

L2N7002KDW1T1G

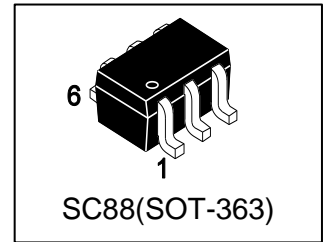
S-L2N7002KDW1T1G

Small Signal MOSFET

380 mAmps, 60 Volts N-Channel SC-88

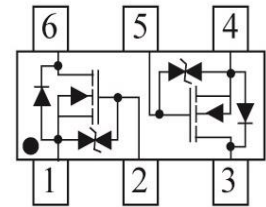
1. FEATURES

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- ESD Protected



2. DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|----------------|---------|-----------------|
| L2N7002KDW1T1G | 72K | 3000/Tape&Reel |
| L2N7002KDW1T3G | 72K | 10000/Tape&Reel |



3. MAXIMUM RATINGS(Ta = 25°C)

| Parameter | Symbol | Limits | Unit |
|--------------------------------|--------|--------|------|
| Drain-Source Voltage | VDSS | 60 | Vdc |
| Gate-Source Voltage | VGS | ±20 | Vdc |
| Drain Current | ID | | mAdc |
| – Steady State TA = 25°C | | 320 | |
| TA = 85°C | | 230 | |
| – t<5s TA = 25°C | | 380 | |
| TA = 85°C | | 270 | |
| Pulsed Drain Current (tp=10µs) | IDM | 1.5 | A |
| Source Current (Body Diode) | IS | 300 | mA |

4. THERMAL CHARACTERISTICS

| Parameter | Symbol | Limits | Unit |
|--|---------|----------|------|
| Total Device Dissipation(Note 1) | PD | | mW |
| – Steady State | | 300 | |
| – t<5s | | 420 | |
| Junction-to-Ambient(Note 1) | RθJA | | °C/W |
| – Steady State | | 417 | |
| – t<5s | | 300 | |
| Lead Temperature for Soldering Purposes (1/8 " from case for 10 s) | TL | 260 | °C |
| Junction and Storage temperature | TJ,Tstg | -55~+150 | °C |
| Gate-Source ESD Rating(HBM, Method 3015) | ESD | 2000 | V |

1. FR-5 = 1.0×0.75×0.062 in.

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)
OFF CHARACTERISTICS

| Characteristic | Symbol | Min. | Typ. | Max. | Unit |
|--|-----------|------------|------|------|-------|
| Drain–Source Breakdown Voltage (VGS = 0, ID = 250μAdc) | VBRDSS | 60 | - | - | Vdc |
| Drain-to–Source Breakdown Voltage Temperature Coefficient | VBRDSS/TJ | - | 71 | - | mV/°C |
| Zero Gate Voltage Drain Current (VGS = 0, VDS = 60 Vdc) | IDSS | TJ = 25°C | - | 1.0 | μAdc |
| | | TJ = 125°C | - | 500 | |
| (VGS = 0, VDS = 50 Vdc) | | - | - | 100 | nAdc |
| Gate–Body Leakage Current, Forward (VGS = 20 Vdc) | IGSSF | - | - | 10 | μAdc |
| Gate–Body Leakage Current, Reverse (VGS = - 20 Vdc) | IGSSR | - | - | -10 | μAdc |

ON CHARACTERISTICS (Note 2)

| | | | | | |
|--|------------|-------------------------------|---|-----|-------|
| Gate Threshold Voltage (VDS = VGS, ID = 250μAdc) | VGS(th) | 1.0 | - | 2.5 | Vdc |
| Negative Threshold Temperature Coefficient | VGS(TH)/TJ | - | 4 | - | mV/°C |
| Static Drain–Source On–State Resistance (VGS = 10 Vdc, ID = 500 mAdc) | RDS(on) | - | - | 2.3 | Ω |
| | | (VGS = 5.0 Vdc, ID = 50 mAdc) | - | - | |
| Forward Transconductance (VDS = 5.0 Vdc, ID = 200 mAdc) | gfs | 80 | - | - | mS |

