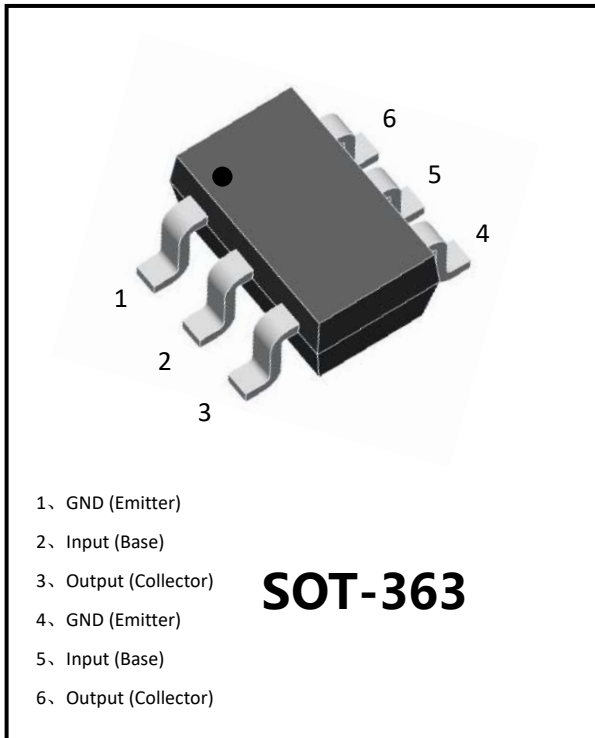


## Dual PNP Digital Transistors (Built-in Resistors)



### Features

- Epoxy meets UL-94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors
- Only the on/off conditions need to be set for operation, making the circuit design easy
- Simplifies Circuit Design、Reduces Board Space、Reduces Component Count
- Part no. with suffix "Q" means AEC-Q101 qualified

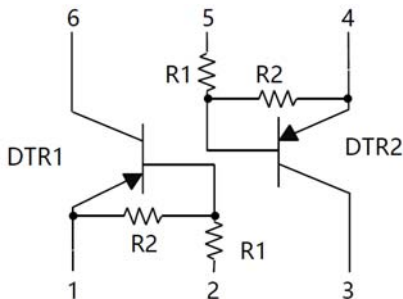
### Application

- Control of IC inputs、Switching loads、Digital system

### Mechanical Data

- **Package:** SOT-363
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** B11

### ■Equivalent circuit



### ■ Ordering Information (Example)

| PREFERED P/N | PACKING CODE | UNIT WEIGHT(g)     | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|--------------|--------------|--------------------|----------------------|-------------------------|----------------------------|---------------|
| UMB11NQ      | F2           | Approximate 0.009g | 3000                 | 30000                   | 120000                     | 7" reel       |



# UMB11NQ

## ■Maximum Ratings (Ta=25°C Unless otherwise specified)

| ITEM                                            | SYMBOL          | UNIT | VALUE       |
|-------------------------------------------------|-----------------|------|-------------|
| Collector-Emitter Voltage                       | $V_{CEO}$       | V    | -50         |
| Collector-Base Voltage                          | $V_{CBO}$       | V    | -50         |
| Emitter-Base Voltage                            | $V_{EBO}$       | V    | -10         |
| Supply Voltage                                  | $V_{CC}$        | V    | -50         |
| Input Voltage                                   | $V_{IN}$        | V    | -40 to +10  |
| Collector Current                               | $I_C$           | mA   | -100        |
| Power Dissipation                               | $P_D$           | mW   | 150         |
| Thermal Resistance From Junction to Ambient (*) | $R_{\theta JA}$ | °C/W | 833         |
| Junction Temperature                            | $T_j$           | °C   | -55 to +150 |
| Storage Temperature                             | $T_{STG}$       | °C   | -55 to +150 |

