

Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**NPN
Digital Transistor**

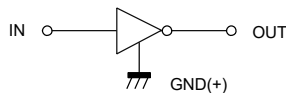
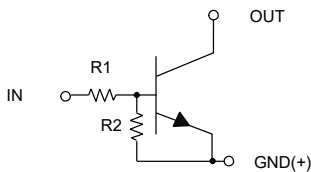
Maximum Ratings @ 25°C Unless Otherwise Specified

| Parameter | Symbol | Min | Typ | Max | Unit |
|----------------------|--------------|-----|-----|-----|------|
| Supply Voltage | V_{CC} | --- | 50 | --- | V |
| Input Voltage | V_{IN} | -5 | --- | +12 | V |
| Output Current | I_o | --- | 100 | --- | mA |
| | $I_{c(Max)}$ | --- | 100 | --- | mA |
| Power Dissipation | P_D | --- | 200 | --- | mW |
| Junction Temperature | T_J | --- | --- | 150 | °C |
| Storage Temperature | T_{stg} | -55 | --- | 150 | °C |

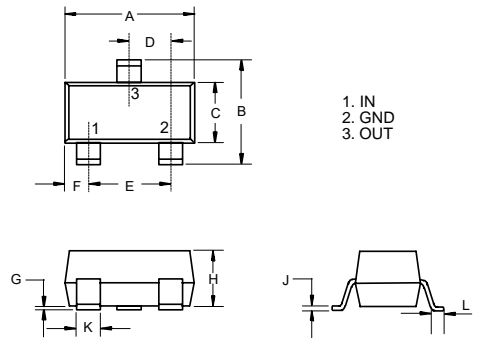
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Device Marking: E42

Internal Structure

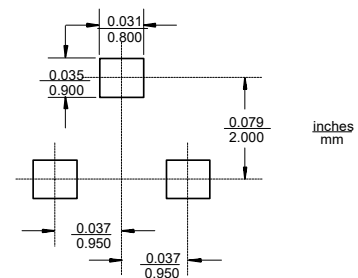


SOT-23



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.110 | 0.120 | 2.80 | 3.04 | |
| B | 0.083 | 0.104 | 2.10 | 2.64 | |
| C | 0.047 | 0.055 | 1.20 | 1.40 | |
| D | 0.034 | 0.041 | 0.85 | 1.05 | |
| E | 0.067 | 0.083 | 1.70 | 2.10 | |
| F | 0.018 | 0.024 | 0.45 | 0.60 | |
| G | 0.0004 | 0.006 | 0.01 | 0.15 | |
| H | 0.035 | 0.043 | 0.90 | 1.10 | |
| J | 0.003 | 0.007 | 0.08 | 0.18 | |
| K | 0.012 | 0.020 | 0.30 | 0.51 | |
| L | 0.007 | 0.020 | 0.20 | 0.50 | |

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

| Parameter | Symbol | Min | Typ | Max | Unit | Conditions |
|----------------------|--------------|------|-----|------|------------|----------------------------------|
| Input Voltage | $V_{I(off)}$ | 0.5 | --- | --- | V | $V_{CC}=5V, I_O=100\mu A$ |
| | $V_{I(on)}$ | --- | --- | 1.1 | V | $V_O=0.3V, I_O=5mA$ |
| Output Voltage | $V_{O(on)}$ | --- | 0.1 | 0.3 | V | $I_O=5mA, I_I=0.25mA$ |
| Input Current | I_I | --- | --- | 3.6 | mA | $V_I=5V$ |
| Output Current | $I_{O(off)}$ | --- | --- | 0.5 | μA | $V_{CC}=50V, V_I=0$ |
| DC Current Gain | G_I | 80 | --- | --- | | $V_O=5V, I_O=10mA$ |
| Input Resistance | R_1 | 1.54 | 2.2 | 2.86 | K Ω | |
| Resistance Ratio | R_2/R_1 | 17 | 21 | 26 | | |
| Transition Frequency | f_T | --- | 250 | --- | MHz | $V_{CE}=10V, I_E=-5mA, f=100MHz$ |

Curve Characteristics

Fig. 1 - DC Current Gain Characteristics

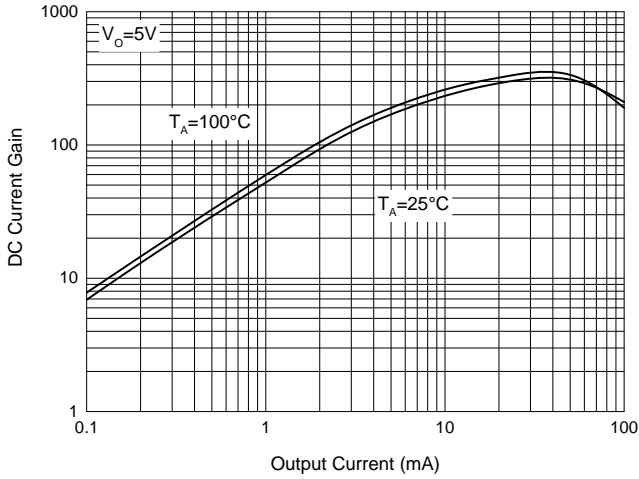


Fig. 2 - Input Voltage (on) Characteristics

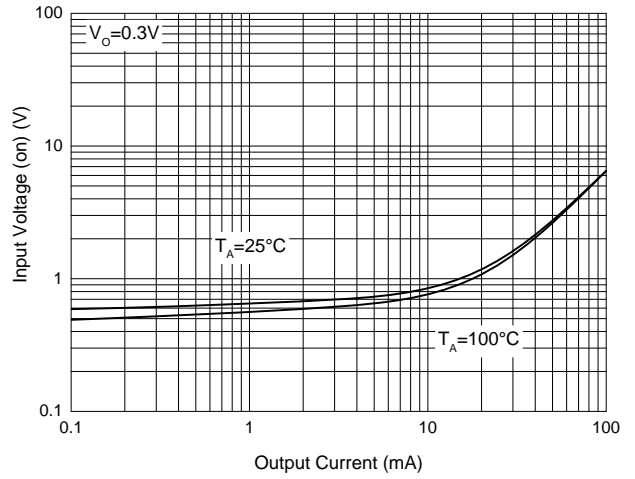


Fig. 3 - Input Voltage (off) Characteristics

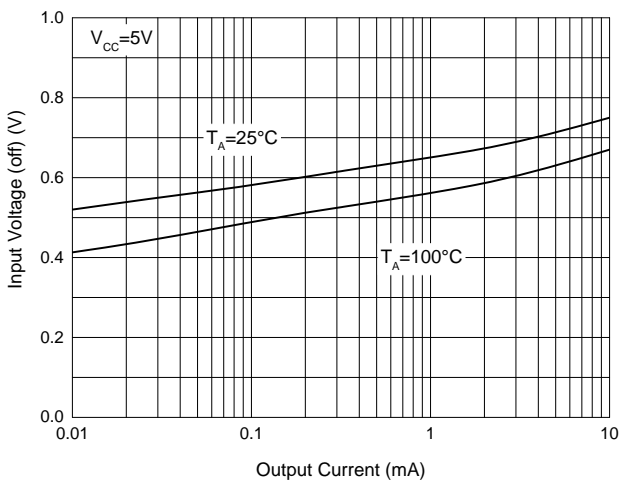


Fig. 4 - Output Voltage Characteristics

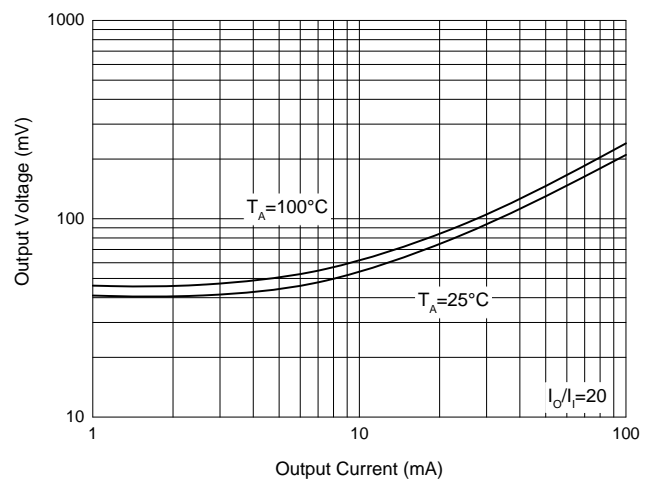
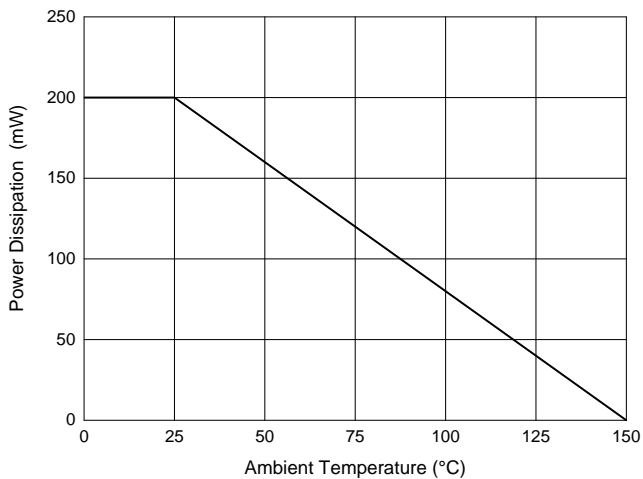


Fig. 5 - Power Derating Curve



Ordering Information

| Device | Packing |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:3Kpcs/Reel |

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