



DTNP124E

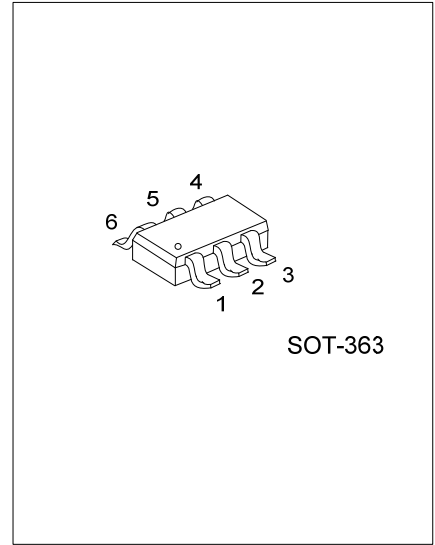
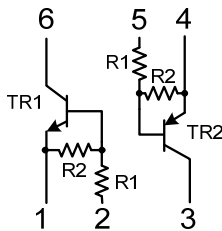
DUAL TRANSISTOR

GENERAL PURPOSE (DUAL DIGITAL TRANSISTOR)

■ **FEATURES**

- * Both the DTA124E chip and DTC124E chip in a SOT-363 package.
- * NPN/PNP silicon transistor(Built-in resistor type)

■ **EQUIVALENT CIRCUIT**



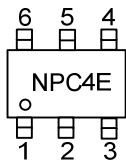
■ **ORDERING INFORMATION**

| Ordering Number | | Package | Pin Assignment | | | | | | Packing |
|-----------------|-----------------|---------|----------------|----|----|----|----|----|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | 6 | |
| DTNP124EL-AL6-R | DTNP124EG-AL6-R | SOT-363 | G1 | I1 | O2 | G2 | I2 | O1 | Tape Reel |

Note: Pin Assignment: G: GND I: Input O: Output

| | | |
|-----------------|------------------|---|
| DTNP124EG-AL6-R | (1)Packing Type | (1) R: Tape Reel |
| | (2)Package Type | (2) AL6: SOT-363 |
| | (3)Green Package | (3) G: Halogen Free and Lead Free, L: Lead Free |

■ **MARKING**



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | | UNIT |
|---|--------------|------------|-----------|--------------------|
| | | TR1 (NPN) | TR2 (PNP) | |
| Supply Voltage | V_{CC} | 50 | -50 | V |
| Input Voltage | V_{IN} | -10 ~ +40 | -40 ~ +10 | V |
| Output Current | I_{OUT} | 30 | -30 | mA |
| | $I_{C(MAX)}$ | 100 | -100 | mA |
| Total Power Dissipation (120mW per element must not be exceeded) | P_D | 150 | | mW |
| Junction Temperature | T_J | +150 | | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | | $^{\circ}\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

TR1 (NPN)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|----------------------|--------------|--|------|-----|------|---------------|
| Input Voltage | $V_{I(OFF)}$ | $V_{CC}= 5V, I_{OUT}=100\mu\text{A}$ | | | 0.5 | V |
| | $V_{I(ON)}$ | $V_{OUT}= 0.2V, I_{OUT}= 5\text{mA}$ | 3 | | | |
| Output Voltage | $V_{O(ON)}$ | $I_{OUT}/I_{IN}= 10\text{mA} / 0.5\text{mA}$ | | 0.1 | 0.3 | V |
| Input Current | I_i | $V_{IN}= 5V$ | | | 0.36 | mA |
| Output Current | $I_{O(OFF)}$ | $V_{CC}= 50V, V_{IN}=0V$ | | | 0.5 | μA |
| DC Current Gain | h_{FE} | $V_{OUT}= 5V, I_{OUT}= 5\text{mA}$ | 56 | | | |
| Input Resistance | R_1 | | 15.4 | 22 | 28.6 | k Ω |
| Resistance Ratio | R_2/R_1 | | 0.8 | 1 | 1.2 | |
| Transition Frequency | f_T | $V_{CE}=10V, I_E = -5\text{mA}, f=100\text{MHz}$ (Note) | | 250 | | MHz |