(\*) Device mounted on FR-4 PCB 1.0 x 1.0 x 0.06 inch

## ■Electrical Characteristics (Ta=25°C unless otherwise specified)

| ITEM                 | SYMBOL       | UNIT       | CONDITIONS                              | MIN  | TYP | MAX   |
|----------------------|--------------|------------|-----------------------------------------|------|-----|-------|
| Input voltage        | $V_{I(off)}$ | V          | $V_{CC} = -5V, I_O = -100\mu A$         | -0.5 | -   | -     |
|                      | $V_{I(on)}$  | V          | $V_O = -0.3V, I_O = -10mA$              | -    | -   | -3    |
| Output voltage       | $V_{O(on)}$  | V          | $I_O = -10mA, I_I = -0.5mA$             | -    | -   | -0.3  |
| Input current        | $I_I$        | mA         | $V_I = -5V$                             | -    | -   | -0.88 |
| Output current       | $I_{O(off)}$ | $\mu A$    | $V_{CC} = -50V, V_I = 0$                | -    | -   | -0.5  |
| DC current gain      | $G_I$        |            | $V_O = -5V, I_O = -5mA$                 | 30   | -   | -     |
| Input resistance     | $R_I$        | k $\Omega$ |                                         | 7    | 10  | 13    |
| Resistance ratio     | $R_2/R_1$    |            |                                         | 0.8  | 1   | 1.2   |
| Transition frequency | $f_T$        | MHz        | $V_{CE} = -10V, I_E = -5mA, f = 100MHz$ | -    | 250 | -     |



## ■ Characteristics (Typical)

Fig.1 - ON Characteristics

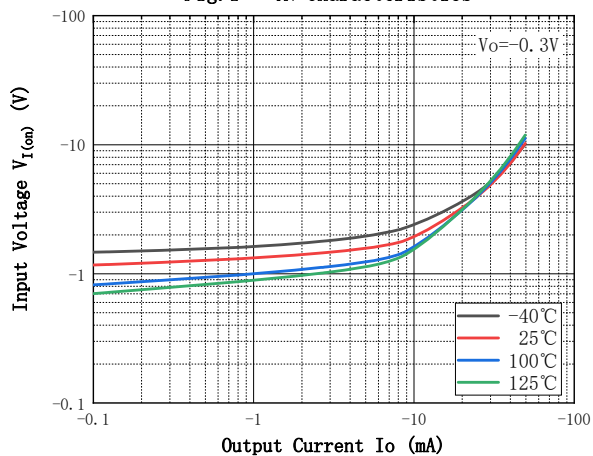


Fig.2 - OFF Characteristics

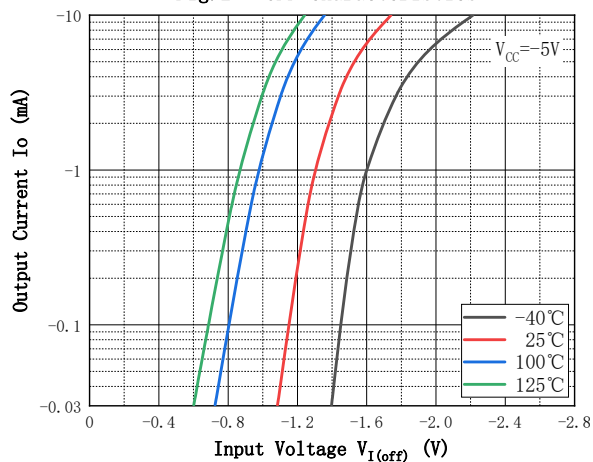


Fig.3 - Output Voltage Characteristics

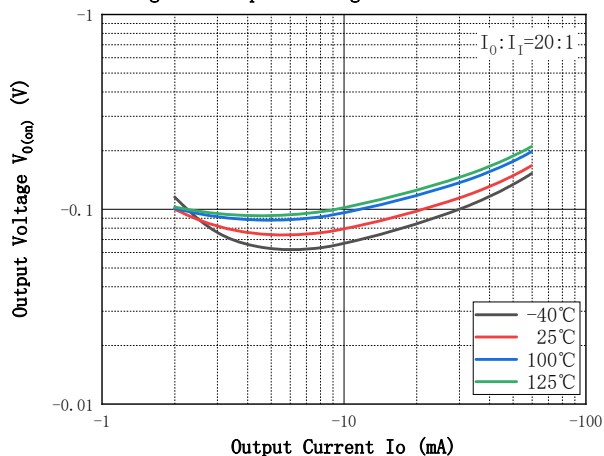


Fig.4 - DC Current Gain Characteristics

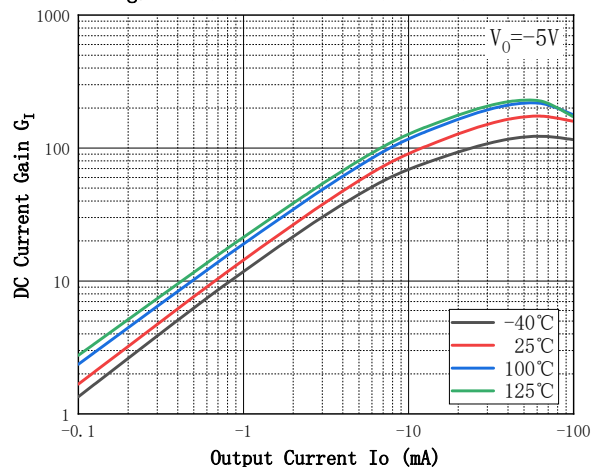


Fig.5 -  $C_o$  —  $V_{CB}$

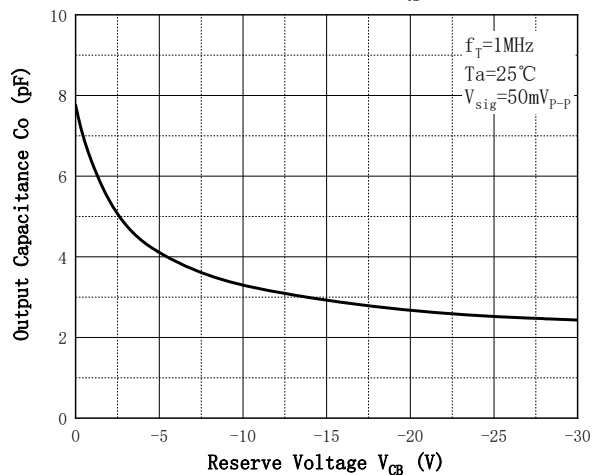
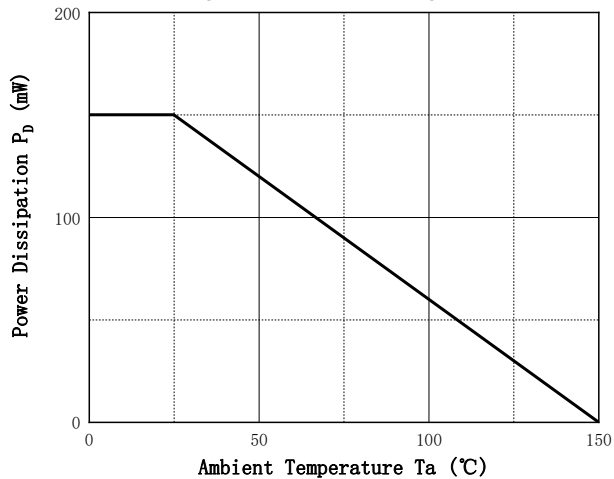


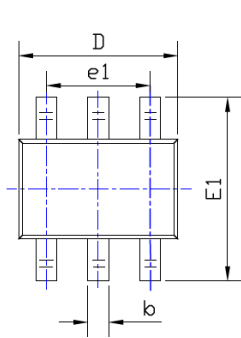
Fig.6 - Power Derating Curve



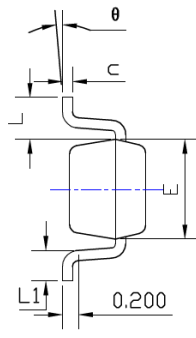


## UMB11NQ

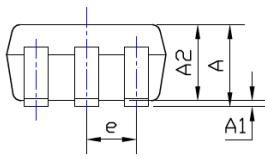
### ■SOT-363 Package Outline Dimensions & Suggested Pad Layout



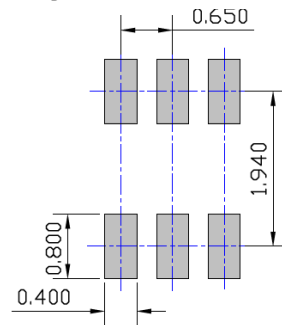
TOP VIEW



SIDE VIEW



SIDE VIEW



UNIT: mm

SUGGESTED SOLDER PAD LAYOUT

| SYMBOL | DIMENSIONS |       |            |       |
|--------|------------|-------|------------|-------|
|        | INCHES     |       | Millimeter |       |
|        | MIN.       | MAX.  | MIN.       | MAX.  |
| A      | 0.035      | 0.043 | 0.900      | 1.100 |
| A1     | 0.000      | 0.004 | 0.000      | 0.100 |
| A2     | 0.035      | 0.039 | 0.900      | 1.000 |
| b      | 0.006      | 0.014 | 0.150      | 0.350 |
| c      | 0.004      | 0.010 | 0.100      | 0.250 |
| D      | 0.071      | 0.087 | 1.800      | 2.200 |
| E      | 0.045      | 0.053 | 1.150      | 1.350 |
| E1     | 0.085      | 0.096 | 2.150      | 2.450 |
| e      | 0.026TYP   |       | 0.650TYP   |       |
| e1     | 0.047      | 0.055 | 1.200      | 1.400 |
| L      | 0.021REF   |       | 0.525REF   |       |
| L1     | 0.010      | 0.018 | 0.260      | 0.460 |
| θ      | 0°         | 8°    | 0°         | 8°    |

#### NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



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