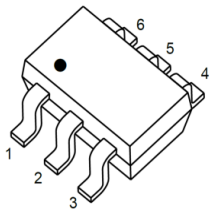
# GP3134KDW

## 20V Dual N-Channel MOSFET

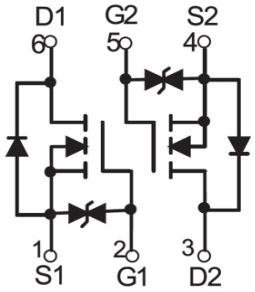
### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---|---|---|
| 20V | 170mΩ@4.5V | 0.75A |
| | 230mΩ@2.5V | |
| | 330mΩ@1.8V | |

**SOT-363**




**Schematic diagram**




### Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- ESD Protected

### Application

- Load Switch
- DC/DC Converter

### MARKING:


### ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25℃ unless otherwise noted)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain - Source Voltage | | $V_{DS}$ | 20 | V |
| Gate - Source Voltage | | $V_{GS}$ | ±12 | V |
| Continuous Drain Current[1,5] | $T_A$ = 25℃ | $I_D$ | 0.75 | A |
| Pulsed Drain Current[2] | | $I_{DM}$ | 3.0 | A |
| Power Dissipation[4,5] | $T_A$ = 25℃ | $P_D$ | 150 | mW |
| Thermal Resistance from Junction to Ambient[5] | | $R_{\theta JA}$ | 833 | ℃/W |
| Junction Temperature | | $T_J$ | 150 | ℃ |
| Storage Temperature | | $T_{STG}$ | -55~ +150 | ℃ |

## MOSFET ELECTRICAL CHARACTERISTICS ($T_J$ = 25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain - Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250μA | 20 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 20V, $V_{GS}$ = 0V | | | 1 | μA |
| Gate - Body Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±10V, $V_{DS}$ = 0V | | | ±10 | μA |
| **On Characteristics**[3] | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 0.4 | 0.7 | 1 | V |
| Drain-source On-resistance | $R_{DS(on)}$ | $V_{GS}$ =4.5V, $I_D$ = 0.65A | | 170 | 380 | mΩ |
| | | $V_{GS}$ = 2.5V, $I_D$ = 0.55A | | 230 | 450 | |
| | | $V_{GS}$ = 1.8V, $I_D$ =0.45A | | 330 | 590 | |
| **Dynamic Characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ = 10V, f = 1MHz | | 55.6 | | pF |
| Output Capacitance | $C_{oss}$ | | | 15.2 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 10.3 | | |
| **Switching Characteristics** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DD}$ = 10V, $V_{GS}$ = 4.5V, $I_D$=0.65A | | 0.78 | | nC |
| Gate-source Charge | $Q_{gs}$ | | | 0.23 | | |
| Gate-drain Charge | $Q_{gd}$ | | | 0.01 | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DS}$ = 10V, $V_{GS}$ = 4.5V<br>$I_D$ = 0.5A, $R_{GEN}$=10Ω | | 6.7 | | ns |
| Turn-on Rise Time | $t_r$ | | | 4.8 | | |
| Turn-off Delay Ttime | $t_{d(off)}$ | | | 17.3 | | |
| Turn-off Fall Time | $t_f$ | | | 7.4 | | |
| **Source - Drain Diode Characteristics** | | | | | | |
| Diode Forward Voltage[3] | $V_{SD}$ | $V_{GS}$ = 0V, $I_S$ = 0.15A | | | 1.2 | V |

Notes :

1.The maximum current rating is limited by package.

2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

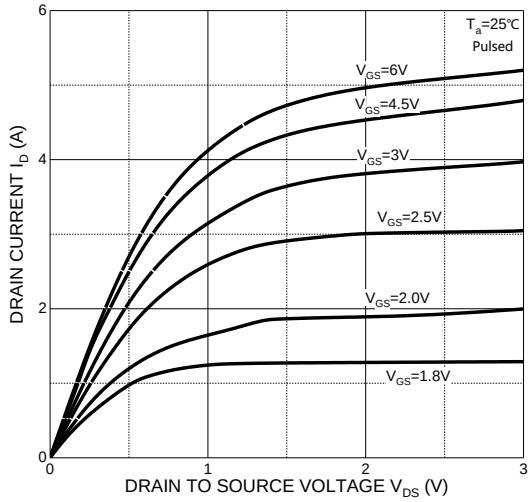
3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

4.The power dissipation $P_D$ is limited by $T_{J(MAX)}$ = 150°C.

