

2N6426, 2N6427

2N6426 is a Preferred Device

Darlington Transistors

NPN Silicon

Features

- These are Pb-Free Devices*

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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

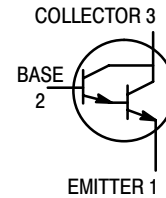
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C/W}$

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.

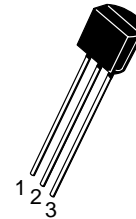


ON Semiconductor®

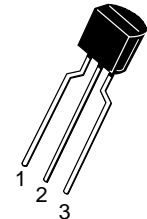
<http://onsemi.com>



TO-92
CASE 29
STYLE 1

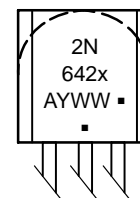


STRAIGHT LEAD
BULK PACK



BENT LEAD
TAPE & REEL
AMMO PACK

MARKING DIAGRAM



- x = 6 or 7
- A = Assembly Location
- Y = Year
- WW = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

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.

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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 mA _{dc} , V _{BE} = 0)	V _{(BR)CEO}	40	–	–	V _{dc}
Collector–Base Breakdown Voltage (I _C = 100 μA _{dc} , I _E = 0)	V _{(BR)CBO}	40	–	–	V _{dc}
Emitter–Base Breakdown Voltage (I _E = 10 μA _{dc} , I _C = 0)	V _{(BR)EBO}	12	–	–	V _{dc}
Collector Cutoff Current (V _{CE} = 25 V _{dc} , I _B = 0)	I _{CES}	–	–	1.0	μA _{dc}
Collector Cutoff Current (V _{CB} = 30 V _{dc} , I _E = 0)	I _{CBO}	–	–	50	nA _{dc}
Emitter Cutoff Current (V _{EB} = 10 V _{dc} , I _C = 0)	I _{EBO}	–	–	50	nA _{dc}

ON CHARACTERISTICS

DC Current Gain, (Note 1) (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc})	2N6426	h _{FE}	20,000	–	200,000	–
	2N6427		10,000	–	100,000	
(I _C = 100 mA _{dc} , V _{CE} = 5.0 V _{dc})	2N6426		30,000	–	300,000	
	2N6427		20,000	–	200,000	
(I _C = 500 mA _{dc} , V _{CE} = 5.0 V _{dc})	2N6426		20,000	–	200,000	
	2N6427		14,000	–	140,000	
Collector–Emitter Saturation Voltage (I _C = 50 mA _{dc} , I _B = 0.5 mA _{dc}) (I _C = 500 mA _{dc} , I _B = 0.5 mA _{dc})		V _{CE(sat)}	– –	0.71 0.9	1.2 1.5	V _{dc}
Base–Emitter Saturation Voltage (I _C = 500 mA _{dc} , I _B = 0.5 mA _{dc})		V _{BE(sat)}	–	1.52	2.0	V _{dc}
Base–Emitter On Voltage (I _C = 50 mA _{dc} , V _{CE} = 5.0 V _{dc})		V _{BE(on)}	–	1.24	1.75	V _{dc}

SMALL–SIGNAL CHARACTERISTICS

Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 1.0 MHz)		C _{obo}	–	5.4	7.0	pF
Input Capacitance (V _{EB} = 1.0 V _{dc} , I _C = 0, f = 1.0 MHz)		C _{ibo}	–	10	15	pF
Input Impedance (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 1.0 kHz)	2N6426 2N6427	h _{ie}	100 50	– –	2000 1000	kΩ
Small–Signal Current Gain (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 1.0 kHz)	2N6426 2N6427	h _{fe}	20,000 10,000	– –	– –	–
Current–Gain – High Frequency (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 100 MHz)	2N6426 2N6427	h _{fe}	1.5 1.3	2.4 2.4	– –	–
Output Admittance (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 1.0 kHz)		h _{oe}	–	–	1000	μmhos
Noise Figure (I _C = 1.0 mA _{dc} , V _{CE} = 5.0 V _{dc} , R _S = 100 kΩ, f = 1.0 kHz)		NF	–	3.0	10	dB

