

# CJ3139KDW-G (Dual P-Channel )

**RoHS Device**

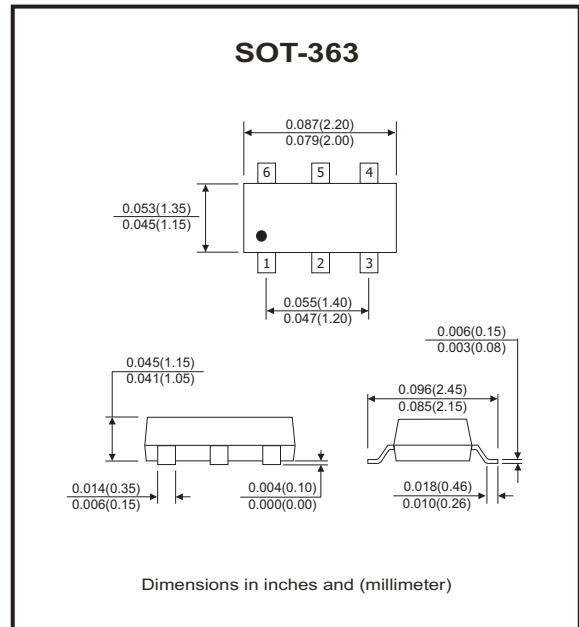

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$    | $I_D$  |
|---------------|--------------------|--------|
| -20V          | 520mΩ @ -4.5V      | -0.66A |
|               | 700mΩ @ -2.5V      |        |
|               | 950mΩ(TYP) @ -1.8V |        |

## Features

- High-side switching
- Low on-resistance
- Low threshold
- Fast switching speed

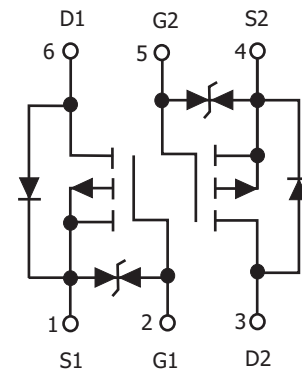
## Mechanical data

- Case: SOT-363, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.
- Weight: 0.006 grams (approx.)



## Circuit diagram

G : Gate  
S : Source  
D : Drain



## Maximum Ratings (at Ta=25 °C unless otherwise noted)

| Parameter                                   | Symbol          | Value       | Unit |
|---------------------------------------------|-----------------|-------------|------|
| Drain-source voltage                        | $V_{DSS}$       | -20         | V    |
| Typ. Gate-source voltage                    | $V_{GS}$        | ±12         | V    |
| Drain current-Continuous                    | $I_{D(DC)}$     | -0.66       | A    |
| Drain current-pulsed (note1)                | $I_{DM(pulse)}$ | -2.64       | A    |
| Power dissipation (note 2)                  | $P_D$           | 150         | mW   |
| Thermal resistance from junction to ambient | $R_{\theta JA}$ | 833         | °C/W |
| Junction temperature range                  | $T_J$           | -40 to +150 | °C   |
| Storage temperature range                   | $T_{STG}$       | -55 to +150 | °C   |

**Electrical Characteristics** (at  $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| Parameter                                   | Symbol                | Conditions                                                                                       | Min   | Typ  | Max  | Unit |
|---------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------|-------|------|------|------|
| On/Off States                               |                       |                                                                                                  |       |      |      |      |
| Drain-source breakdown voltage              | V <sub>(BR) DSS</sub> | V <sub>GS</sub> = 0V , I <sub>D</sub> = -250μA                                                   | -20   |      |      | V    |
| Gate threshold voltage (note 3)             | V <sub>GS(th)</sub>   | V <sub>bs</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                      | -0.35 |      | -1.1 | V    |
| Gate-body leakage current                   | I <sub>GSS</sub>      | V <sub>GS</sub> = ±10V, V <sub>DS</sub> = 0V                                                     |       |      | ±20  | μA   |
| Zero gate voltage drain current             | I <sub>DSS</sub>      | V <sub>bs</sub> = -20V , V <sub>GS</sub> = 0V                                                    |       |      | -1   | μA   |
| Drain-source on-state resistance (note 3)   | R <sub>DS(on)</sub>   | V <sub>GS</sub> = -4.5V , I <sub>D</sub> = -1A                                                   |       |      | 520  | mΩ   |
|                                             |                       | V <sub>GS</sub> = -2.5V , I <sub>D</sub> = -800mA                                                |       |      | 700  |      |
|                                             |                       | V <sub>GS</sub> = -1.8V , I <sub>D</sub> = -500mA                                                |       | 950  |      |      |
| Forward transconductance                    | g <sub>fs</sub>       | V <sub>DS</sub> = -10V , I <sub>D</sub> = -540mA                                                 | 0.8   |      |      | S    |
| Dynamic characteristics (note 4)            |                       |                                                                                                  |       |      |      |      |
| Input capacitance                           | C <sub>iss</sub>      | V <sub>bs</sub> = -16V , V <sub>GS</sub> = 0V<br>f=1MHz                                          |       |      | 170  | pF   |
| Output capacitance                          | C <sub>oss</sub>      |                                                                                                  |       |      | 25   |      |
| Reverse transfer capacitance                | C <sub>rss</sub>      |                                                                                                  |       |      | 15   |      |
| Switching time (note4)                      |                       |                                                                                                  |       |      |      |      |
| Turn-on delay time                          | td(on)                | V <sub>DD</sub> = -10V, I <sub>D</sub> = -200mA<br>V <sub>GS</sub> = -4.5V, R <sub>G</sub> = 10Ω |       | 9    |      | nS   |
| Rise time                                   | tr                    |                                                                                                  |       | 5.8  |      |      |
| Turn-off delay time                         | td(off)               |                                                                                                  |       | 32.7 |      |      |
| Fall time                                   | tf                    |                                                                                                  |       | 20.3 |      |      |
| Drain-source diode characteristics          |                       |                                                                                                  |       |      |      |      |
| Drain-source diode forward voltage (note 3) | V <sub>SD</sub>       | I <sub>s</sub> = -0.5A , V <sub>GS</sub> = 0V                                                    |       |      | -1.2 | V    |

**Notes:**

1. Repetitive rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at  $T_A=25^{\circ}\text{C}$ .
3. Pulse test: Pulse width $\leq 300\mu s$ , Duty cycle $\leq 0.5\%$ .
4. These parameters have no way to verify.

