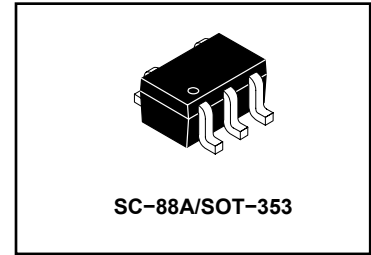


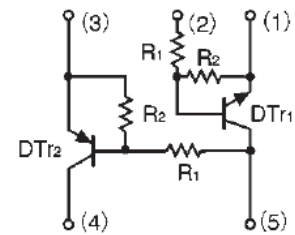
EPITAXIAL PLANAR NPN+PNP Dual Digital Transistor



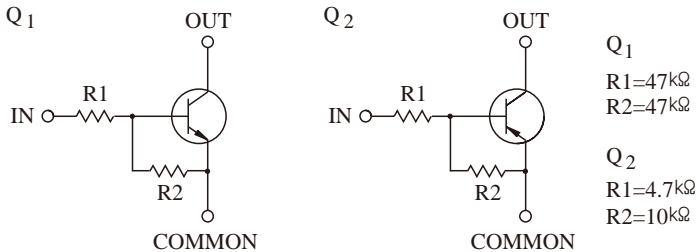
Features

- Including two devices in USV.
(Ultra Supermini type with 5 leads.)
- With Built-in bias resistors.
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.
- We declare that the material of product compliance with RoHS requirements.

EQUIVALENT CIRCUIT (TOP VIEW)



EQUIVALENT CIRCUIT



ORDERING INFORMATION

| Device | Marking | Shipping |
|--------|---------|------------------|
| UMC5N | C5 | 3000 Tape & Reel |

DTr1 Absolute maximum ratings (T_a=25°C)

| Parameter | Symbol | Value | Unit |
|---|---------------------|----------|------|
| Supply voltage | V _{CC} | 50 | V |
| Input voltage | V _{IN} | -10~+40 | V |
| Output current | I _O | 30 | mA |
| | I _{C(MAX)} | 100 | |
| Power dissipation | P _d | 150 | mW |
| Thermal Resistance From Junction To Ambient | R _{θJA} | 833 | °C/W |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | -55~+150 | °C |

DTr1 Electrical characteristics (T_a=25°C)

| Parameter | Symbol | Min | Typ | Max | Unit | Conditions |
|----------------------|--------------------------------|------|-----|------|------|--|
| Input voltage | V _{I(off)} | 0.5 | | | V | V _{CC} =5V, I _O =100μA |
| | V _{I(on)} | | | 3 | | 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 | | | 0.18 | mA | V _I =5V |
| Output current | I _{O(off)} | | | 0.5 | μA | V _{CC} =50V, V _I =0 |
| DC current gain | G _I | 68 | | | | V _O =5V, I _O =5mA |
| Input resistance | R ₁ | 32.9 | 47 | 61.1 | kΩ | |
| Resistance ratio | R ₂ /R ₁ | 0.8 | 1 | 1.2 | | |
| Transition frequency | f _T | | 250 | | MHz | V _O =10V, I _O =5mA, f=100MHz |

DTr2 Absolute maximum ratings ($T_a=25^\circ\text{C}$)

| Parameter | Symbol | Value | Unit |
|----------------------|--------------|----------|------------------|
| Supply voltage | V_{CC} | -50 | V |
| Input voltage | V_N | -20~+7 | V |
| Output current | I_O | -100 | mA |
| | $I_{C(MAX)}$ | -100 | |
| Power dissipation | P_d | 150 | mW |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55~+150 | $^\circ\text{C}$ |