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

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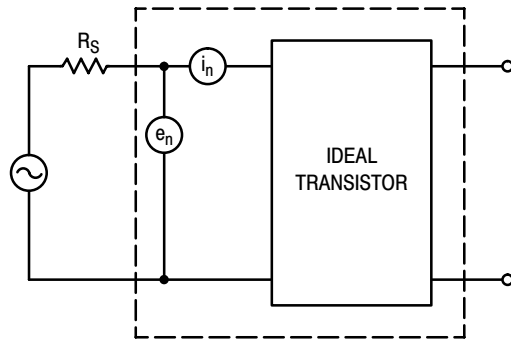


Figure 1. Transistor Noise Model

NOISE CHARACTERISTICS

($V_{CE} = 5.0$ Vdc, $T_A = 25^\circ\text{C}$)

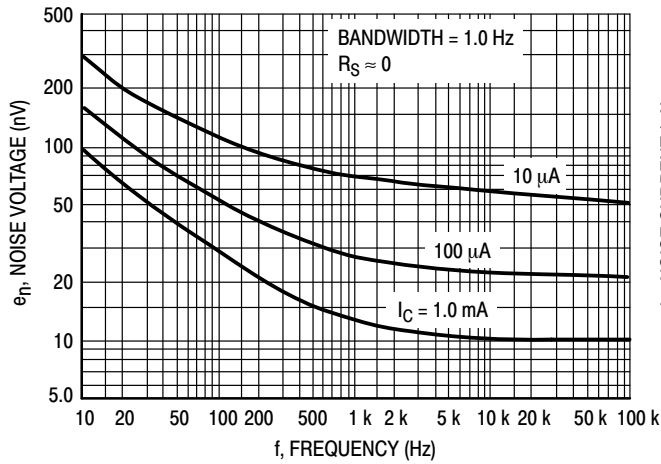


Figure 2. Noise Voltage

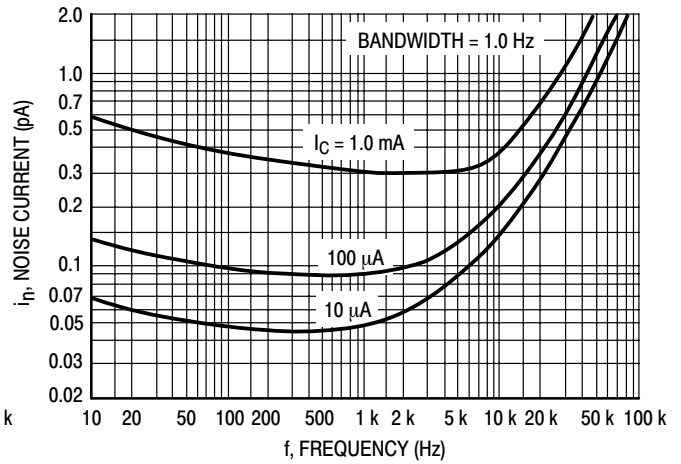