## RATING AND CHARACTERISTIC CURVES (CJ3139KDW-G)

Fig.1 - Output Characteristics

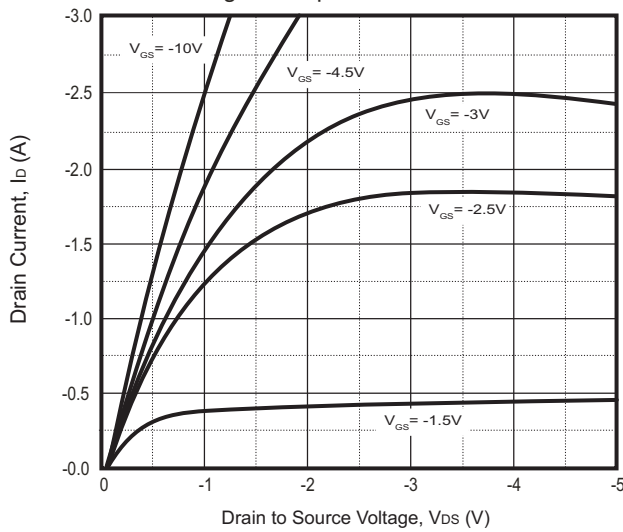


Fig.2 - Transfer Characteristics

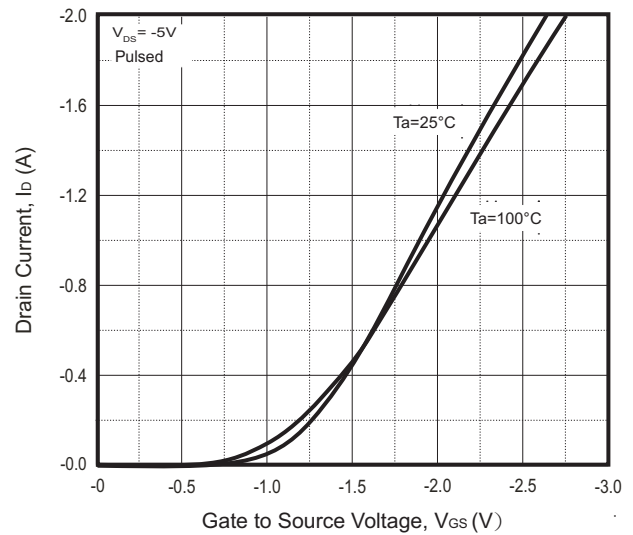


Fig.3 -  $R_{DS(ON)}$  —  $I_d$

