

SOT-363 Plastic-Encapsulate Transistors

UMF21N DUAL DIGITAL TRANSISTOR (NPN+PNP)

DESCRIPTION

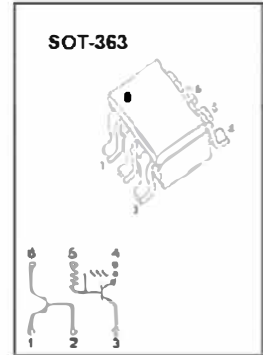
Silicon epitaxial planar transistor

FEATURES

- 2SA2018 and DTC114E are housed independently in a package.
- Power switching circuit in a single package.
- Mounting cost and area can be cut in half.

APPLICATION

- Power management circuit, mobile telephone quiver circuit
- For portable equipment:(i e Mobile phone,MP3, MD,CD-ROM, DVD-ROM, Note book PC, etc.)



MARKING:F21

TR1 MAXIMUM RATINGS $T_a=25^{\circ}\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------|-------------------------------|---------|--------------------|
| V_{ce0} | Collector-Base Voltage | -15 | V |
| V_{ce0} | Collector-Emitter Voltage | -12 | V |
| V_{eb0} | Emitter-Base Voltage | -6 | V |
| I_c | Collector Current -Continuous | -0.5 | A |
| P_c | Collector Dissipation | 0.15 | W |
| T_j | Junction Temperature | 150 | $^{\circ}\text{C}$ |
| T_{stg} | Storage Temperature | -55-150 | $^{\circ}\text{C}$ |

DTR2 Absolute maximum ratings($T_a=25^{\circ}\text{C}$)

| Parameter | Symbol | Limits | Unit |
|----------------------|--------------|---------|--------------------|
| Supply voltage | V_{cc} | 50 | V |
| Input voltage | V_{in} | -10~40 | V |
| Output current | I_o | 50 | mA |
| | $I_{O(MAX)}$ | 100 | |
| Power dissipation | P_d | 150 | mW |
| Junction temperature | T_j | 150 | $^{\circ}\text{C}$ |
| Storage temperature | T_{stg} | -55~150 | $^{\circ}\text{C}$ |

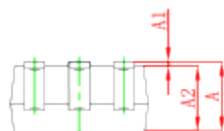
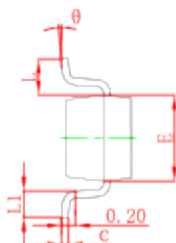
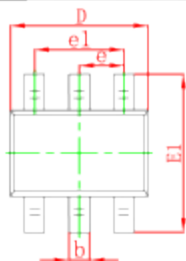
TR1 ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|---|-----|-----|-------|---------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C = -10\mu A, I_E = 0$ | -15 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C = -1mA, I_E = 0$ | -12 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E = -10\mu A, I_C = 0$ | -8 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB} = -15V, I_E = 0$ | | | -0.1 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = -8V, I_C = 0$ | | | -0.1 | μA |
| DC current gain | h_{FE} | $V_{CE} = -2V, I_C = -10mA$ | 270 | | 680 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -200mA, I_E = -10mA$ | | | -0.25 | V |
| Transition frequency | f_T | $V_{CE} = -2V, I_C = -10mA, f = 100MHz$ | | 260 | | MHz |
| Collector output capacitance | C_{ob} | $V_{CB} = -10V, I_E = 0, f = 1MHz$ | | 6.5 | | pF |

DTR2 Electrical Characteristics (Ta=25 °C)

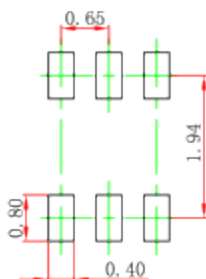
| Parameter | Symbol | Min. | Typ | Max. | Unit | Conditions |
|----------------------|--------------|------|-----|------|------------|--|
| Input voltage | $V_{i(off)}$ | 0.5 | | | V | $V_{CC} = 5V, I_C = 100\mu A$ |
| | $V_{i(on)}$ | | | 3 | | $V_O = 0.3V, I_C = 10mA$ |
| Output voltage | $V_{O(on)}$ | | | 0.3 | V | $I_C/I_E = 10mA/0.5mA$ |
| 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 | | | | $V_O = 5V, I_C = 5mA$ |
| Input resistance | R_i | 7 | 10 | 13 | K Ω | |
| Resistance ratio | R_2/R_1 | 0.8 | 1 | 1.2 | | |
| Transition frequency | f_T | | 250 | | MHz | $V_{CE} = 10V, I_E = -5mA, f = 100MHz$ |

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 | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.450 | 0.085 | 0.096 |
| 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 |
| theta | 0° | 8° | 0° | 8° |

SOT-363 Suggested Pad Layout



Note:

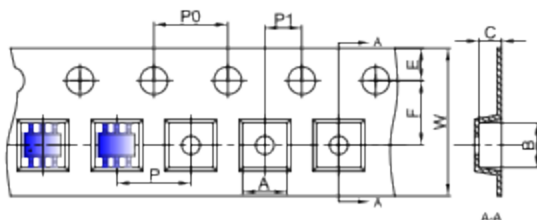
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

NOTICE

JCET reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JCET does not assume any liability arising out of the application or use of any product described herein.

SOT-363 Tape and reel

SOT-363 Embossed Carrier Tape

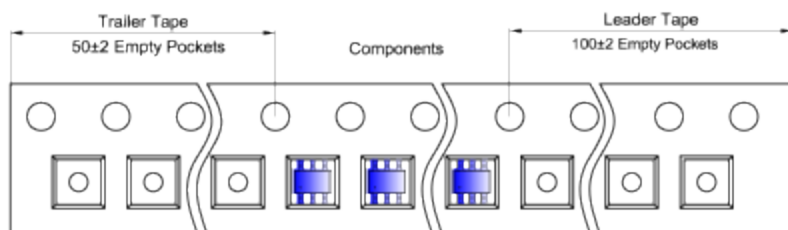


Packaging Description:

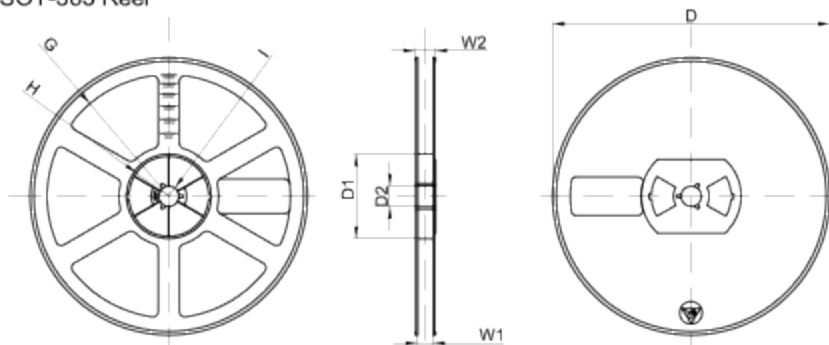
SOT-363 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter | | | | | | | | | | |
|------------------------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|-----------|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-363 | 2.25 | 2.55 | 1.20 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |
| (Tolerance) | +/-0.05 | +/-0.05 | +/-0.05 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +0.3/-0.1 |

SOT-363 Tape Leader and Trailer



SOT-363 Reel



| Dimensions are in millimeter | | | | | | | | |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 7"Die | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |
| Tolerance | +/-2 | +/-1 | +/-1 | +/-1 | +/-1 | +/-1 | +/-1 | +/-1 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch | 45,000 pcs | 203×203×195 | 180,000 pcs | 438×438×220 | |