Figure 3. Noise Current

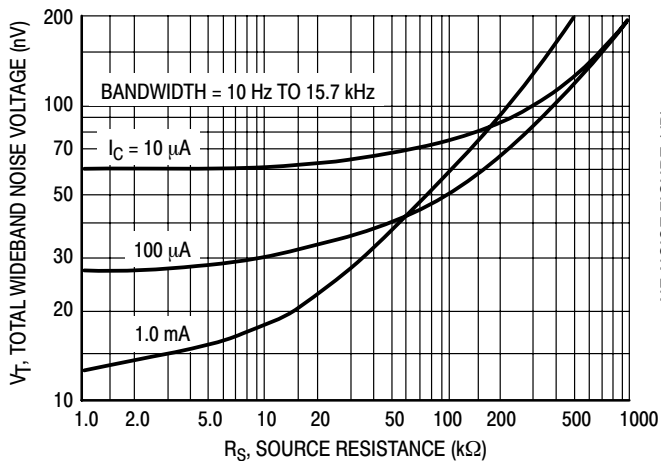


Figure 4. Total Wideband Noise Voltage

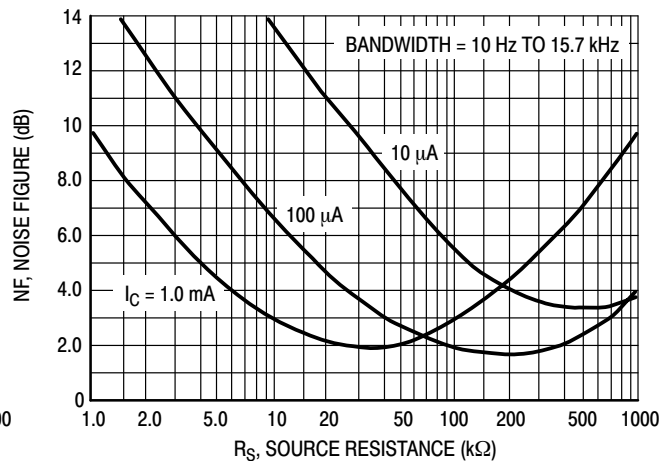


Figure 5. Wideband Noise Figure

SMALL-SIGNAL CHARACTERISTICS

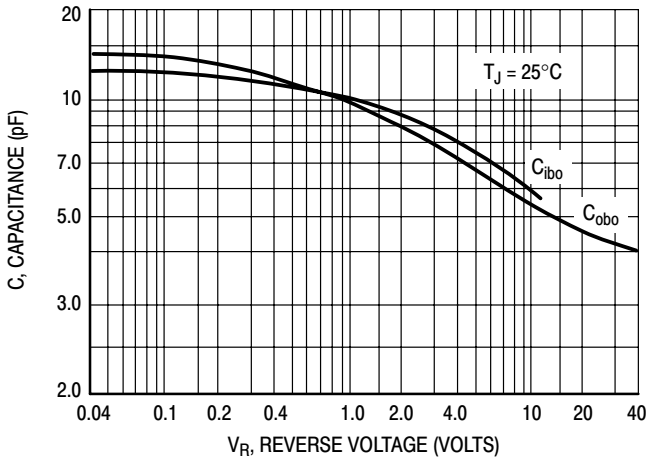


Figure 6. Capacitance

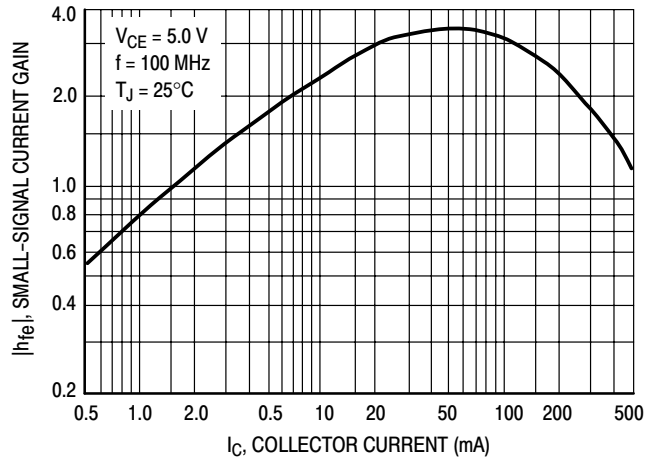


Figure 7. High Frequency Current Gain

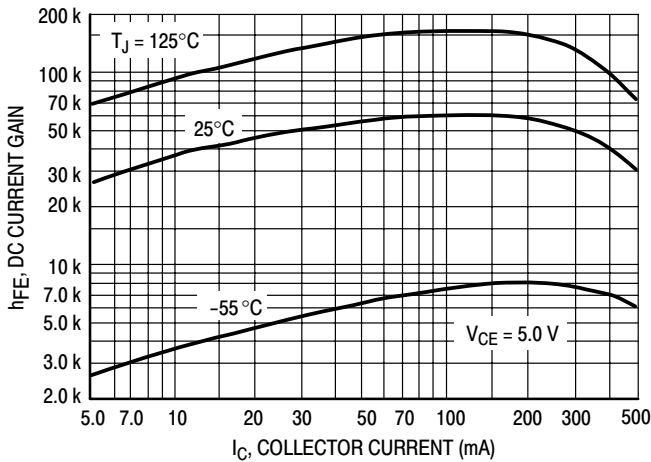