DYNAMIC CHARACTERISTICS

| | | | | | |
|--|------|---|-----|---|----|
| Input Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz) | Ciss | - | 34 | - | pF |
| Output Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz) | Coss | - | 3 | - | pF |
| Reverse Transfer Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz) | Crss | - | 2.2 | - | pF |

SWITCHING CHARACTERISTICS

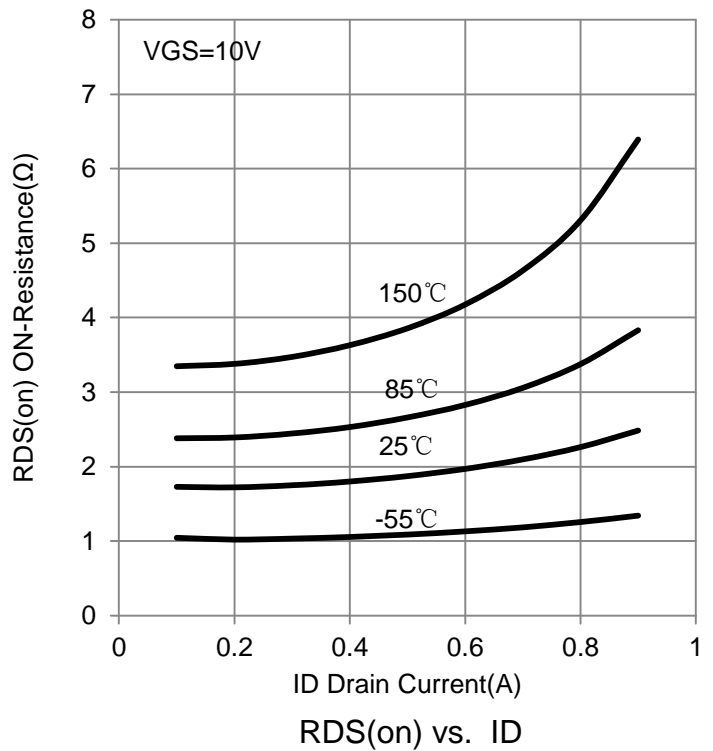
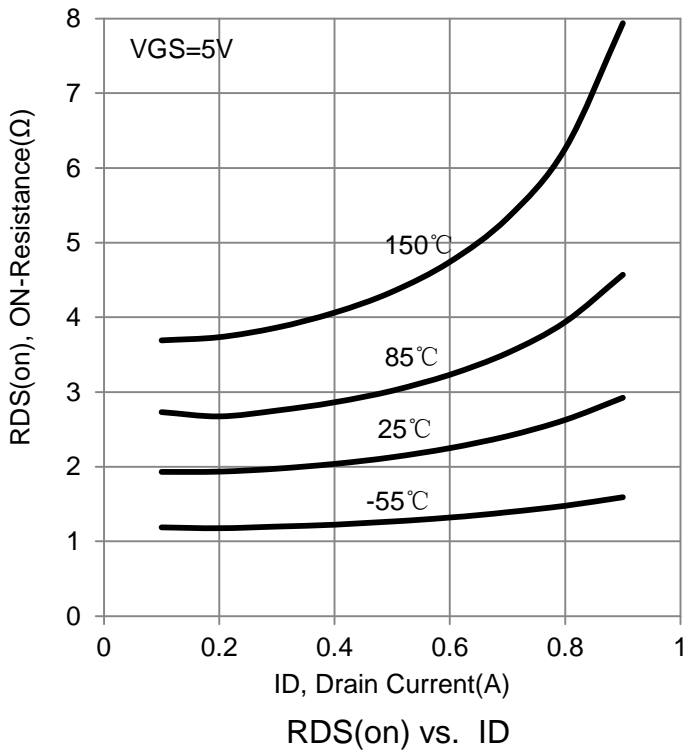
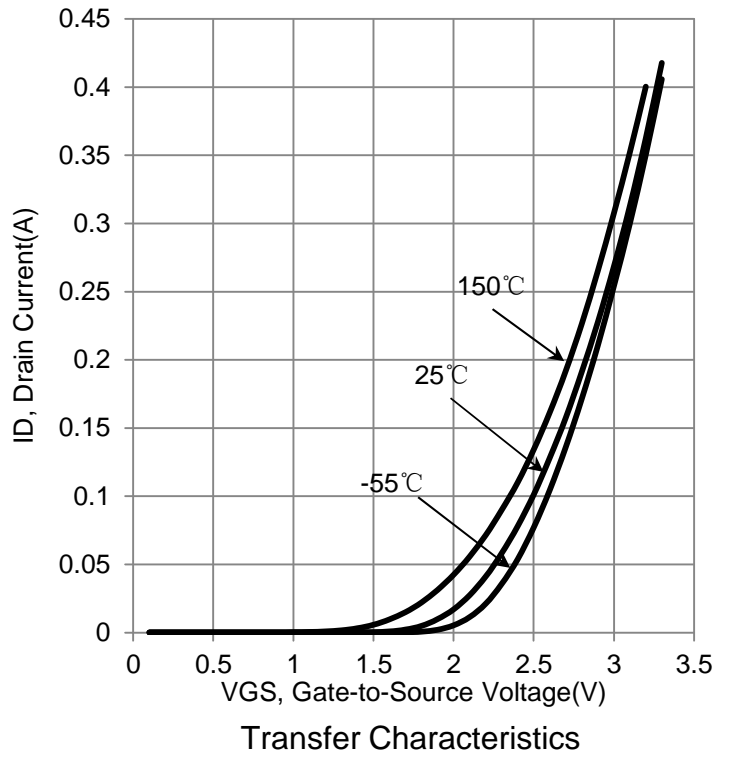
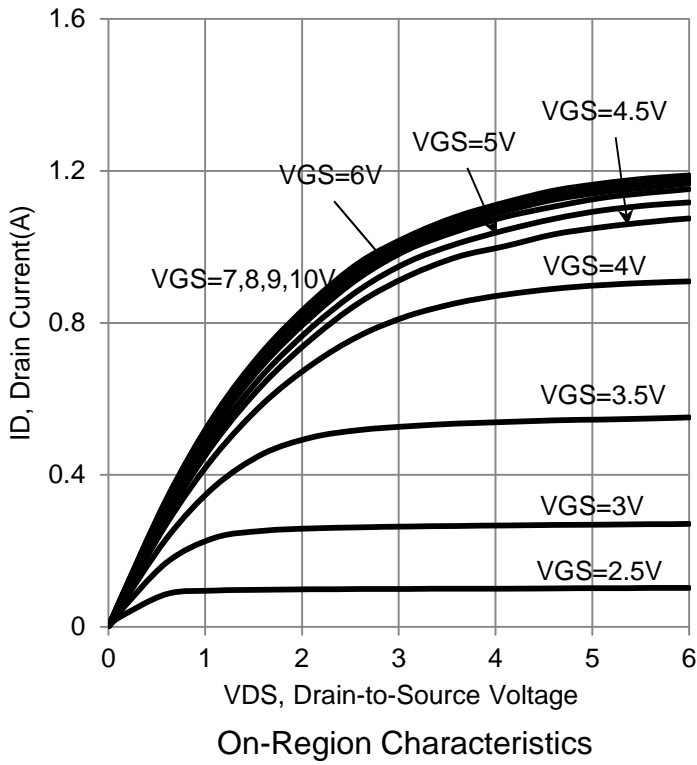
| | | | | | | |
|---------------------|---|---------|---|-----|---|----|
| Turn-On Delay Time | VDS = 10 V, VGEN = 10 V, ID = 500 mA | td(on) | - | 3.8 | - | ns |
| Rise Time | | tr | - | 3.4 | - | |
| Turn-Off Delay Time | | td(off) | - | 19 | - | |
| Fall Time | | tf | - | 12 | - | |

