

Features

- 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)

Maximum Ratings @ 25°C Unless Otherwise Specified

- Thermal Resistance: 833°C/W Junction to Ambient

DTR1 NPN

| Parameter | Symbol | Value | Unit |
|----------------------|-----------|----------|------|
| Supply Voltage | V_{CC} | 50 | V |
| Input Voltage | V_{IN} | -10~+40 | V |
| Output Current | I_O | 100 | mA |
| Power Dissipation | P_D | 150 | mW |
| Junction Temperature | T_J | -55~+150 | °C |
| Storage Temperature | T_{stg} | -55~+150 | °C |

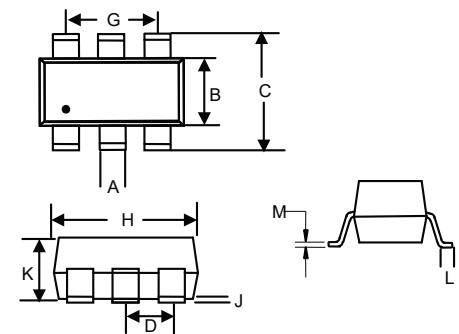
DTR2 PNP

| Parameter | Symbol | Value | Unit |
|----------------------|-----------|----------|------|
| Supply Voltage | V_{CC} | -50 | V |
| Input Voltage | V_{IN} | -40~+10 | V |
| Output Current | I_O | -100 | mA |
| Power Dissipation | P_D | 150 | mW |
| Junction Temperature | T_J | -55~+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.

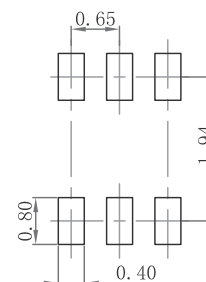
**NPN&PNP
Digital Transistors**

SOT-363

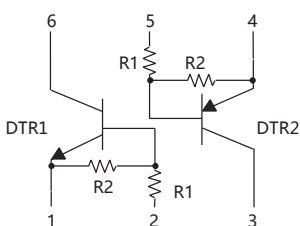


| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|-------|------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.006 | 0.014 | 0.15 | 0.35 | |
| B | 0.045 | 0.053 | 1.15 | 1.35 | |
| C | 0.079 | 0.096 | 2.00 | 2.45 | |
| D | 0.026 | | 0.65 | | TYP. |
| G | 0.047 | 0.055 | 1.20 | 1.40 | |
| H | 0.071 | 0.087 | 1.80 | 2.20 | |
| J | ----- | 0.004 | ----- | 0.10 | |
| K | 0.031 | 0.043 | 0.80 | 1.10 | |
| L | 0.010 | 0.018 | 0.26 | 0.46 | |
| M | 0.003 | 0.006 | 0.08 | 0.15 | |

