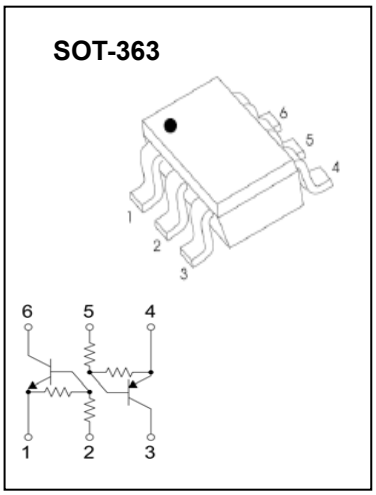
# Digital Transistors (Built-in Resistors)

## FEATURES

- DTA114E and DTC114E transistors are built-in a package.
- Transistor elements are independent, eliminating interference.
- AEC-Q101 qualified (Automotive grade with suffix "Q".)
- Expsemi electronics




## MARKING:D3

## Absolute maximum ratings (Ta=25℃)

| Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| **Supply voltage** | $V_{CC}$ | 50 | V |
| **Input voltage** | $V_{IN}$ | -10~40 | V |
| **Output current** | $I_O$ | 50 | mA |
| | $I_{C(MAX)}$ | 100 | |
| **Power dissipation** | $P_D$* | 150 | mW |
| **Operation Junction and Storage Temperature Range** | $T_J$,$T_{stg}$ | -55~+150 | ℃ |

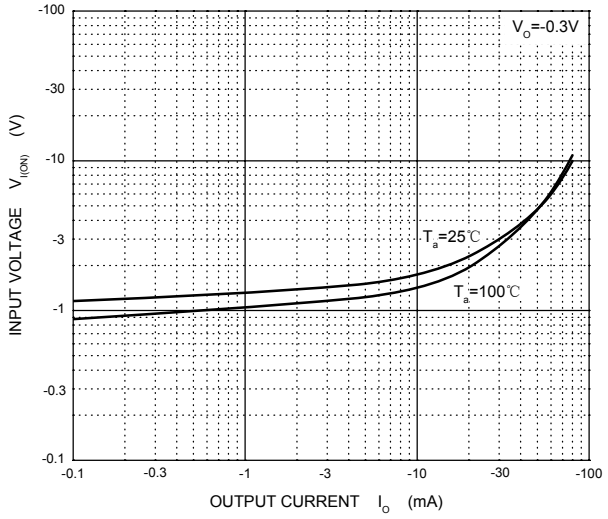
Note 1: 150mW per element must not be exceeded.

**Electrical characteristics (Ta=25℃)**

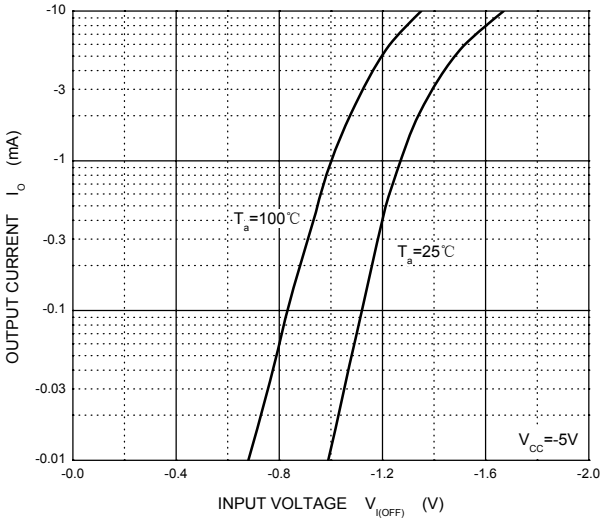
| Parameter | Symbol | Min. | Typ | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| **Input voltage** | $V_{I(off)}$ | 0.5 | | | V | $V_{CC}$=5V ,$I_O$=100μA |
| | $V_{I(on)}$ | | | 3 | | $V_O$=0.3V ,$I_O$=10mA |
| **Output voltage** | $V_{O(on)}$ | | | 0.3 | V | $I_O$/$I_I$=10mA/0.5mA |
| **Input current** | $I_I$ | | | 0.88 | 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,$I_O$=5mA |
| **Input resistance** | $R_1$ | 7 | 10 | 13 | kΩ | |
| **Resistance ratio** | $R_2$/$R_1$ | 0.8 | 1 | 1.2 | | |
| **Transition frequency** | $f_T$ | | 250 | | MHz | $V_{CE}$=10V ,$I_E$=-5mA,f=100MHz |