BODY–DRAIN DIODE RATINGS

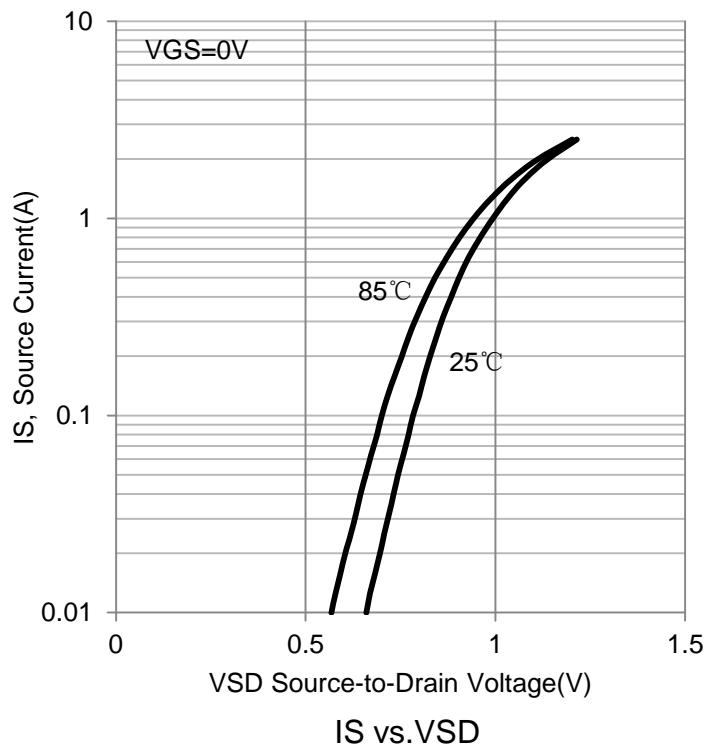
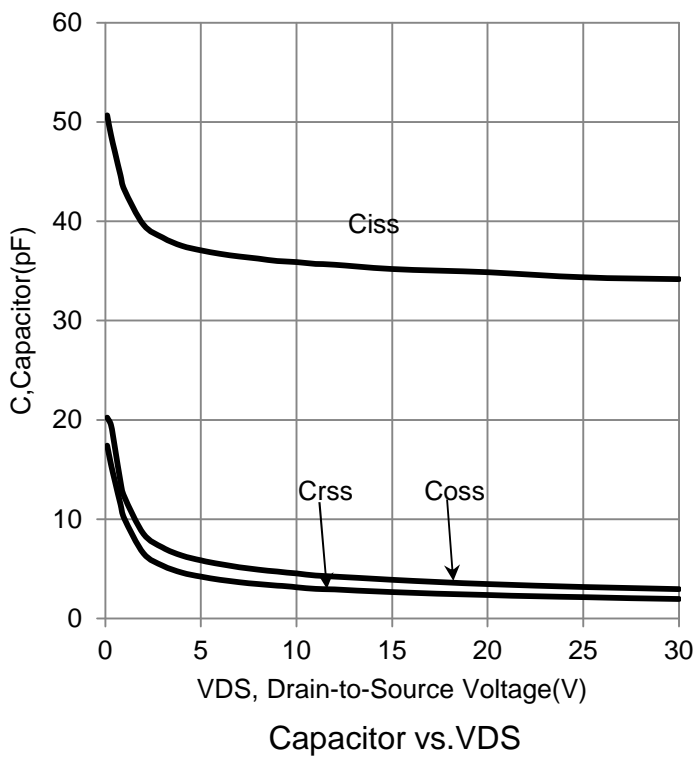
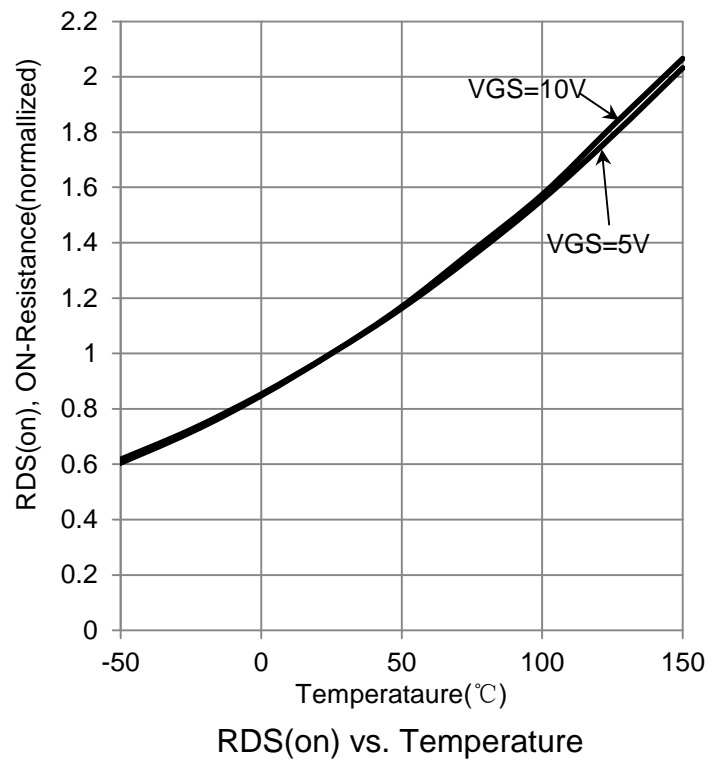
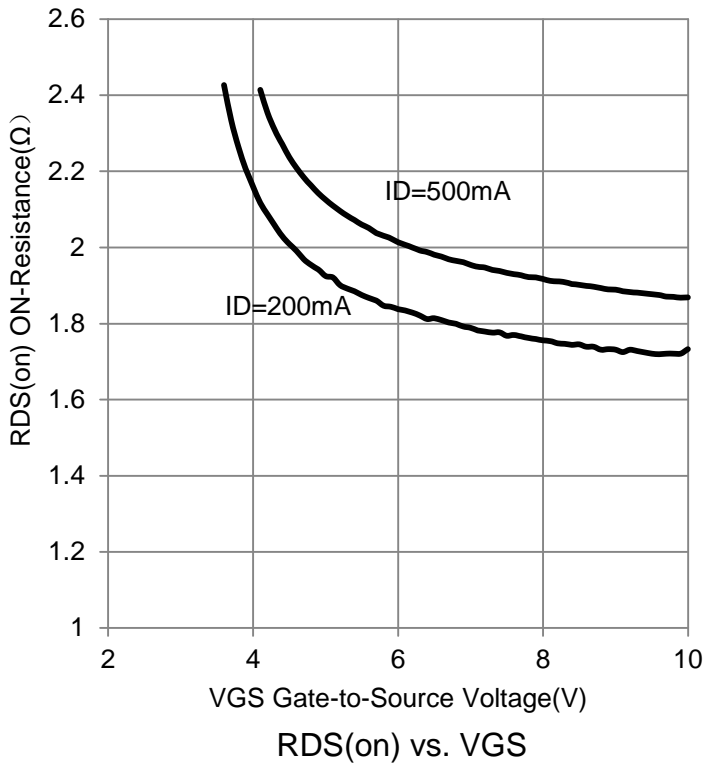
| | | | | | | |
|--|-----|-----------|---|-----|-----|-----|
| Diode Forward On–Voltage (IS = 115 mAdc, VGS = 0 V) | VSD | TJ = 25°C | - | - | 1.4 | Vdc |
| | | TJ = 85°C | - | 0.7 | - | |