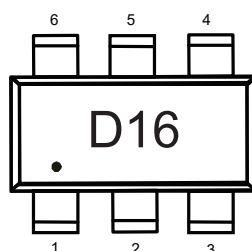
Suggested Solder Pad Layout



Internal Structure



Marking Code



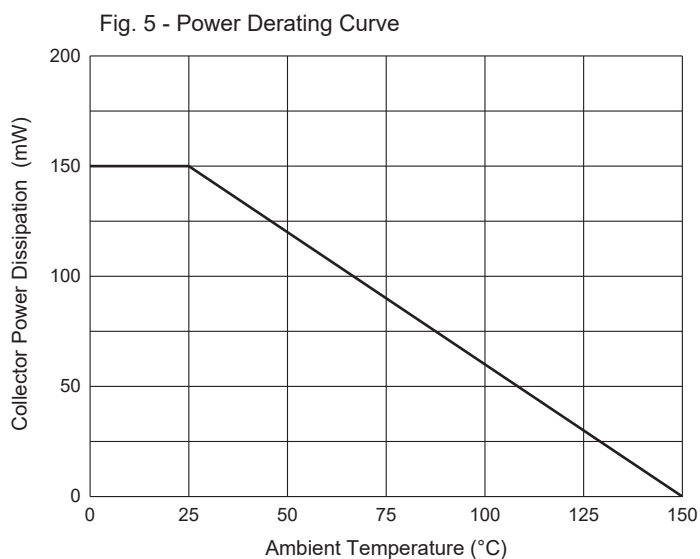
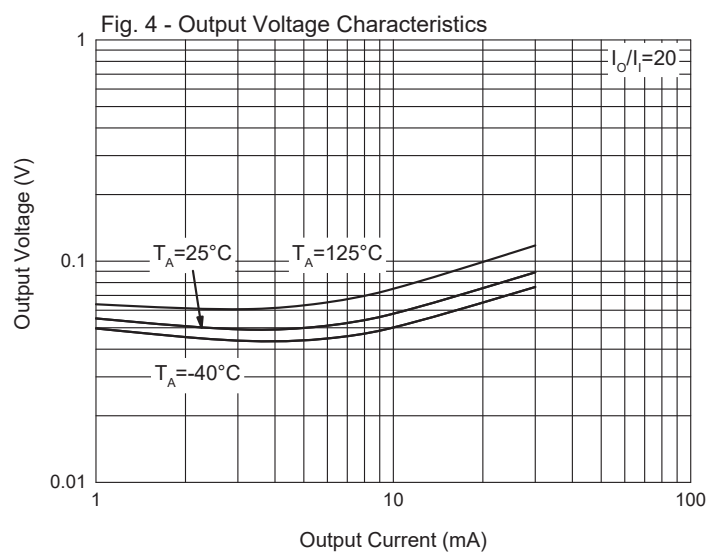
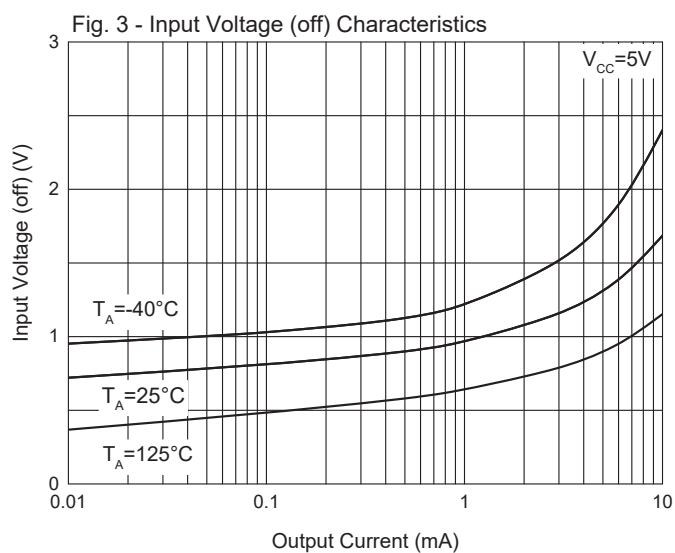
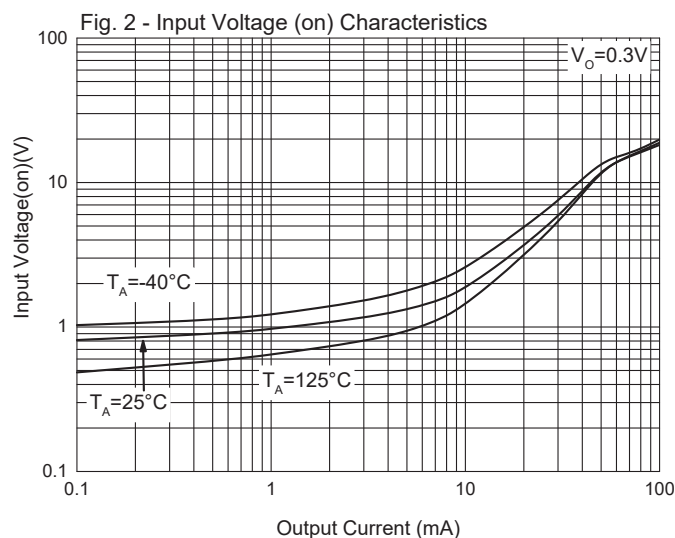
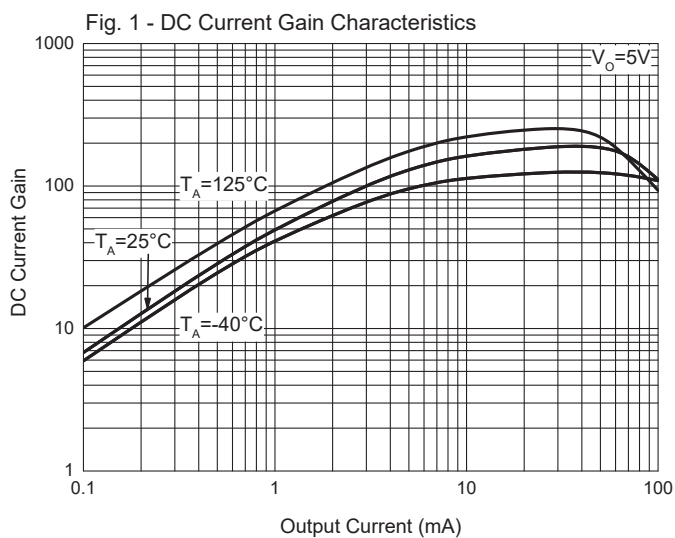
Electrical Characteristics @ 25°C Unless Otherwise Specified
DTR1 NPN