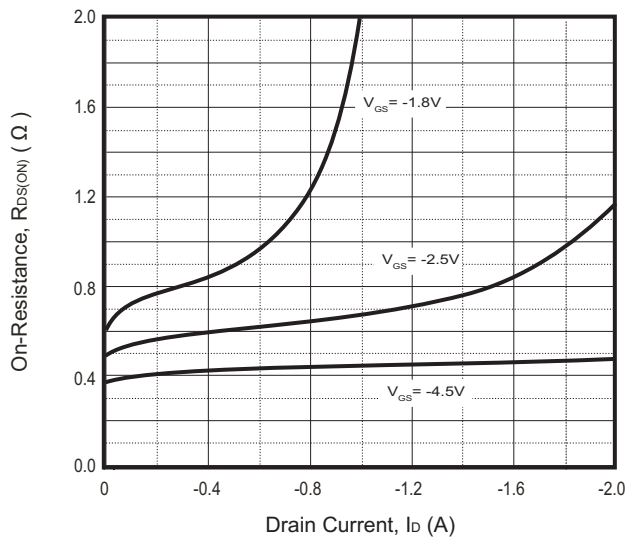


Fig.4 -  $R_{DS(ON)}$  —  $V_{gs}$

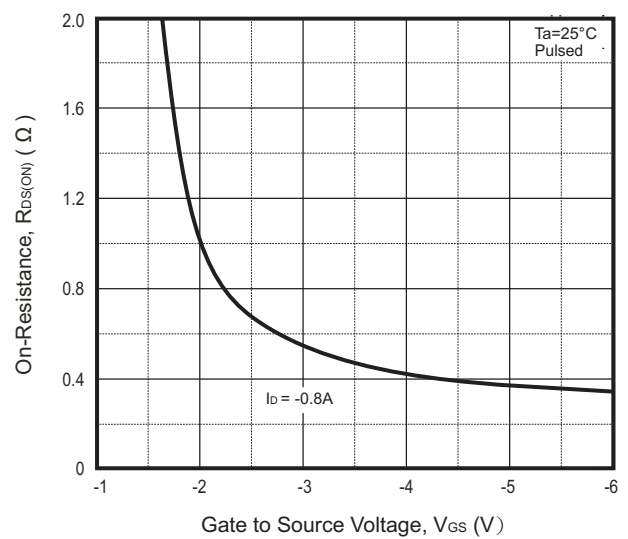


Fig.5 -  $I_s$  —  $V_{SD}$

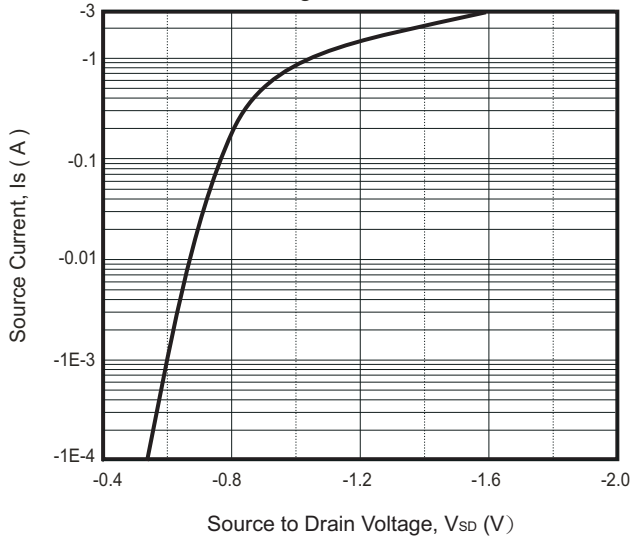
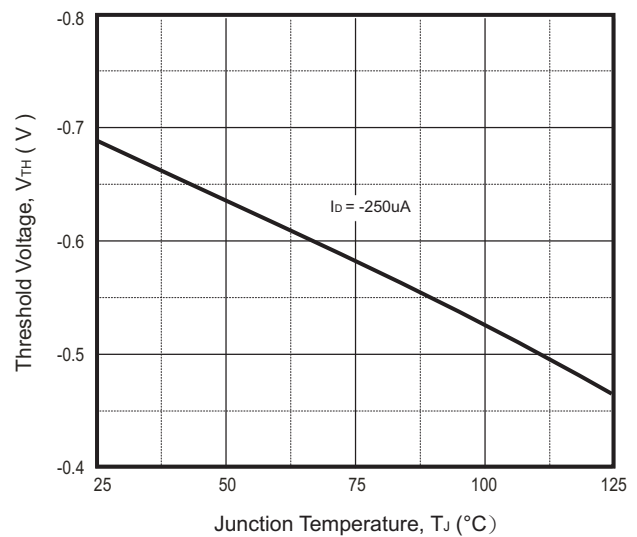
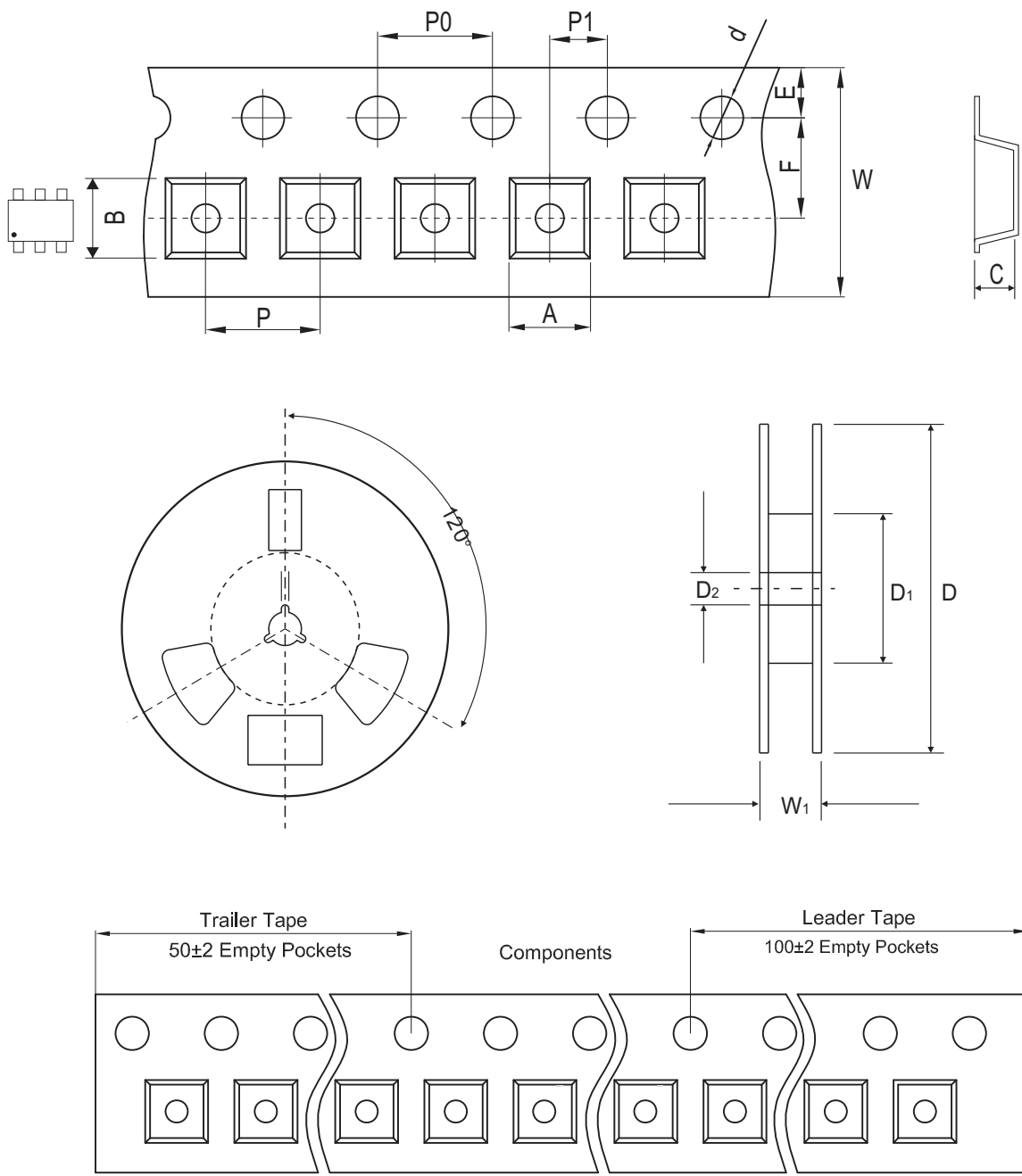