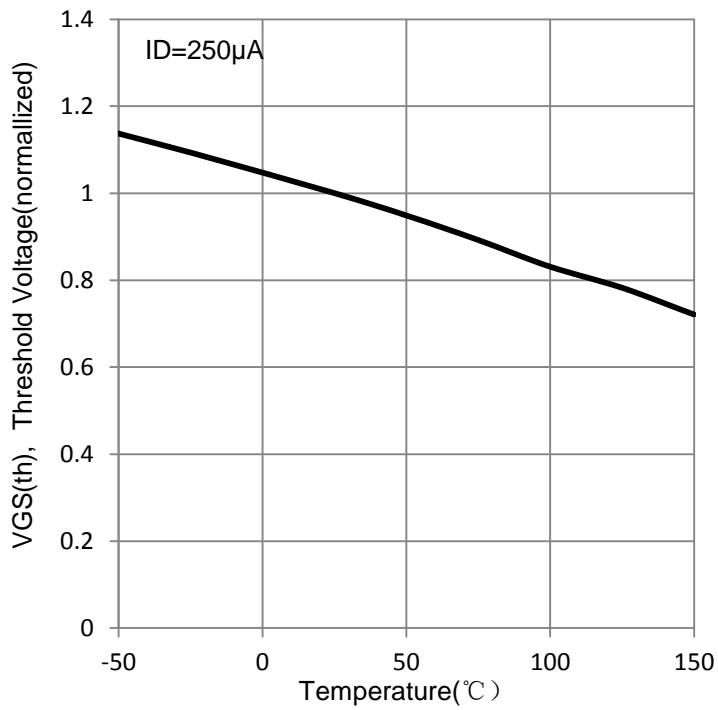
2.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

