2N6426*, 2N6427

Preferred Device

Darlington Transistors

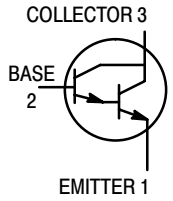
NPN Silicon

Features

- Pb−Free Packages are Available**
- Device Marking: Device Type, e.g., 2N6426, Date Code

ON Semiconductor®

http://onsemi.com



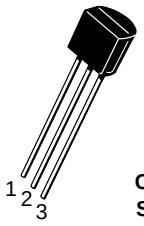
MAXIMUM RATINGS

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

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.

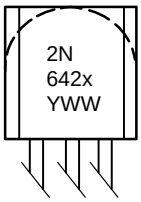
THERMAL CHARACTERISTICS

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



TO−92
CASE 29
STYLE 1

MARKING DIAGRAM



642x	Specific Device Code
Y	= Year
WW	= Work Week

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

***Preferred** devices are recommended choices for future use and best overall value.

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

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector−Emitter Breakdown Voltage, (Note 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
ON CHARACTERISTICS						
DC Current Gain, (Note 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%.

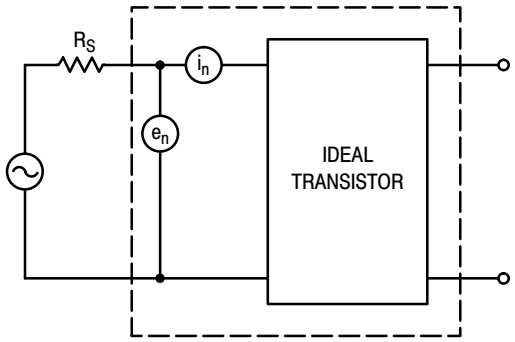


Figure 1. Transistor Noise Model

NOISE CHARACTERISTICS

(V_{CE} = 5.0 Vdc, T_A = 25°C)

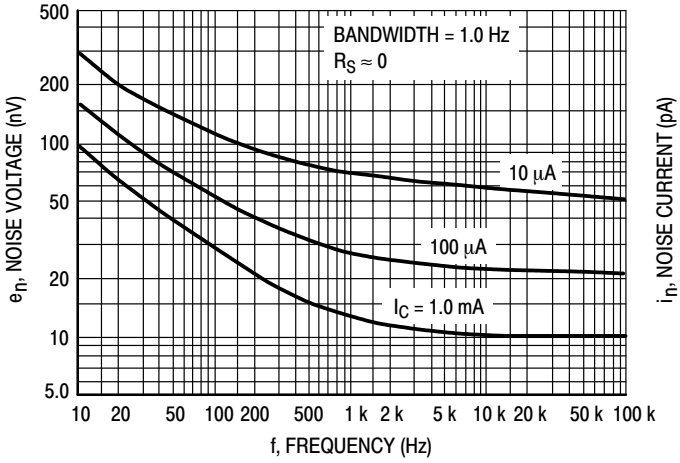


Figure 2. Noise Voltage

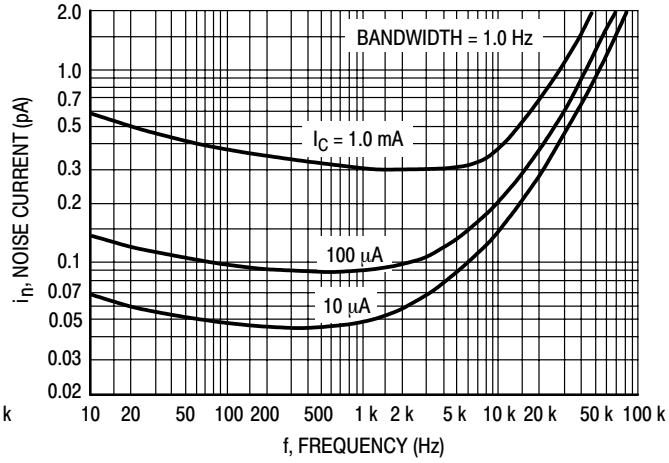


Figure 3. Noise Current

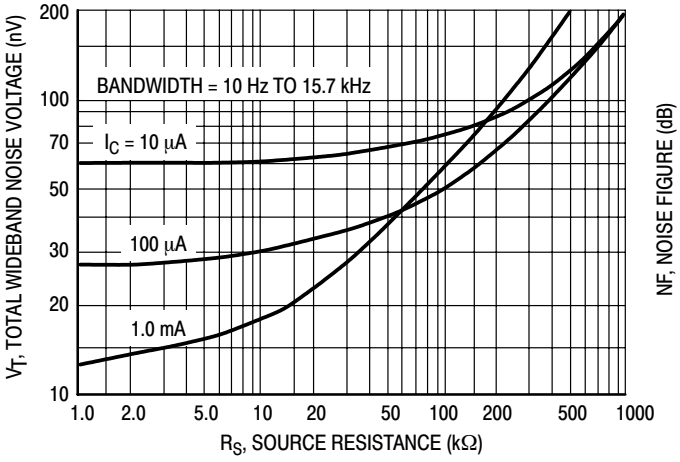


Figure 4. Total Wideband Noise Voltage

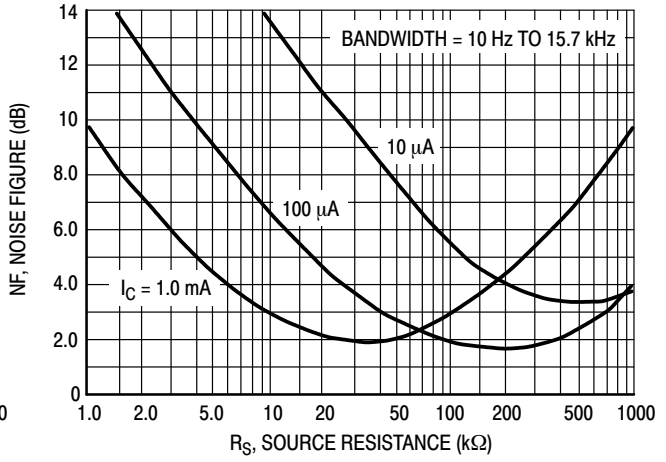


Figure 5. Wideband Noise Figure

SMALL−SIGNALCHARACTERISTICS

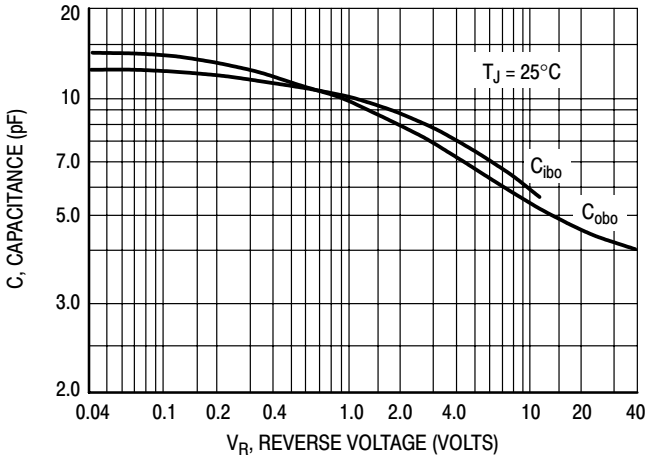


Figure 6. Capacitance

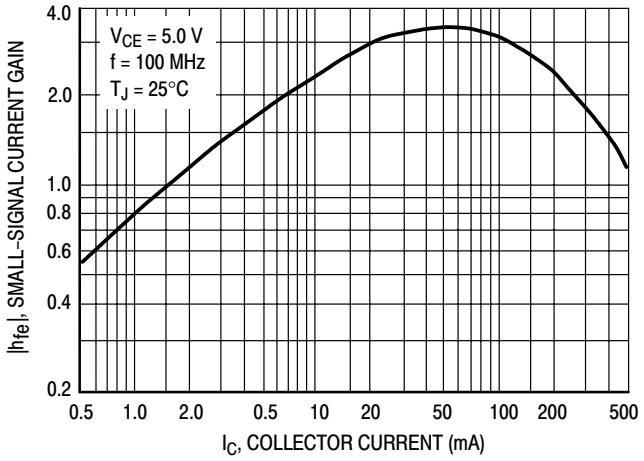


Figure 7. High Frequency Current Gain

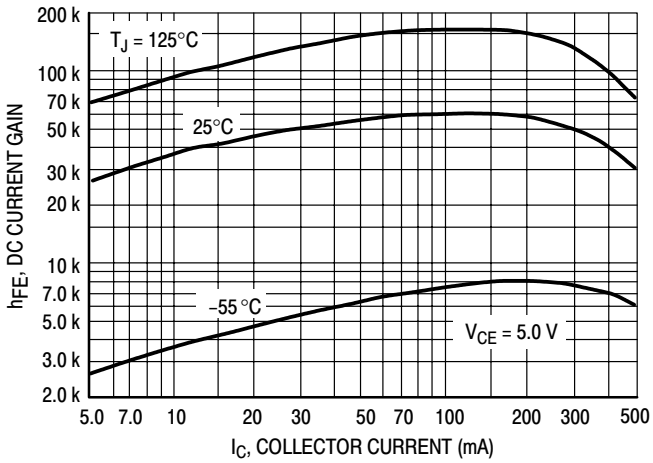


Figure 8. DC Current Gain