Note: Transition Frequency of the Device

TR2 (PNP)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|----------------------|--------------|---|------|------|-------|---------------|
| Input Voltage | $V_{I(OFF)}$ | $V_{CC}= -5V, I_{OUT}= -100\mu\text{A}$ | | | -0.5 | V |
| | $V_{I(ON)}$ | $V_{OUT}= -0.2V, I_{OUT}= -5\text{mA}$ | -3 | | | |
| Output Voltage | $V_{O(ON)}$ | $I_{OUT}/I_{IN}= -10\text{mA} / -0.5\text{mA}$ | | -0.1 | -0.3 | V |
| Input Current | I_i | $V_{IN}= -5V$ | | | -0.36 | mA |
| Output Current | $I_{O(OFF)}$ | $V_{CC}= -50V, V_{IN}=0V$ | | | -0.5 | μA |
| DC Current Gain | G_i | $V_{OUT}= -5V, I_{OUT}= -5\text{mA}$ | 56 | | | |
| Input Resistance | R_1 | | 15.4 | 22 | 28.6 | k Ω |
| Resistance Ratio | R_2/R_1 | | 0.8 | 1 | 1.2 | |
| Transition Frequency | f_T | $V_{CE}= -10\text{V}, I_E = 5\text{mA}, f=100\text{MHz}$ (Note) | | 250 | | MHz |

Note: Transition Frequency of the Device.

■ TYPICAL CHARACTERISTICS

TR1 (NPN)

Fig.1 Input voltage vs.output current (ON characteristics)

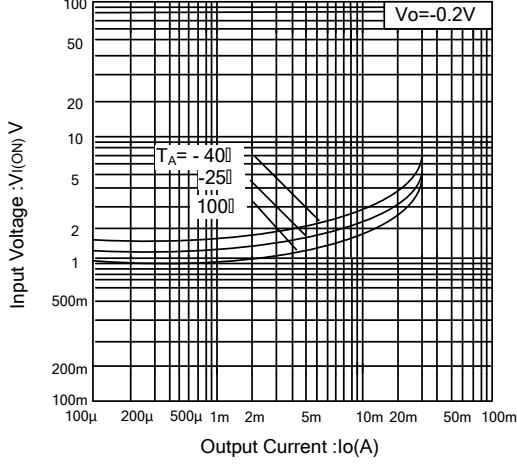


Fig.2 Output current vs Input voltage (OFF characteristics)

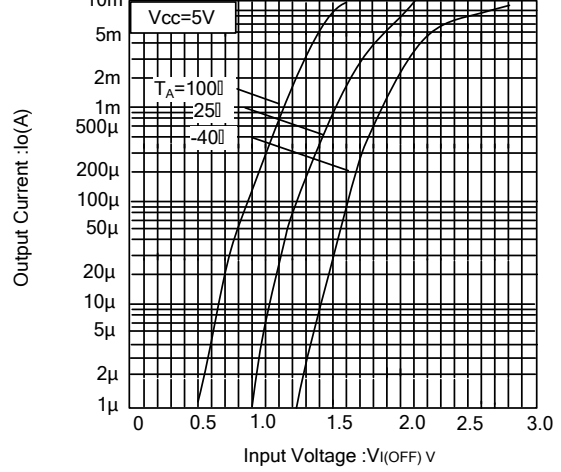


Fig.3 DC current gain vs.output current

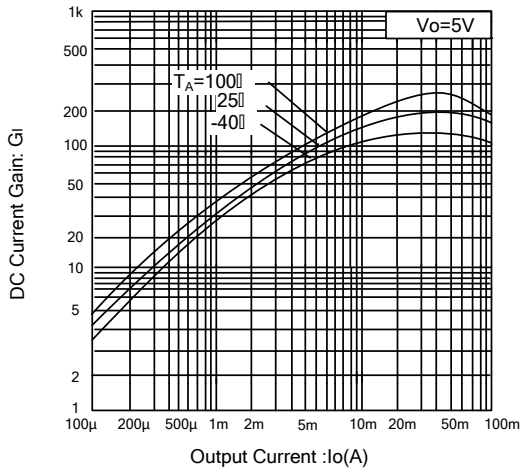
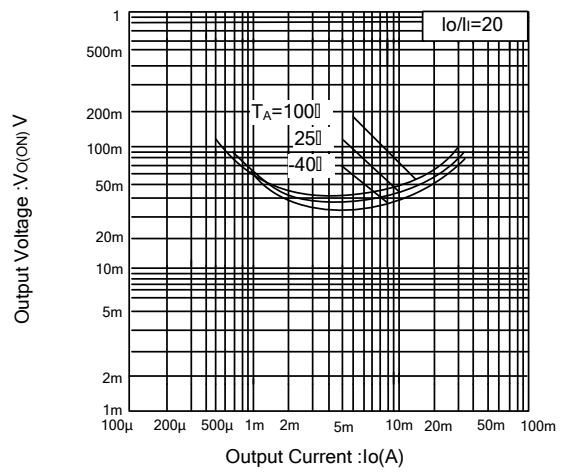


Fig.4 Output voltage vs.output current



TYPICAL CHARACTERISTICS (Cont.)

