RoHS
Available on commercial versions

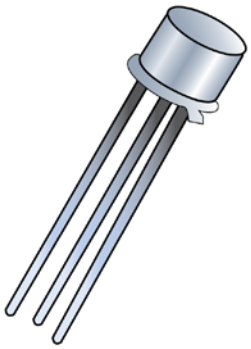
NPN Silicon Power Transistor

Qualified per MIL-S-19500/207

Qualified Levels:
JAN

DESCRIPTION

This family of 2N1479 through 2N1482 medium-power, planar transistors are military qualified to the JAN level for high-reliability applications.



TO-5 Package

Important: For the latest information, visit our website http://www.microsemi.com.

FEATURES

- JEDEC registered 2N1479 through 2N1482 series
- JAN qualification are available per MIL-S-19500/207.
  (See part nomenclature for all available options.)
- RoHS compliant versions available (commercial grade only)

APPLICATIONS / BENEFITS

- General purpose transistors for low power applications requiring high frequency switching
- Low package profile
- Military and other high-reliability applications

MAXIMUM RATINGS @ T_A = +25 ºC unless otherwise noted

Parameters / Test Conditions	Symbol	2N1479 2N1481	2N1480 2N1482	Unit
Collector-Emitter Voltage	V_{CEO}	40	55	V
Collector-Base Voltage	V_{CBO}	60	100	V
Emitter-Base Voltage	V_{EBO}	12		V
Base Current	I_B	1.0		A
Collector Current	I_C	1.5		A
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C
Thermal Resistance Junction-to-Case	$R_{\Theta JC}$	35		°C/W
Total Power Dissipation @ T_A = +25 °C (1)	P_T	1.0		W

Notes: 1. For 1000 hours expected life at T_A = +25 ºC

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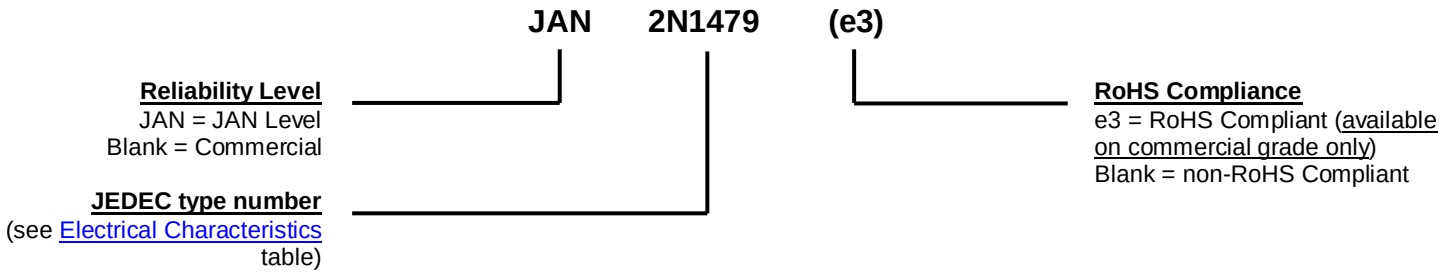
MECHANICAL and PACKAGING

- CASE: Hermetically sealed steel base, nickel cap
- TERMINALS: Leads are gold plated kovar (Solder dip (Sn63/Pb37) is available upon special request. NOTE: Solder dipping will eliminate RoHS compliance.)
- MARKING: Part number, date code, manufacturer's ID
- POLARITY: NPN
- WEIGHT: Approximately 1.14 grams
- See Package Dimensions on last page.

PART NOMENCLATURE



SYMBOLS & DEFINITIONS

Symbol	Definition
h_{FE}	Common-emitter static forward current transfer ratio: The ratio of the dc output current to the dc input current with the output voltage held constant.
I_B	Base current: The value of the dc current into the base terminal.
I_C	Collector current: The value of the dc current into the collector terminal.
I_E	Emitter current: The value of the dc current into the emitter terminal.
T_C	Case temperature: The temperature measured at a specified location on the case of a device.
$V_{(BR)CEO}$	Collector-emitter breakdown voltage, base open. The breakdown voltage between the collector and emitter terminals when the collector terminal is biased in the reverse direction with respect to the emitter terminal, and the base terminal is open circuited. The collector terminal is considered to be biased in the reverse direction when it is made positive for npn transistors, or negative for pnp transistors, with respect to the emitter terminal.
V_{CB}	Collector-base voltage: The dc voltage between the collector and the base.
V_{CBO}	Collector-base voltage, emitter open: The voltage between the collector and base terminals when the emitter terminal is open-circuited.
V_{CC}	Collector-supply voltage: The supply voltage applied to a circuit connected to the collector.
V_{CE}	Collector-emitter voltage: The dc voltage between the collector and the emitter.
$V_{CE(sat)}$	Collector-emitter saturation voltage: The voltage between the collector and emitter terminals under conditions of base current or base-emitter voltage beyond which the collector current remains essentially constant as the base current or voltage is increased.
V_{CEO}	Collector-emitter voltage, base open: The voltage between the collector and the emitter terminals when the base terminal is open-circuited.
V_{EB}	Emitter-base voltage: The dc voltage between the emitter and the base
V_{EBO}	Emitter-base voltage, collector open: The voltage between the emitter and base terminals with the collector terminal open-circuited.