Figure 8. DC Current Gain

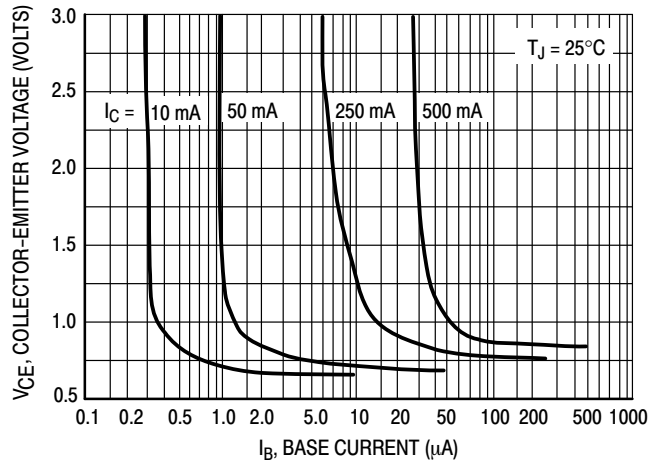


Figure 9. Collector Saturation Region

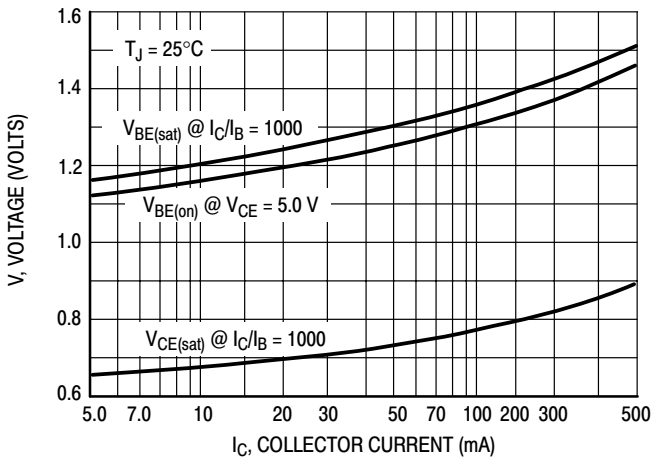


Figure 10. "On" Voltages

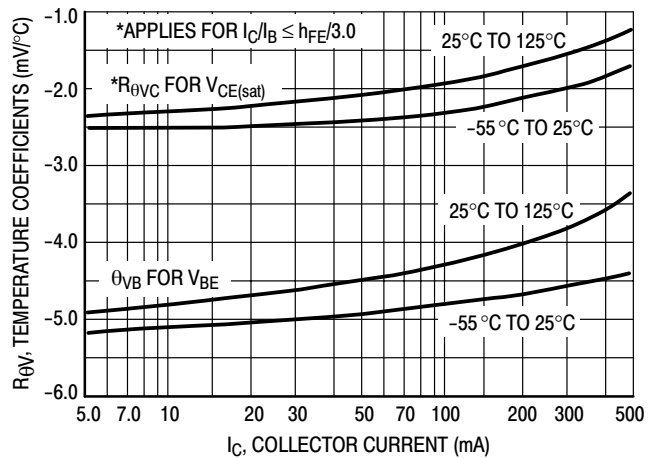


Figure 11. Temperature Coefficients

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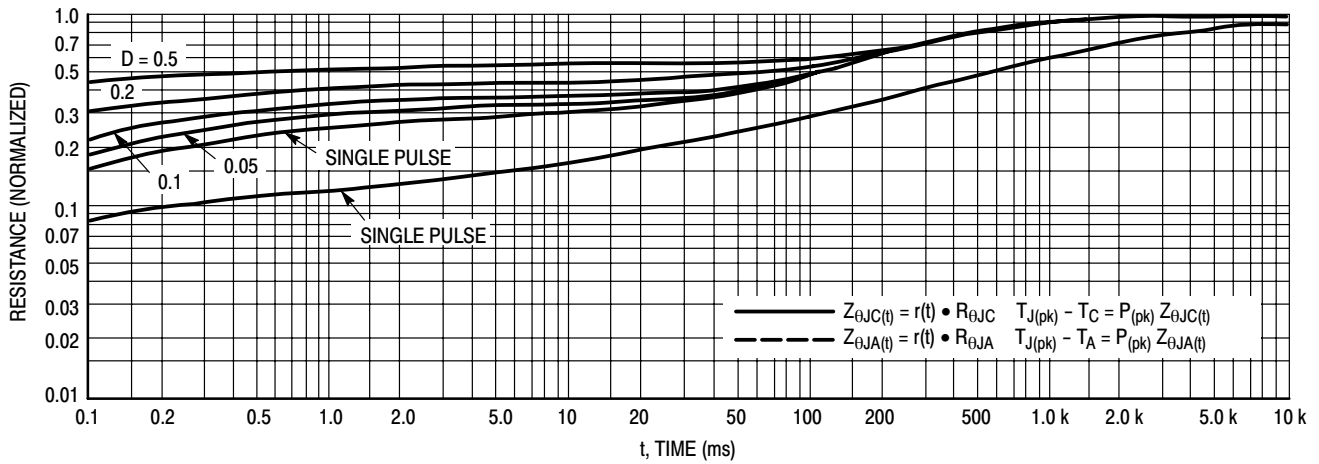


Figure 12. Thermal Response

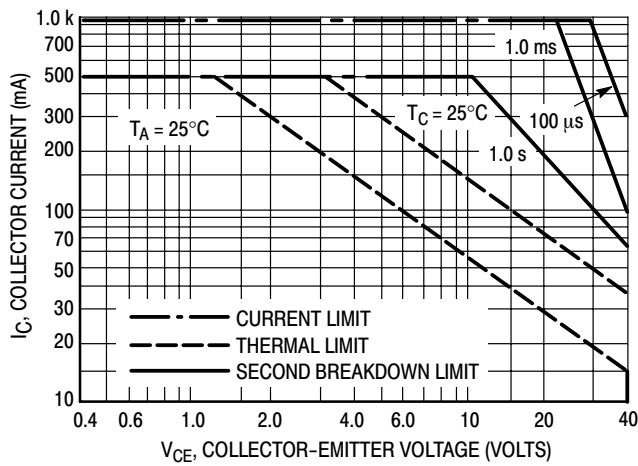
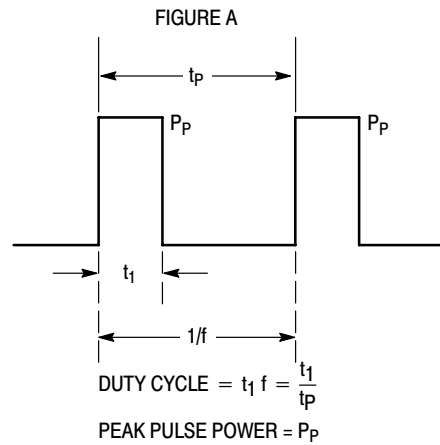


Figure 13. Active Region Safe Operating Area



Design Note: Use of Transient Thermal Resistance Data

ORDERING INFORMATION

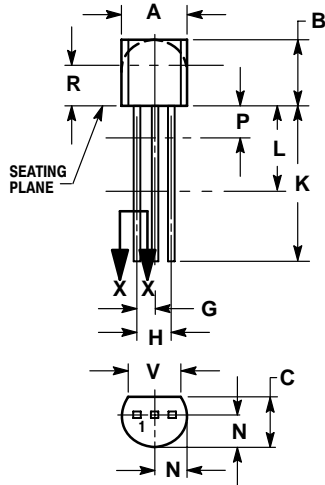
Device	Package	Shipping†
2N6426G	TO-92 (Pb-Free)	5,000 Units / Bulk
2N6426RLRAG	TO-92 (Pb-Free)	2,000 / Tape & Ammo
2N6427G	TO-92 (Pb-Free)	5,000 Units / Bulk
2N6427RLRAG	TO-92 (Pb-Free)	2,000 / Tape & Ammo

†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.

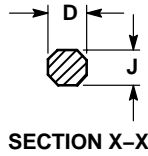
2N6426, 2N6427

PACKAGE DIMENSIONS

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



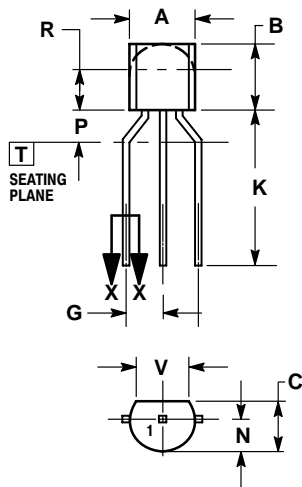
STRAIGHT LEAD
BULK PACK



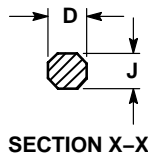
NOTES:

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:

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

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