DTr2 Electrical characteristics ($T_a=25^\circ\text{C}$)

| Parameter | Symbol | Min | Typ | Max | Unit | Conditions |
|----------------------|--------------|------|-----|------|---------------|--|
| Input voltage | $V_{(off)}$ | -0.3 | | | V | $V_{CC}=-5V, I_O=-100\mu\text{A}$ |
| | $V_{(on)}$ | | | -2.5 | | $V_O=-0.3V, I_O=-20\text{mA}$ |
| Output voltage | $V_{O(on)}$ | | | -0.3 | V | $I_O=-10\text{mA}, I_I=-0.5\text{mA}$ |
| Input current | I_I | | | -1.8 | mA | $V_I=-5V$ |
| Output current | $I_{O(off)}$ | | | -0.5 | μA | $V_{CC}=-50V, V_I=0$ |
| DC current gain | G_I | 30 | | | | $V_O=-5V, I_O=-10\text{mA}$ |
| Input resistance | R_1 | 3.29 | 4.7 | 6.11 | k Ω | |
| Resistance ratio | R_2/R_1 | 1.7 | 2.1 | 2.6 | | |
| Transition frequency | f_T | | 250 | | MHz | $V_O=-10V, I_O=-5\text{mA}, f=100\text{MHz}$ |

TYPICAL ELECTRICAL CHARACTERISTICS

DT_{r1} (NPN)

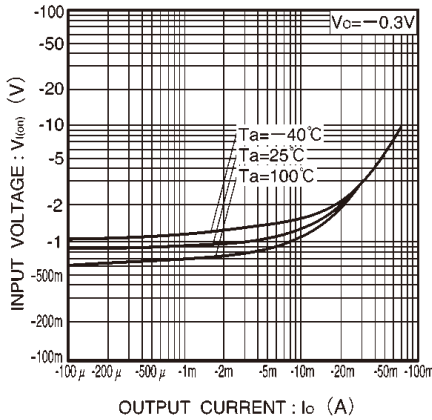


Fig.5 Input voltage vs. output current (ON characteristics)

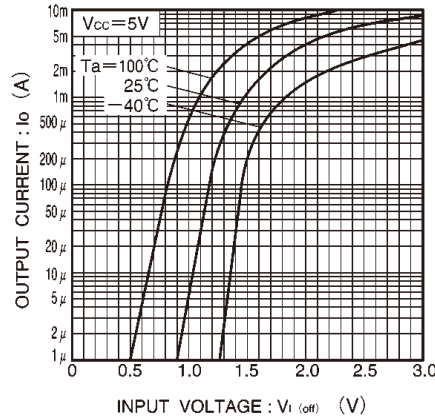


Fig.2 Output current vs. input voltage (OFF characteristics)

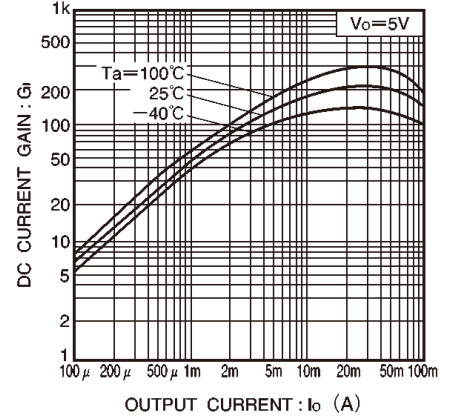


Fig.3 DC current gain vs. output current

DT_{r2} (PNP)

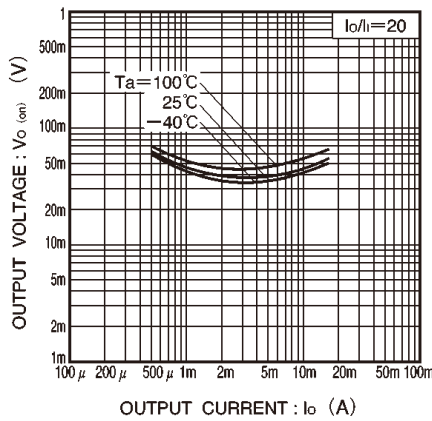


Fig.4 Output voltage vs. output current

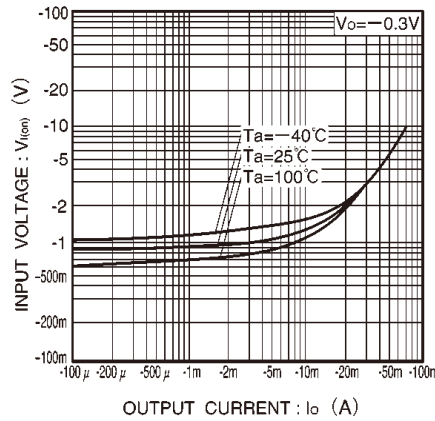


Fig.5 Input voltage vs. output current (ON characteristics)