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ELECTRICAL CHARACTERISTICS @ T_A = +25 °C, unless otherwise noted

OFF CHARACTERISTICS

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Collector-Emitter Breakdown Voltage I_C = 50 mA,	2N1479, 2N1481 2N1480, 2N1482	$V_{(BR)CEO}$	40 55		V
Collector-Emitter Breakdown Voltage V_{EB} = 1.5 V, I_C = 0.25 mA V_{EB} = 1.5 V, I_C = 0.25 mA	2N1479, 2N1481 2N1480, 2N1482	$V_{(BR)CEX}$	60 100		V
Collector-Base Cutoff Current V_{CB} = 30 V V_{CB} = 50 V	2N1479, 2N1481 2N1480, 2N1482	I_{CBO1}		5.0	µA
Emitter-Base Cutoff Current V_{EB} = 12 V		I_{EBO}		10	µA

ON CHARACTERISTICS

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Forward-Current Transfer Ratio I_C = 200 mA, V_{CE} = 4.0 V	2N1479, 2N1480 2N1481, 2N1482	h_{FE}	20 35	60 100	
Collector-Emitter Saturation Voltage I_C = 200 mA, I_B = 20 mA I_C = 200 mA, I_B = 10 mA	2N1479, 2N1480 2N1481, 2N1482	$V_{CE(sat)}$		0.75 0.75	V
Base-Emitter Voltage Non-Saturation I_C = 200 mA, V_{CE} = 4.0 V		V_{BE}		1.5	V

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Forward Current Cutoff Frequency I_C = 5.0 mA, V_{CB} = 28 V	f_{ab}	800		kHz

SWITCHING CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Turn-On / Turn-Off Time V_{CC} = 12 V, R_C = 59 Ω, I_{B0} = I_{B2} = 8.5 mA; I_{B1} = 20 mA	t_{on} + t_{off}		25	µs

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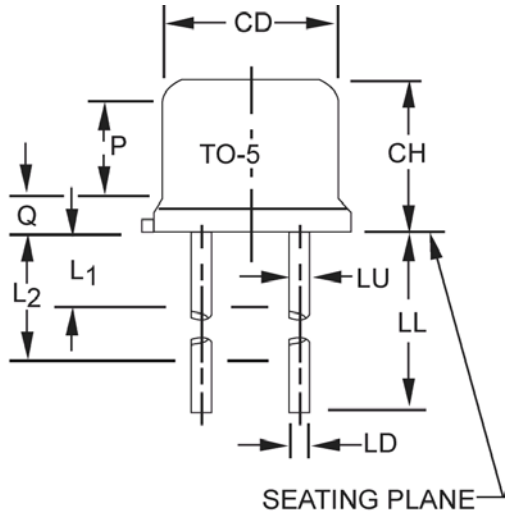
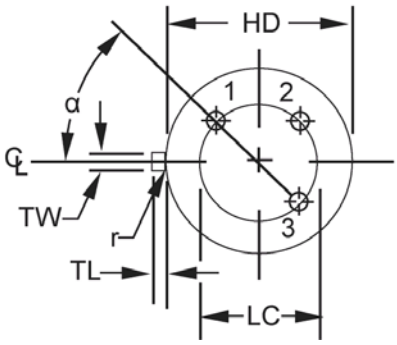
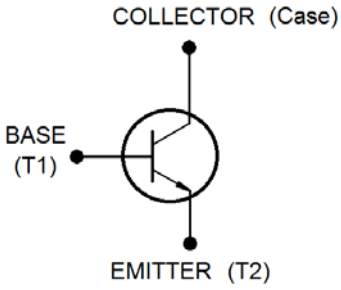
PACKAGE DIMENSIONS





Symbol	Dimensions				Note
	Inch		Millimeters		
	Min	Max	Min	Max	
CD	0.305	0.335	7.75	8.51	
CH	0.240	0.260	6.10	6.60	
HD	0.335	0.370	8.51	9.40	
LC	0.200 TP		5.08 TP		10
LD	0.016	0.021	0.41	0.53	2, 9
LL	1.5	1.75	3.81	4.45	9
LU	0.016	0.019	0.41	0.48	3, 9
L1	-	0.050	-	1.27	13
L2	0.250	-	6.35	-	13
P	0.100	-	2.54	-	4
Q	-	-	-	-	5
TL	0.029	0.045	0.74	1.14	8
TW	0.028	0.034	0.71	0.86	
r	-	0.007	-	0.18	Radius
α	45° TP		45° TP		6



NOTES:

1. Dimensions are in inches. Millimeters are given for information only.
2. Measure in the zone beyond 0.250 (6.35 mm) from the seating plane.
3. Measure in the zone 0.050 (1.27 mm) and 0.250 (6.35 mm) from the seating plane.
4. Variations on Dim B in this zone shall not exceed 0.010 (0.25 mm).
5. Outline in this zone is not controlled.
6. When measured in a gauging plane 0.054 + 0.001 (1.37 mm + 0.03 mm) below the seating plane of the transistor max dia leads shall be within 0.007 (0.18mm) of their true location relative to a maximum width tab. Smaller dia leads shall fall within the outline of the max dia lead tolerance.
7. Collector internally connected to case.
8. Measured from the maximum diameter of the actual device.
9. All 3 leads.
10. Leads at gauge plane 0.054 inch (1.37 mm) +0.001 inch (0.03 mm) -0.000 inch (0.00 mm) below seating plane shall be within 0.007 inch (0.18 mm) radius of true position (TP) relative to tab. Device may be measured by direct methods or by gauge.

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