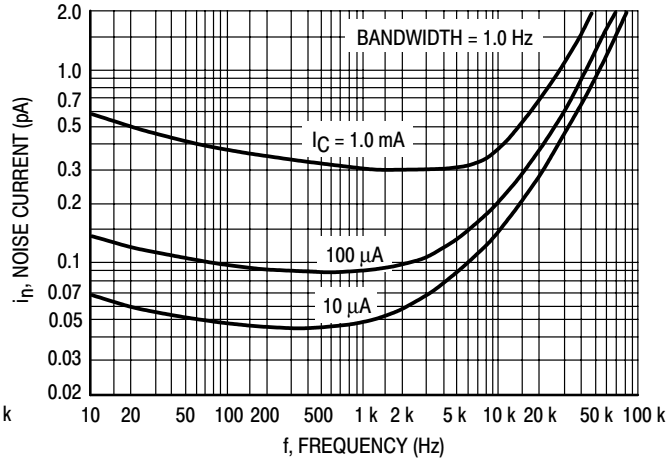


Figure 3. Noise Current

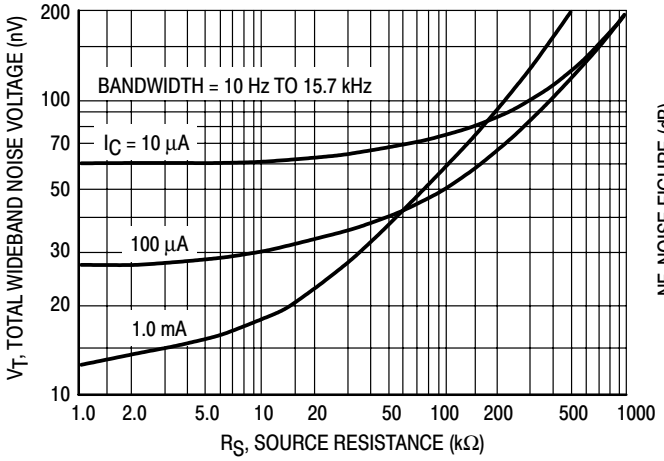


Figure 4. Total Wideband Noise Voltage

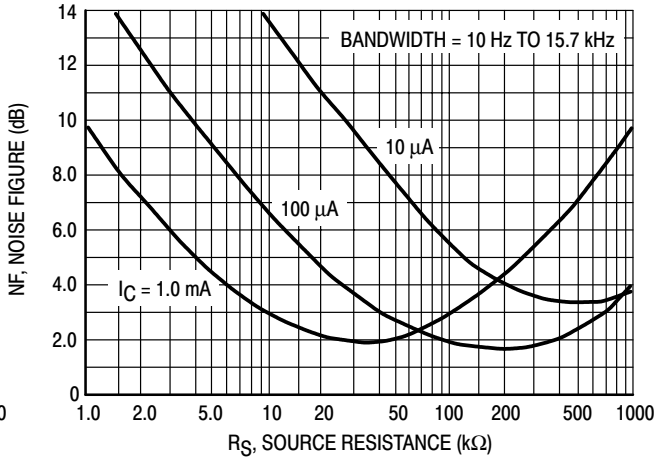


Figure 5. Wideband Noise Figure

SMALL−SIGNALCHARACTERISTICS

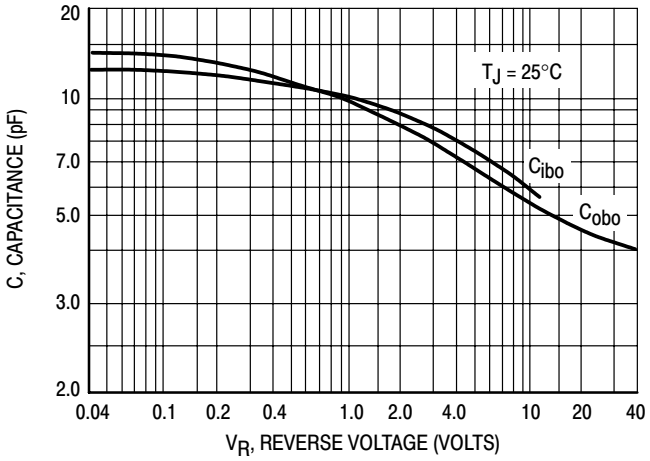


Figure 6. Capacitance

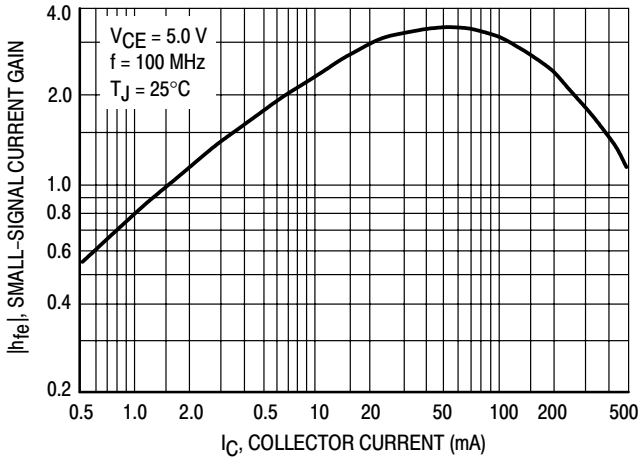


Figure 7. High Frequency Current Gain

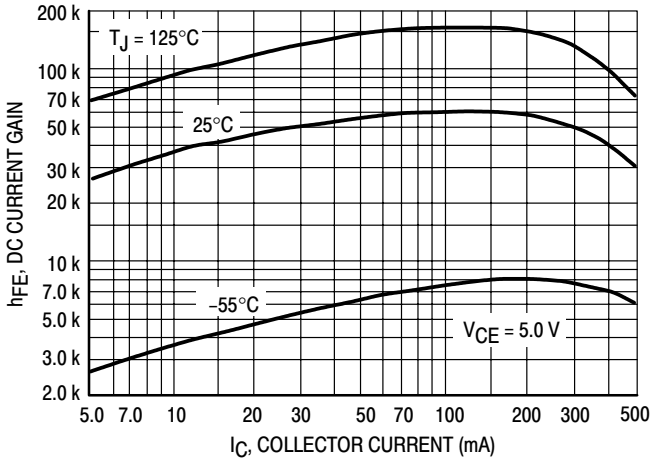


Figure 8. DC Current Gain