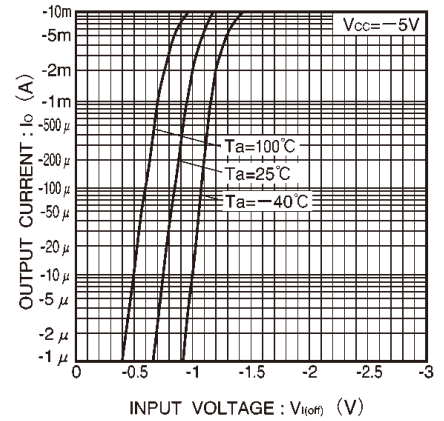


Fig.6 Output current vs. input voltage (OFF characteristics)

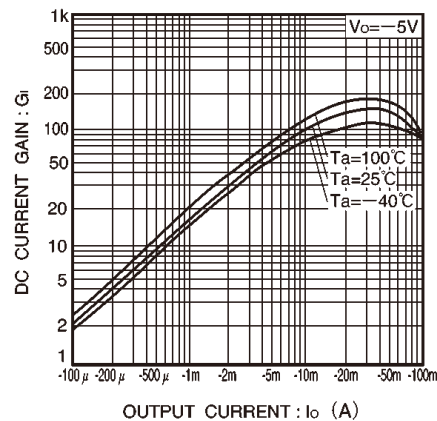


Fig.7 DC current gain vs. output current

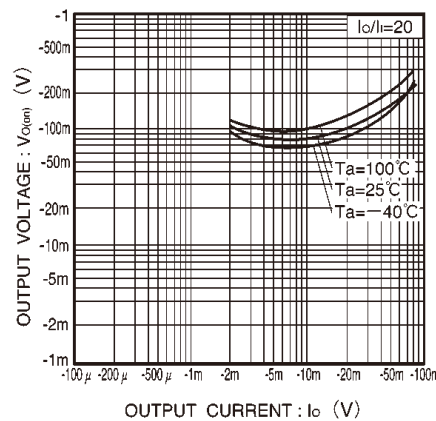
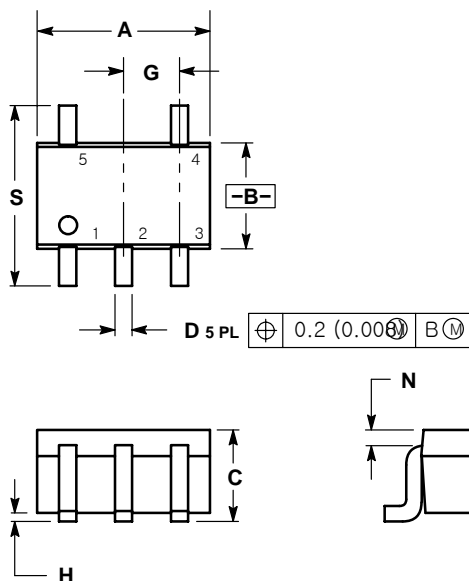


Fig.8 Output voltage vs. output current

SC-88A/SOT-353



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: NCH.
 3. 419A-01 OBSOLETE. NEW STANDARD 419A-02.
 4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.071 | 0.087 | 1.80 | 2.20 |
| B | 0.045 | 0.053 | 1.15 | 1.35 |
| C | 0.031 | 0.043 | 0.80 | 1.10 |
| D | 0.004 | 0.012 | 0.10 | 0.30 |
| G | 0.026 BSC | | 0.65 BSC | |
| H | --- | 0.004 | --- | 0.10 |
| J | 0.004 | 0.010 | 0.10 | 0.25 |
| K | 0.004 | 0.012 | 0.10 | 0.30 |
| N | 0.008 REF | | 0.20 REF | |
| S | 0.079 | 0.087 | 2.00 | 2.20 |

SOLDERING FOOTPRINT*