# Typical Characteristics

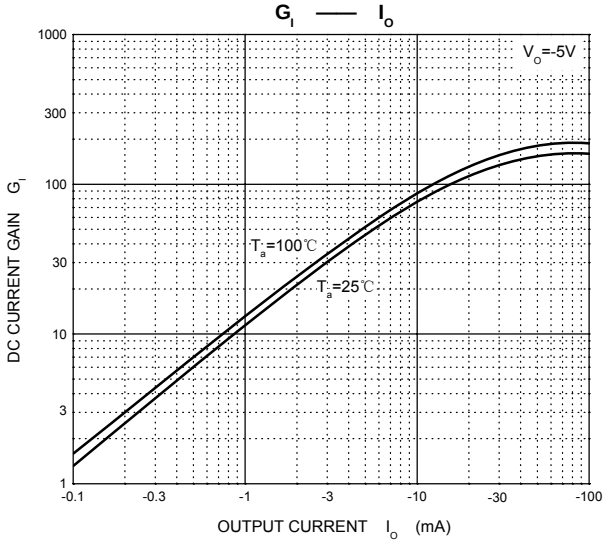
ON Characteristics



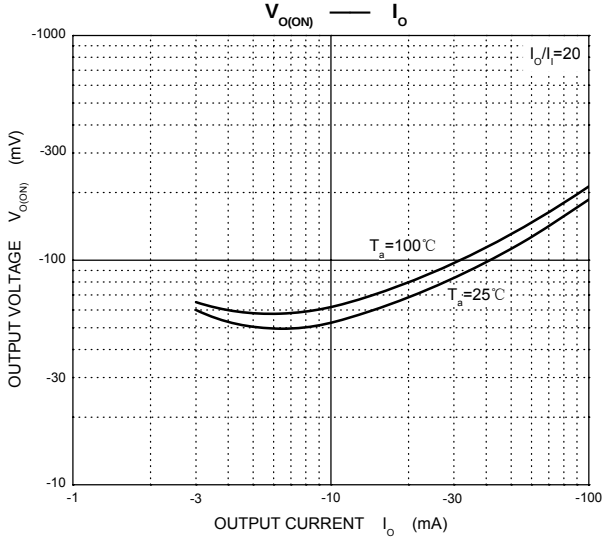

OFF Characteristics



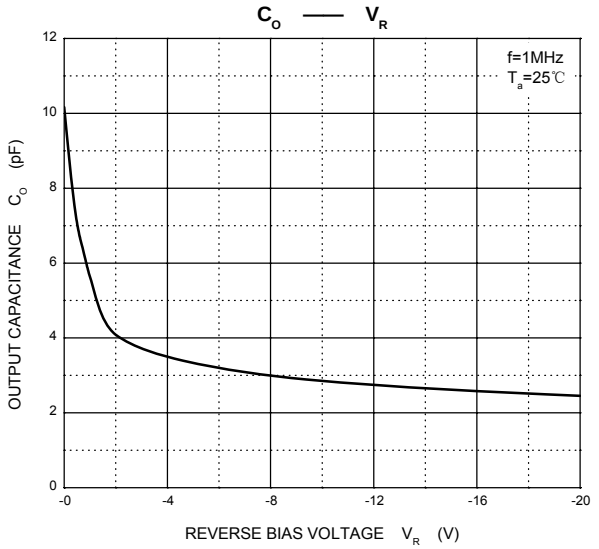

$G_I$ —— $I_O$



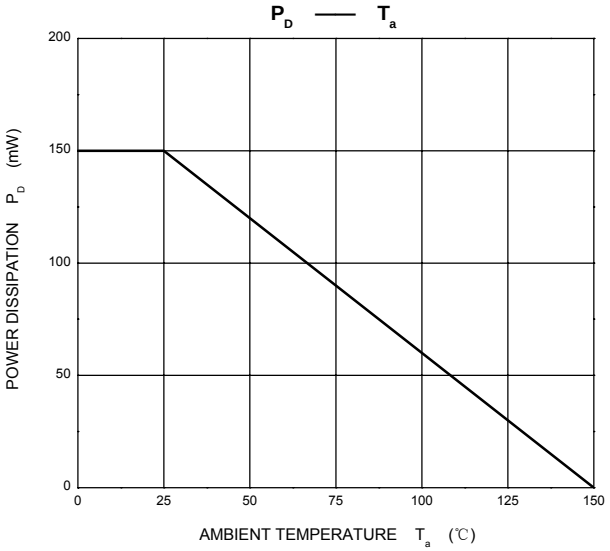

$V_{O(ON)}$ —— $I_O$




$C_O$ —— $V_R$



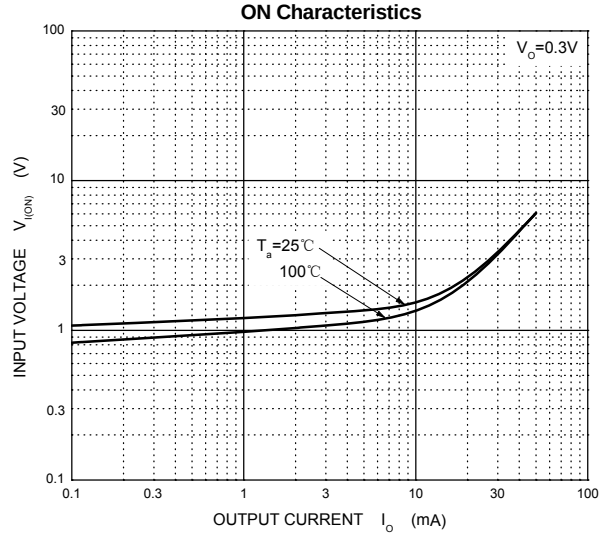

$P_D$ —— $T_a$



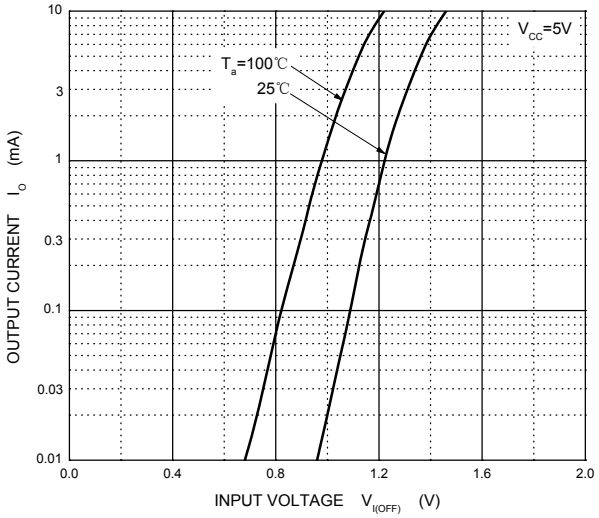