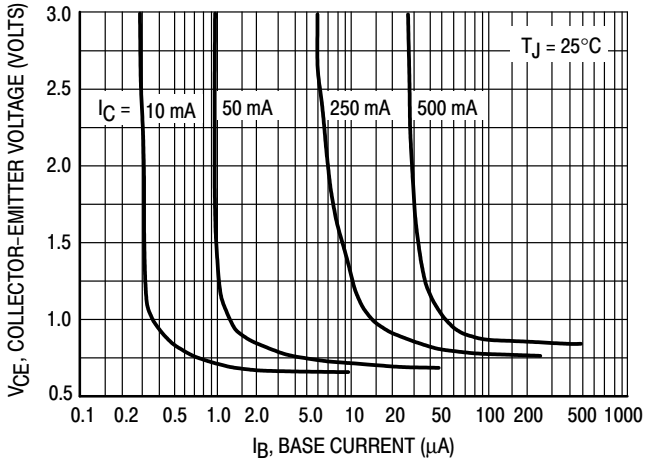


Figure 9. Collector Saturation Region

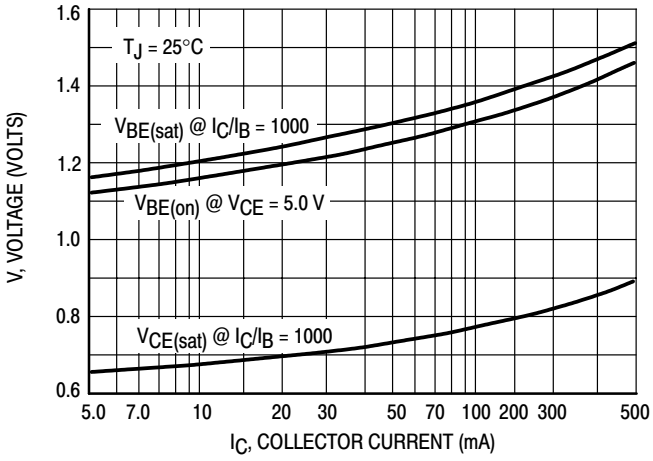


Figure 10. “On” Voltages

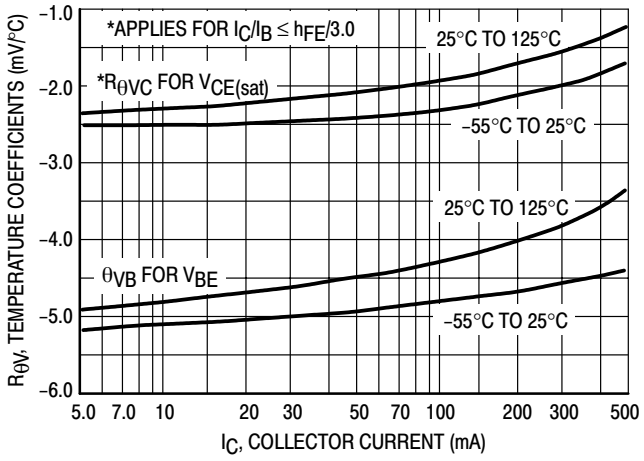


Figure 11. Temperature Coefficients

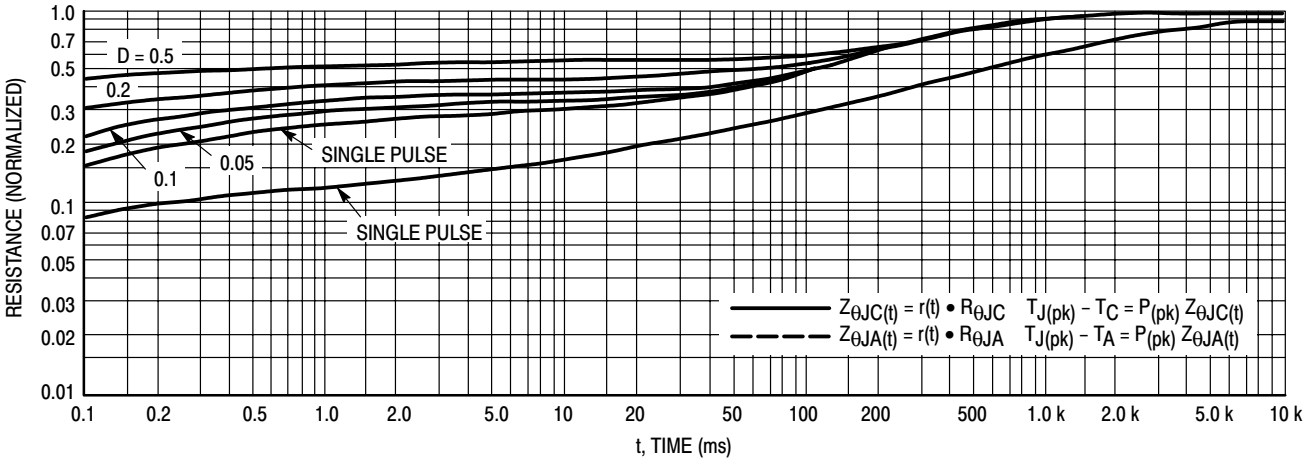


Figure 12. Thermal Response

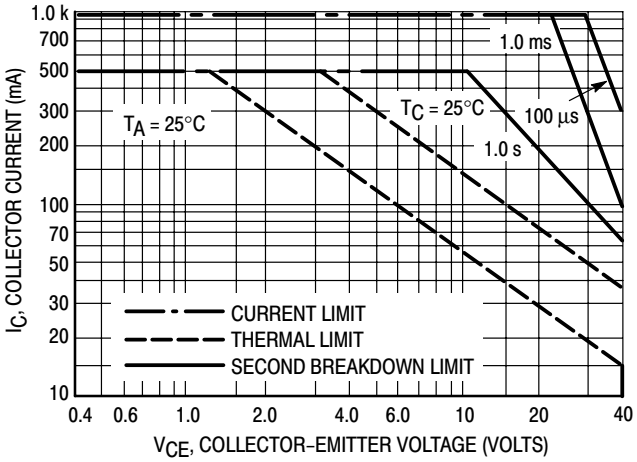
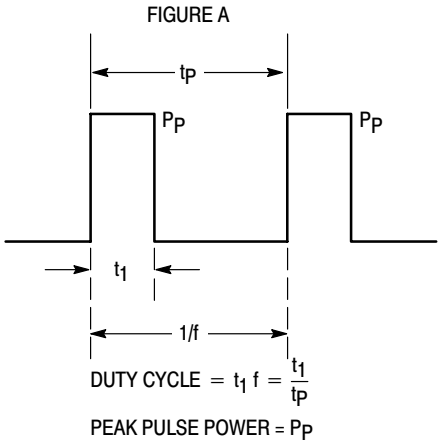


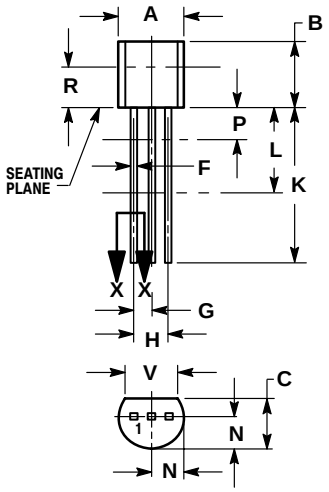
Figure 13. Active Region Safe Operating Area

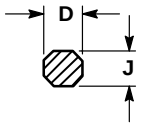


Design Note: Use of Transient Thermal Resistance Data

PACKAGE DIMENSIONS

CASE 029–04
(TO–226AA)
ISSUE AD





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. 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.

	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	0.022	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:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

Notes

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