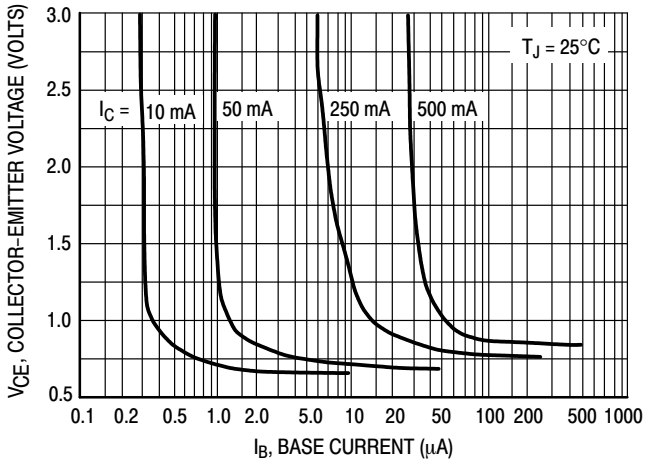


Figure 9. Collector Saturation Region

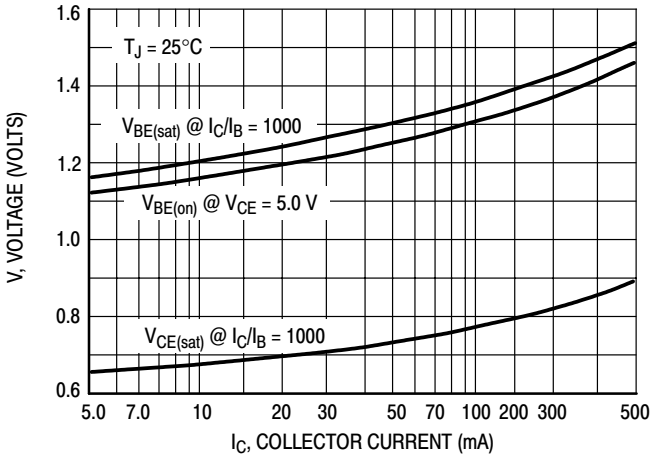


Figure 10. “On” Voltages

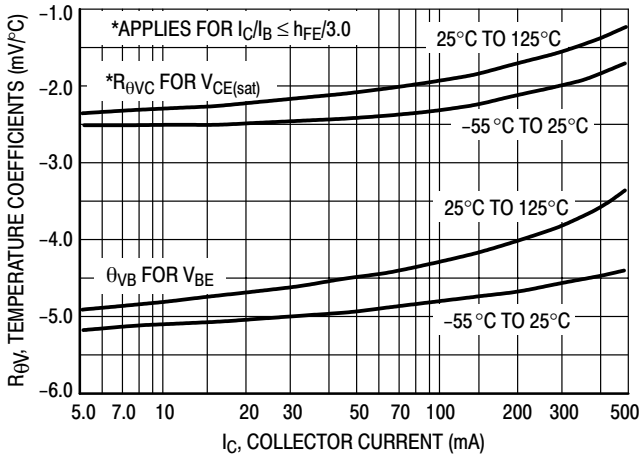


Figure 11. Temperature Coefficients

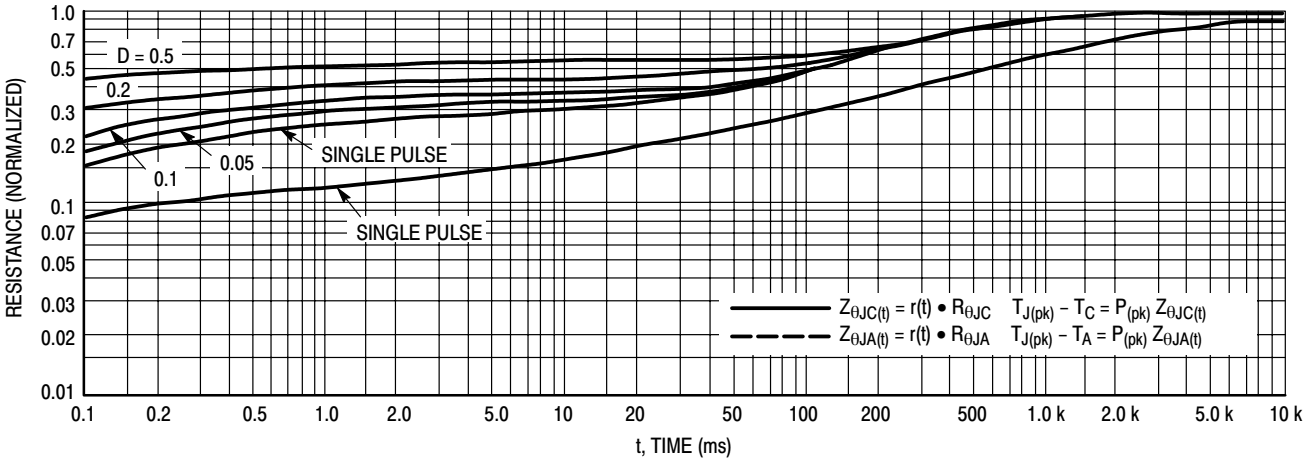


Figure 12. Thermal Response

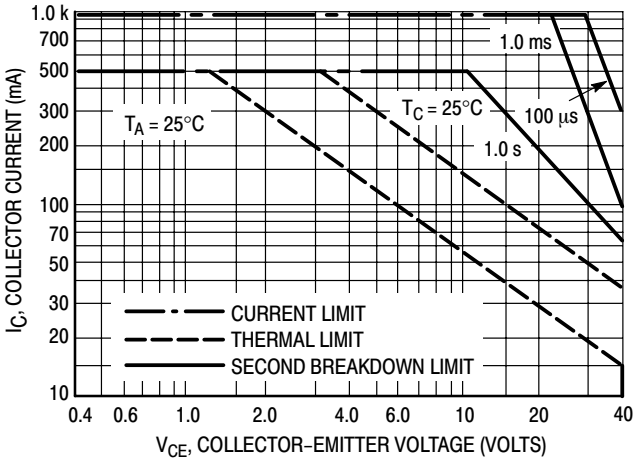
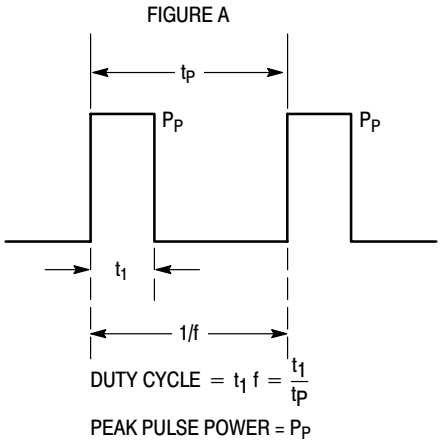


Figure 13. Active Region Safe Operating Area

Design Note: Use of Transient Thermal Resistance Data



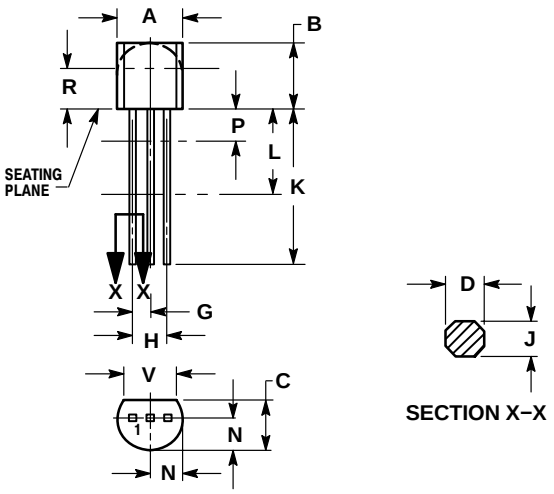
ORDERING INFORMATION

Device	Package	Shipping†
2N6426	TO−92	5,000 Units / Box
2N6426G	TO−92 (Pb−Free)	5,000 Units / Box
2N6426RLRA	TO−92	2,000 / Tape & Reel
2N6427	TO−92	5,000 Units / Box
2N6427RLRA	TO−92	2,000 / Tape & Reel
2N6427RLRAG	TO−92 (Pb−Free)	2,000 / 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.

PACKAGE DIMENSIONS

TO−92
TO−226AA
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.

	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
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
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