# Typical Characteristics

**DTC114E**

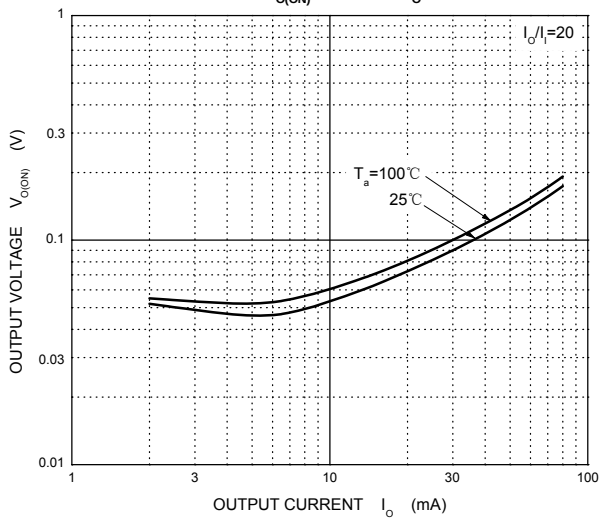
**ON Characteristics**



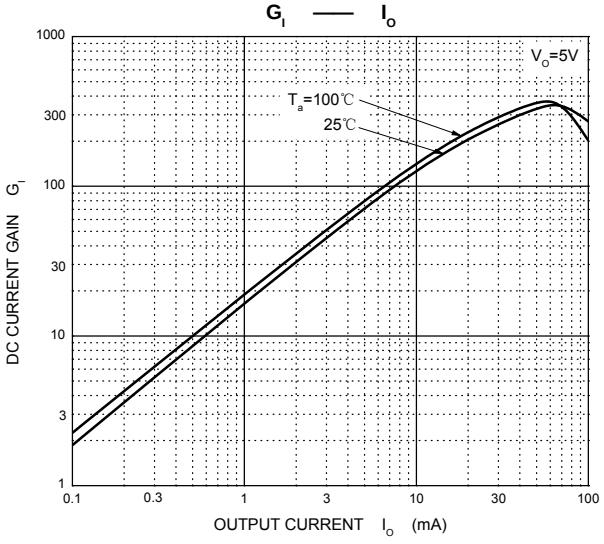

**OFF Characteristics**



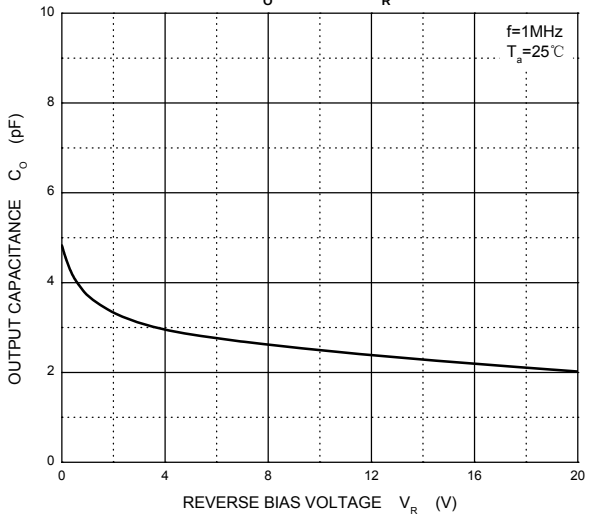

**$V_{O(ON)}$ — $I_O$**



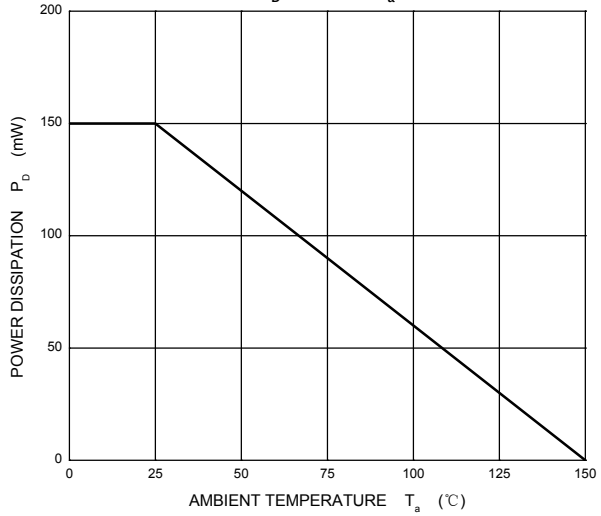

**$G_I$ — $I_O$**



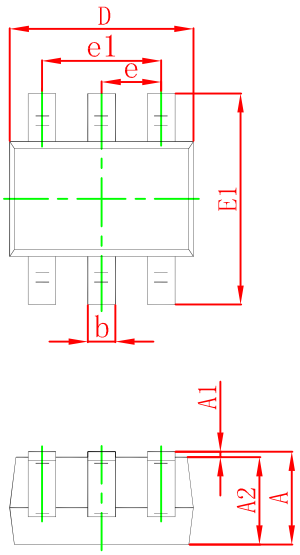

**$C_O$ — $V_R$**

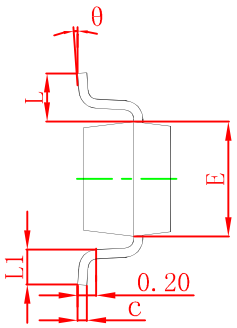



**$P_D$ — $T_a$**



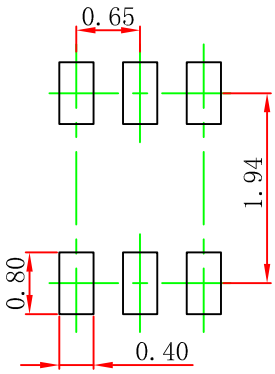
## SOT-363 Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.150 | 0.350 | 0.006 | 0.014 |
| c | 0.100 | 0.150 | 0.004 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.400 | 0.085 | 0.094 |
| e | 0.650 TYP | | 0.026 TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

## SOT-363 Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.