TR2 (PNP)

Fig.1 Input voltage vs.output current
(ON characteristics)

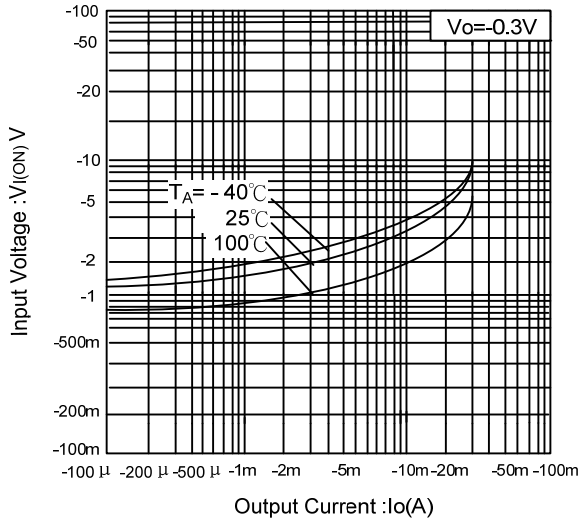


Fig.2 Output current vs Input voltage.
(OFF characteristics)

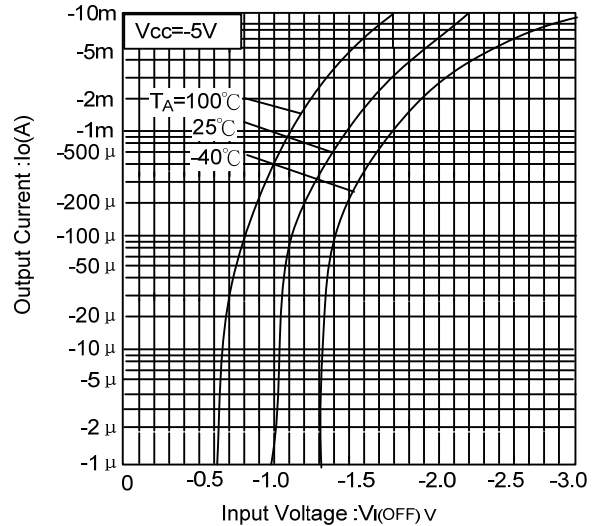


Fig.3 DC current gain vs.output current

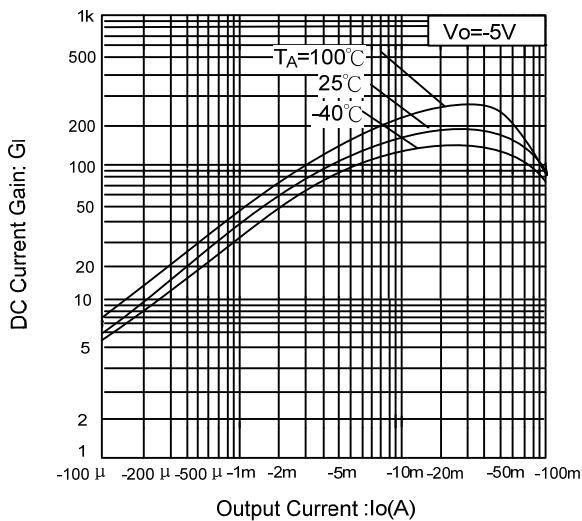
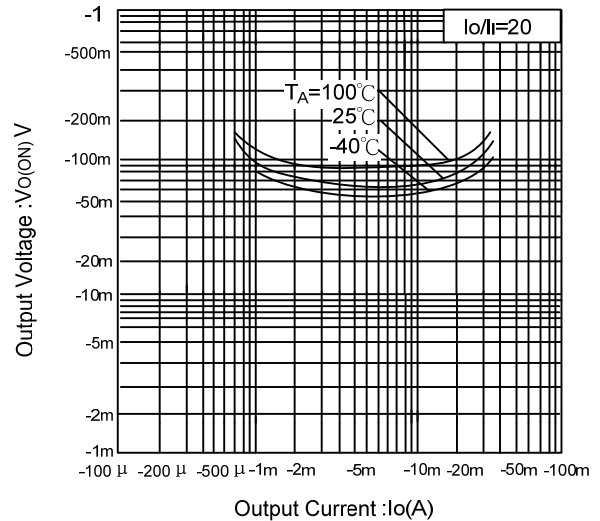


Fig.4 Output voltage vs.output current



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