| Parameter | Symbol | Min | Typ | Max | Unit | Conditions |
|----------------------|--------------|------|-----|------|------------|------------------------------|
| Input Voltage | $V_{I(off)}$ | 0.4 | --- | --- | V | $V_{CC}=5V, I_O=100\mu A$ |
| | $V_{I(on)}$ | --- | --- | 2.5 | V | $V_O=0.3V, I_O=2mA$ |
| Output Voltage | $V_{O(on)}$ | --- | --- | 0.3 | V | $I_O=10mA, I_I=0.5mA$ |
| Input Current | I_I | --- | --- | 120 | μA | $V_I=5V$ |
| Output Current | $I_{O(off)}$ | --- | --- | 0.1 | μA | $V_{CC}=50V, V_I=0$ |
| DC Current Gain | G_I | 56 | --- | --- | | $V_O=5V, I_O=5mA$ |
| Input Resistance | R_I | 15.4 | 22 | 28.6 | K Ω | |
| Resistance Ratio | R_2/R_1 | 1.7 | 2.1 | 2.6 | | |
| Transition Frequency | f_T | 200 | --- | --- | MHz | $V_O=10V, I_E=5mA, f=100MHz$ |

DTR2 PNP

| Parameter | Symbol | Min | Typ | Max | Unit | Conditions |
|----------------------|--------------|------|-----|------|------------|--------------------------------|
| Input Voltage | $V_{I(off)}$ | -0.4 | --- | --- | V | $V_{CC}=-5V, I_O=-100\mu A$ |
| | $V_{I(on)}$ | --- | --- | -2.5 | V | $V_O=-0.3V, I_O=-2mA$ |
| Output Voltage | $V_{O(on)}$ | --- | --- | -0.3 | V | $I_O=-10mA, I_I=-0.5mA$ |
| Input Current | I_I | --- | --- | -120 | μA | $V_I=-5V$ |
| Output Current | $I_{O(off)}$ | --- | --- | -0.1 | μA | $V_{CC}=-50V, V_I=0$ |
| DC Current Gain | G_I | 56 | --- | --- | | $V_O=-5V, I_O=-5mA$ |
| Input Resistance | R_I | 15.4 | 22 | 28.6 | K Ω | |
| Resistance Ratio | R_2/R_1 | 1.7 | 2.1 | 2.6 | | |
| Transition Frequency | f_T | 200 | --- | --- | MHz | $V_O=-10V, I_E=-5mA, f=100MHz$ |