Fig.6 - Threshold Voltage



Reel Taping Specification

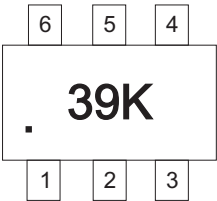


| SOT-363 | SYMBOL | A             | B             | C             | d             | D             | D1            | D2            |
|---------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|         | (mm)   | 2.25 ± 0.05   | 2.55 ± 0.05   | 1.20 ± 0.05   | 1.50 ± 0.10   | 178.00 ± 2.00 | 54.40 ± 1.00  | 13.00 ± 1.00  |
|         | (inch) | 0.089 ± 0.002 | 0.100 ± 0.002 | 0.047 ± 0.002 | 0.059 ± 0.004 | 7.008 ± 0.079 | 2.142 ± 0.039 | 0.512 ± 0.039 |

| SOT-363 | SYMBOL | E             | F             | P             | P0            | P1            | W                    | W1            |
|---------|--------|---------------|---------------|---------------|---------------|---------------|----------------------|---------------|
|         | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.10   | 4.00 ± 0.10   | 4.00 ± 0.10   | 2.00 ± 0.10   | 8.00 + 0.30/-0.10    | 12.30 ± 1.00  |
|         | (inch) | 0.069 ± 0.004 | 0.138 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.315 + 0.012/-0.004 | 0.484 ± 0.039 |

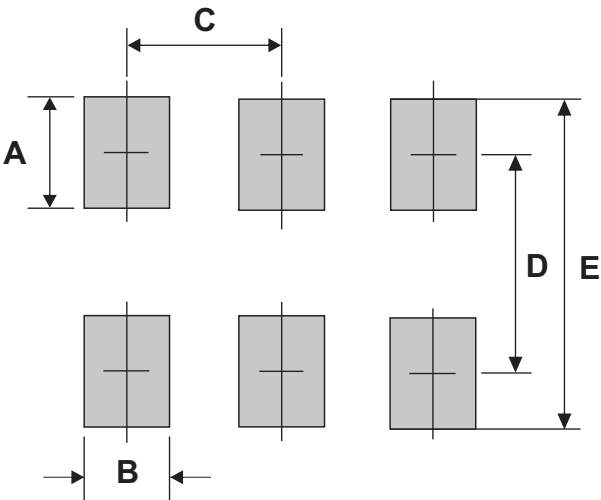
Marking Code

| Part Number | Marking Code |
|-------------|--------------|
| CJ3139KDW-G | 39K          |



Suggested PAD Layout

| SIZE | SOT-363 |        |
|------|---------|--------|
|      | (mm)    | (inch) |
| A    | 0.80    | 0.032  |
| B    | 0.40    | 0.016  |
| C    | 0.65    | 0.026  |
| D    | 1.94    | 0.076  |
| E    | 2.74    | 0.108  |



Standard Packaging

| Case Type | REEL PACK       |                     |
|-----------|-----------------|---------------------|
|           | REEL<br>( pcs ) | Reel Size<br>(inch) |
| SOT-363   | 3,000           | 7                   |