6. ELECTRICAL CHARACTERISTICS CURVES



6. ELECTRICAL CHARACTERISTICS CURVES (Con.)



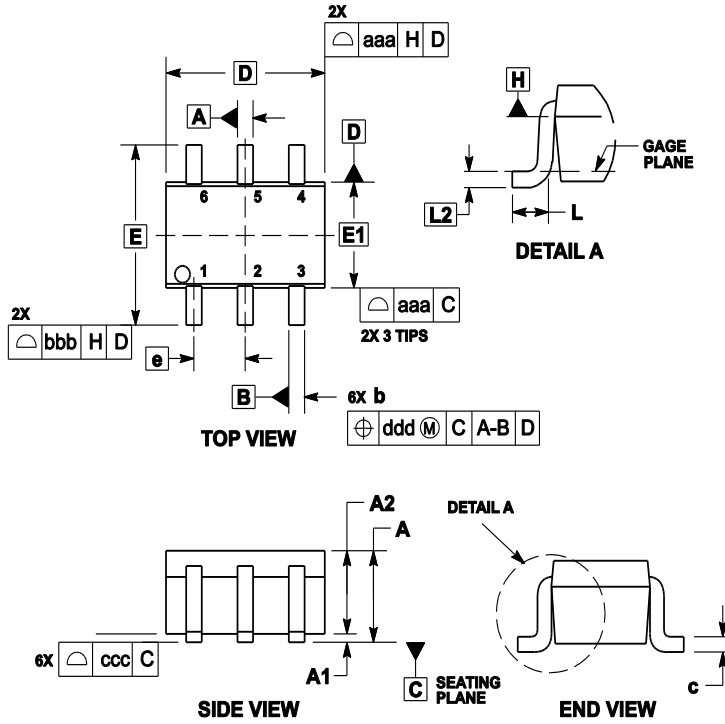
6. ELECTRICAL CHARACTERISTICS CURVES (Con.)

VGS(th) vs. Temperature

7. OUTLINE AND DIMENSIONS

Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | --- | --- | 1.10 | --- | --- | 0.043 |
| A1 | 0.00 | --- | 0.10 | 0 | --- | 0.004 |
| A2 | 0.70 | 0.90 | 1.00 | 0.027 | 0.035 | 0.039 |
| b | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.01 |
| C | 0.08 | 0.15 | 0.22 | 0.003 | 0.006 | 0.009 |
| D | 1.80 | 2.00 | 2.20 | 0.07 | 0.078 | 0.086 |
| E | 2.00 | 2.10 | 2.20 | 0.078 | 0.082 | 0.086 |
| E1 | 1.15 | 1.25 | 1.35 | 0.045 | 0.049 | 0.053 |
| e | 0.65 BSC | | | 0.026 BSC | | |
| L | 0.26 | 0.36 | 0.46 | 0.010 | 0.014 | 0.018 |
| L2 | 0.15 BSC | | | 0.006 BSC | | |
| aaa | 0.15 | | | 0.01 | | |
| bbb | 0.30 | | | 0.01 | | |
| ccc | 0.10 | | | 0.00 | | |
| ddd | 0.10 | | | 0.00 | | |

8. SOLDERING FOOTPRINT