Curve Characteristics DTR1-NPN



Curve Characteristics
DTR2-PNP

Fig. 1 - DC Current Gain Characteristics

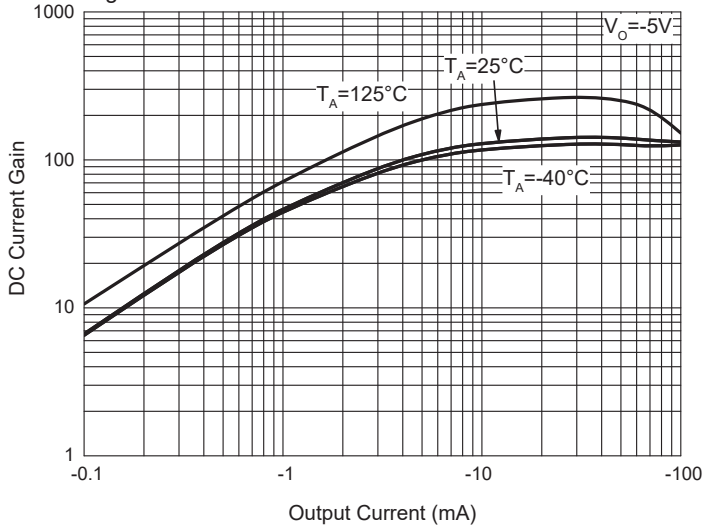


Fig. 2 - Input Voltage (on) Characteristics

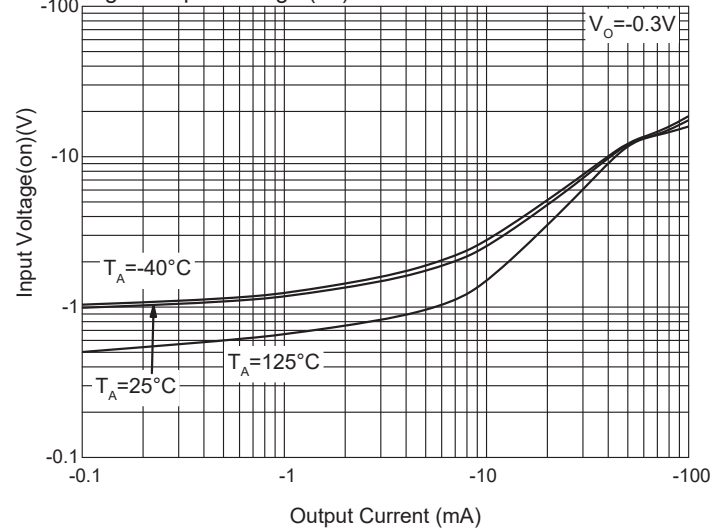


Fig. 3 - Input Voltage (off) Characteristics

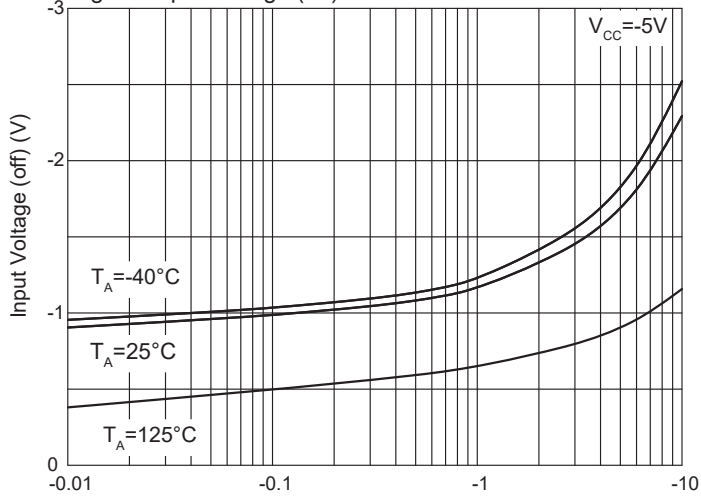


Fig. 4 - Output Voltage Characteristics

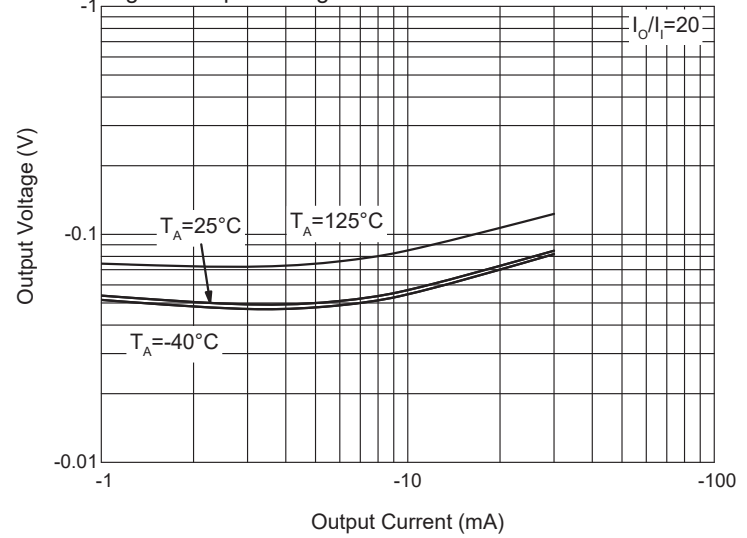
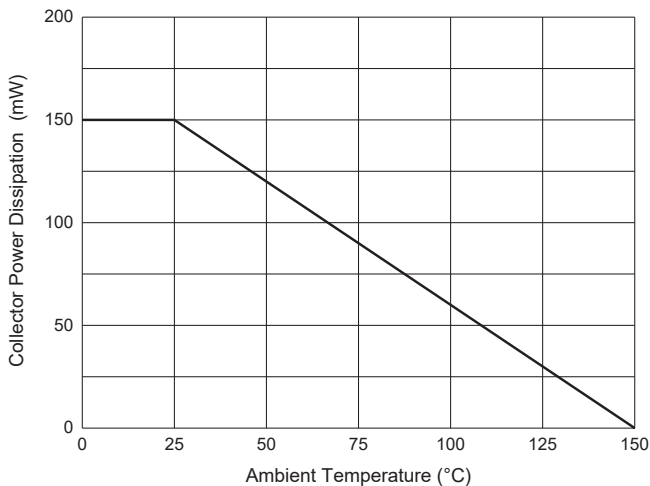


Fig. 5 - Power Derating Curve



Ordering Information

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

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