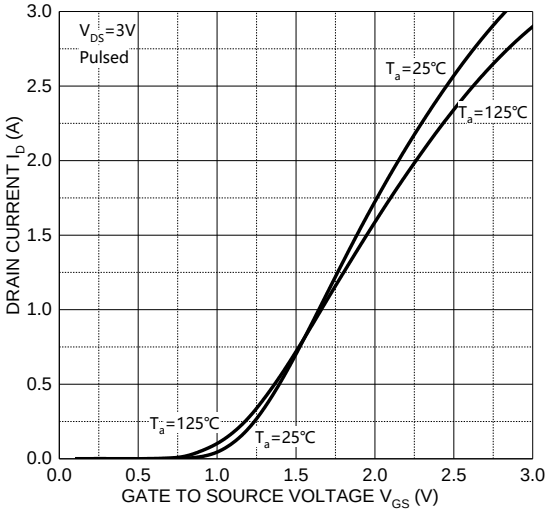
5.Device mounted on 1in$^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A$ =25°C.

## Typical Characteristics

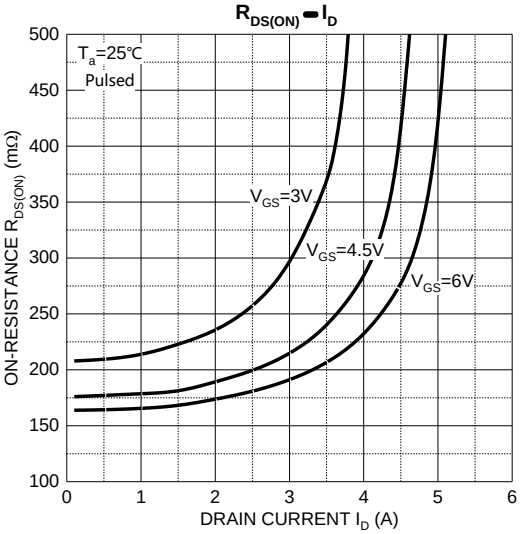
**Output Characteristics**



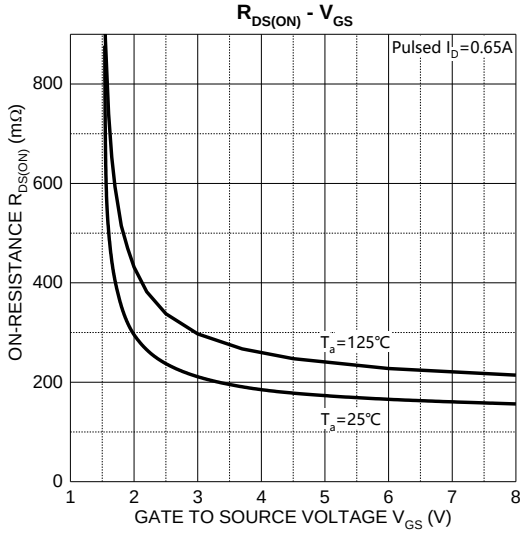

**Transfer Characteristics**



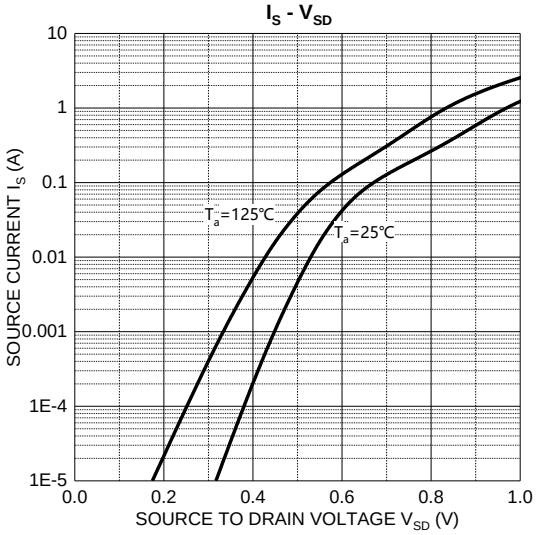

**$R_{DS(ON)}$ - $I_D$**



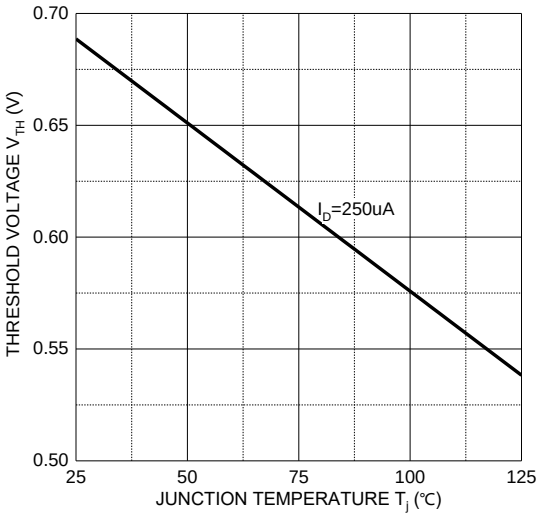

**$R_{DS(ON)}$ - $V_{GS}$**



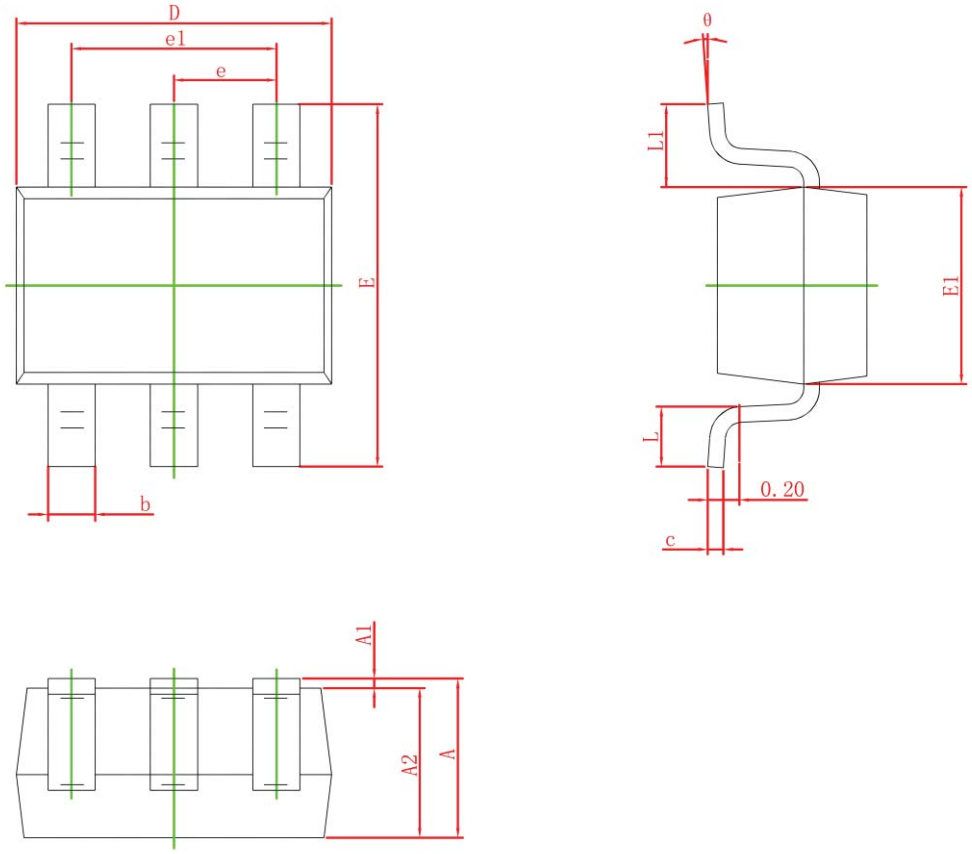

**$I_S$ - $V_{SD}$**




**Threshold Voltage**



## SOT363 Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.000 | 0.035 | 0.039 |
| A1 | 0 | 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 | 1.800 | 2.200 | 0.071 | 0.087 |
| E | 2.000 | 2.450 | 0.079 | 0.096 |
| E1 | 1.150 | 1.350 | 0.045 | 0.053 |
| e | 0.650TYP | | 0.026TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L1 | 0.525REF | | 0.021REF | |
| L | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |