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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





NPN SILICON POWER TRANSISTOR

DESCRIPTION

These 2N6315 and 2N6316 devices are an excellent choice for un-tuned amplifier applications. It is also ideal for general purpose power switch and amplifier applications. Microsemi also offers numerous other products to meet higher and lower power voltage regulation applications.



**TO-213AA (TO-66)
Package**

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

FEATURES

- Hermetically sealed.
- Complimentary pairing with the PNP 2N6317 and 2N6318.
- RoHS compliant versions available.

APPLICATIONS / BENEFITS

- Convenient package.
- Mechanically rugged.
- Commercial, industrial, and military uses.

MAXIMUM RATINGS @ 25 °C unless otherwise stated

| Parameters/Test Conditions | Symbol | Value | Unit |
|--|---------------------|--------------|------|
| Junction and Storage Temperature | T_J and T_{STG} | -65 to +200 | °C |
| Thermal Resistance Junction-to-Lead ⁽¹⁾ | $R_{\theta JL}$ | 235 | °C |
| Collector-Base Voltage | V_{CBO} | 2N6315 60 | V |
| | | 2N6316 80 | |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Collector-Emitter Voltage | V_{CEO} | 2N6315 60 | V |
| | | 2N6316 80 | |
| Continuous Operating Collector Current | I_C | 7 | A |
| Continuous Base Current | | 2 | A |
| Total Power Dissipation ⁽²⁾ | P_T | 90 | W |

NOTES: 1. At 1/8 inch from case for 10 seconds.
2. Derate linearly at 0.515 W/°C.

MSC – Lawrence

6 Lake Street,
Lawrence, MA 01841
Tel: 1-800-446-1158 or
(978) 620-2600
Fax: (978) 689-0803

MSC – Ireland

Gort Road Business Park,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

Website:

www.microsemi.com

MECHANICAL and PACKAGING

- CASE: Hermetic, TO-66 package. Nickel plate with nickel cap.
- TERMINALS: Solder dipped (Sn63/Pb37) over nickel plated alloy 52. RoHS compliant matte-tin plating is also available.
- MARKING: MSC, part number, date code, polarity symbol.
- WEIGHT: Approximately 5.7 grams.
- See [Package Dimensions](#) on last page.

PART NOMENCLATURE**2N6315 (e3)**

JEDEC Type Number
See [Electrical Characteristics](#)
table

RoHS Compliance
e3 = RoHS compliant
Blank = non-RoHS compliant

SYMBOLS & DEFINITIONS

| Symbol | Definition |
|----------|--------------------------|
| I_B | Base current |
| T_C | Case temperature |
| V_{CB} | Collector-base voltage |
| V_{CC} | Collector-supply voltage |
| V_{EB} | Emitter-base voltage |

ELECTRICAL CHARACTERISTICS @ 25 °C unless otherwise stated

| Parameters / Test Conditions | Symbol | Min. | Max. | Unit |
|--|----------------|---------------|------------|------|
| STATIC CHARACTERISTICS | | | | |
| Collector Cutoff Current $V_{CE} = 60\text{ V}, V_{BE} = 1.5\text{ V}, T_C = 150\text{ }^{\circ}\text{C}$ $V_{CE} = 80\text{ V}, V_{BE} = 1.5\text{ V}, T_C = 150\text{ }^{\circ}\text{C}$ | I_{CEX} | | 2.0 | mA |
| Collector Cutoff Current $V_{CE} = 60\text{ V}, V_{BE} = 1.5\text{ V}$ $V_{CE} = 80\text{ V}, V_{BE} = 1.5\text{ V}$ | I_{CEX} | | 0.25 | mA |
| Emitter Cutoff Current $V_{EB} = 5\text{ V}$ | I_{EBO} | | 1.0 | mA |
| Collector-Emitter Open Base Sustain Voltage ⁽¹⁾ $I_B = 0, I_C = 100\text{ mA}$ | $V_{CEO(sus)}$ | 60 80 | | |
| Collector Cutoff Current, Base Open $I_B = 0, V_{CE} = 30\text{ V}$ $I_B = 0, V_{CE} = 40\text{ V}$ | I_{CEO} | | 0.5 | mA |
| DC Forward Current Transfer Ratio ⁽¹⁾ $I_C = 7\text{ A}, V_{CE} = 4\text{ V}$ $I_C = 2.5\text{ A}, V_{CE} = 4\text{ V}$ $I_C = 0.5\text{ A}, V_{CE} = 4\text{ V}$ | h_{FE} | 4 20 35 | 100 | |
| Collector-Emitter Saturation Voltage ⁽¹⁾ $I_C = 7.0\text{ A}, I_B = 1.75\text{ A}$ $I_C = 4.0\text{ A}, I_B = 0.4\text{ A}$ | $V_{CE(sat)}$ | | 2.0 1.0 | V |
| Base-Emitter Saturation Voltage ⁽¹⁾ $I_C = 7.0\text{ A}, I_B = 1.75\text{ A}$ | $V_{BE(sat)}$ | | 2.5 | V |
| Base-Emitter Voltage ⁽¹⁾ $I_C = 2.5\text{ A}, V_{CE} = 4.0\text{ V}$ | V_{BE} | | 1.5 | V |

NOTE: 1. Pulse Width $\leq 300\text{ }\mu\text{s}$; duty cycle $\leq 2\%$.

DYNAMIC CHARACTERISTICS

| Parameters / Test Conditions | Symbol | Min. | Max. | Unit |
|--|------------|------|------|------|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $V_{CE} = 10\text{ V}, I_C = 0.25\text{ A}, f = 1\text{ MHz}$ | $ h_{fe} $ | 4 | | |
| Common Base Output $V_{CB} = 10\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$ | C_{ob} | | 200 | pF |
| Common Emitter Small-Signal Short-Circuit Forward Current Trans-Ratio $V_{CE} = 4\text{ V}, I_C = 0.5\text{ A}, f = 1\text{ kHz}$ | h_{fe} | 20 | | |

SWITCHING CHARACTERISTICS

| Parameters / Test Conditions | Symbol | Min. | Max. | Unit |
|---|--------|------|------|---------------|
| Rise time $V_{CC} = 30\text{ V}, I_C = 2.5\text{ A}, I_{B1} = I_{B2} = 0.25\text{ A}$ (see figure 2) | t_r | | 0.7 | μs |
| Storage time $V_{CC} = 30\text{ V}, I_C = 2.5\text{ A}, I_{B1} = I_{B2} = 0.25\text{ A}$ (see figure 2) | t_s | | 1.0 | μs |
| Fall time $V_{CC} = 30\text{ V}, I_C = 2.5\text{ A}, I_{B1} = I_{B2} = 0.25\text{ A}$ (see figure 2) | t_f | | 0.8 | μs |

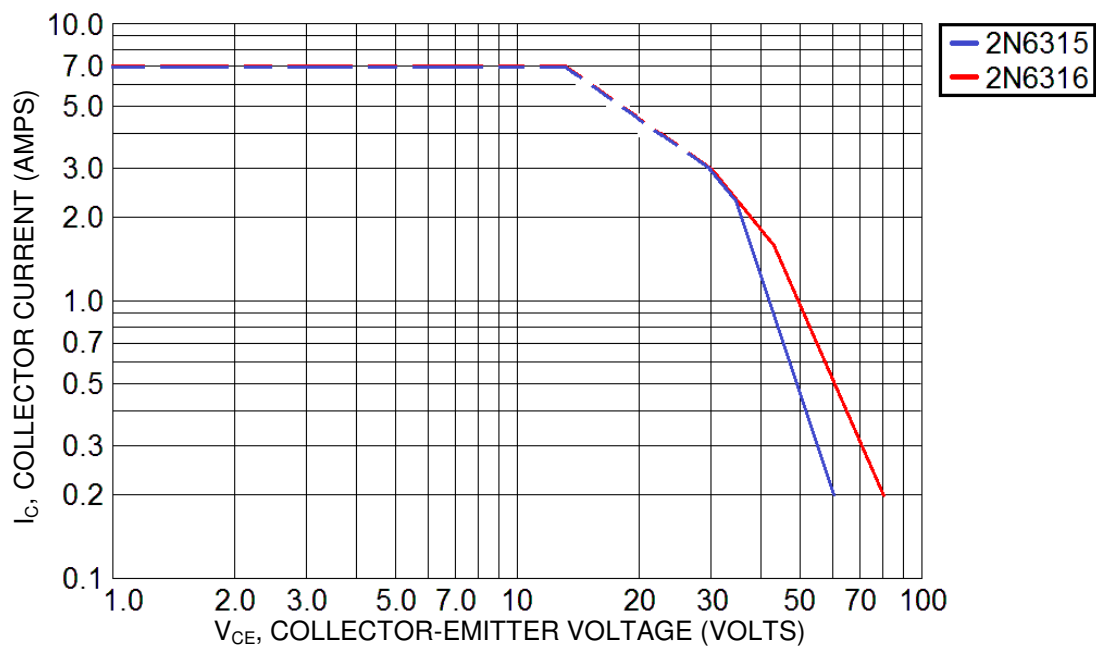
GRAPHS


Figure 1
Safe Operating Area ($T_C = 25^\circ\text{C}$)

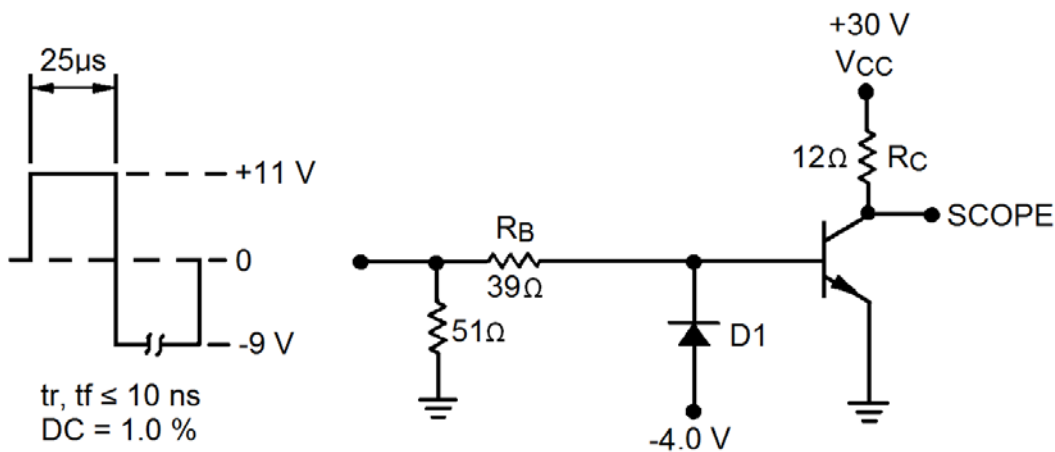
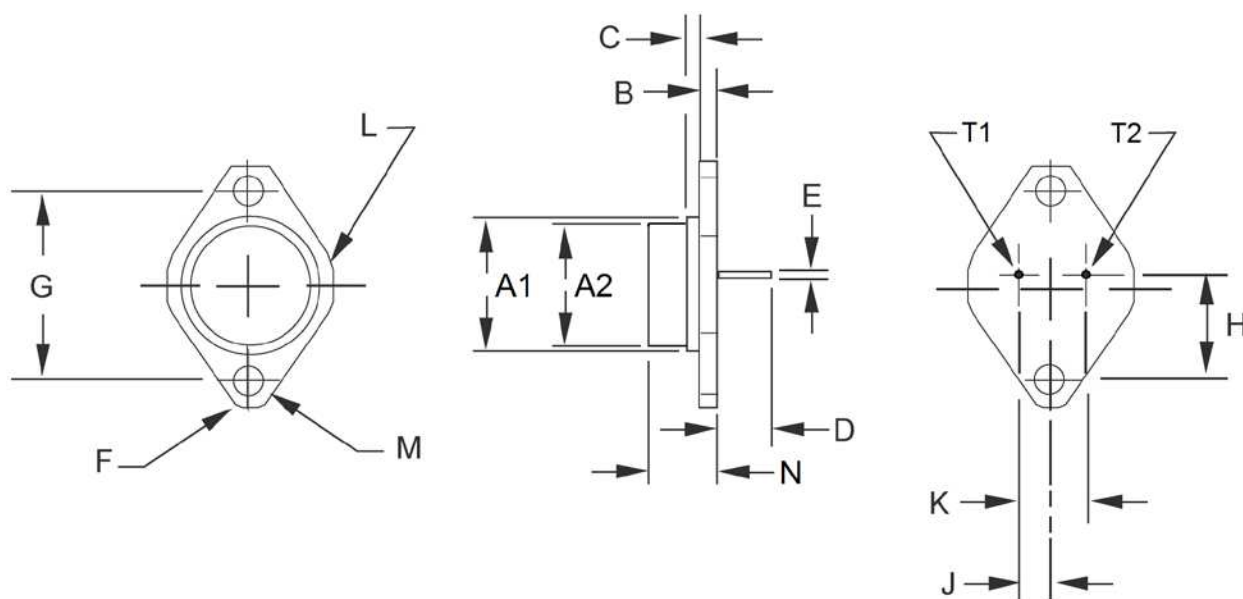


Figure 2
Switching Times Test Circuit

PACKAGE DIMENSIONS


| DIM | INCH | | MILLIMETERS | |
|------|-------------|------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A1 | .470 | .500 | 11.94 | 12.70 |
| A2 | - | .620 | - | 15.75 |
| B | .050 | .075 | 1.27 | 1.91 |
| C | - | .050 | - | 1.27 |
| D | .360 | - | 9.14 | - |
| E | .028 | .034 | 0.71 | 0.86 |
| F | .145 radius | | 3.68 radius | |
| G | .958 | .962 | 24.33 | 24.43 |
| H | .570 | .590 | 14.48 | 14.99 |
| J | .093 | .107 | 2.36 | 2.72 |
| K | .190 | .210 | 4.83 | 5.33 |
| L | .350 radius | | 8.89 radius | |
| M | .142 | .152 | 3.61 | 3.86 |
| N | .250 | .340 | 6.35 | 8.64 |
| T1 | Base | | | |
| T2 | Emitter | | | |
| Case | Collector | | | |