

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 30V           | 3.0mΩ@10V       | 30A   |
|               | 3.9mΩ@4.5V      |       |

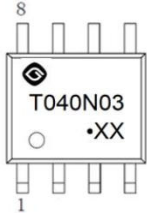
### Feature

- Split Gate Trench Technology
- Low  $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

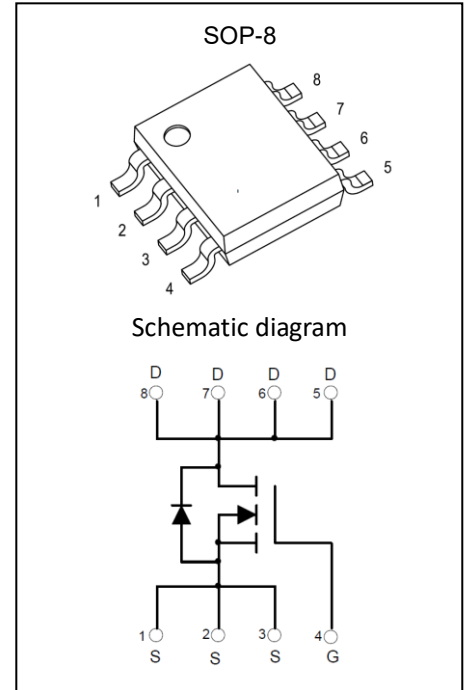
### Application

- Power Switching Application

### MARKING:



T040N03 = Device Code  
 XX = Date Code  
 Solid Dot = Green Indicator



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter  | Symbol                   | Value     | Unit               |
|--|--------------------------|-----------|--------------------|
| Drain - Source Voltage                                   | $V_{DS}$                 | 30        | V                  |
| Gate - Source Voltage                                    | $V_{GS}$                 | $\pm 20$  | V                  |
| Continuous Drain Current <sup>1,5</sup>                  | $I_D$                    | 30        | A                  |
|  | $T_A = 25^\circ\text{C}$ |           |                    |
| Pulsed Drain Current <sup>2</sup>                        | $I_{DM}$                 | 120       | A                  |
| Single Pulsed Avalanche Current <sup>3</sup>             | $I_{AS}$                 | 30.9      | A                  |
| Single Pulsed Avalanche Energy <sup>3</sup>              | $E_{AS}$                 | 238.7     | mJ                 |
| Power Dissipation <sup>5</sup>                           | $P_D$                    | 3         | W                  |
|  | $T_A = 25^\circ\text{C}$ |           |                    |
| Thermal Resistance from Junction to Ambient <sup>6</sup> | $R_{\theta JA}$          | 42        | $^\circ\text{C/W}$ |
| Junction Temperature                                     | $T_J$                    | 150       | $^\circ\text{C}$   |
| Storage Temperature                                      | $T_{STG}$                | -55~ +150 | $^\circ\text{C}$   |

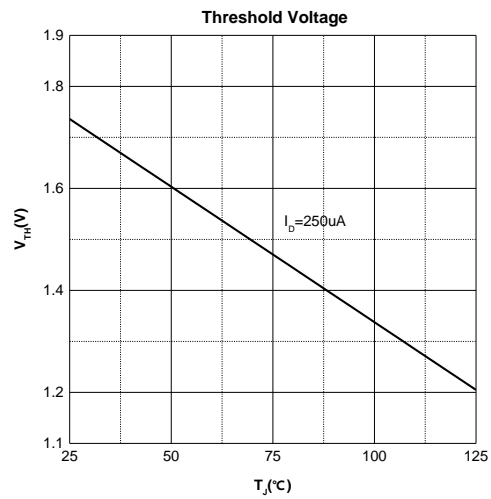
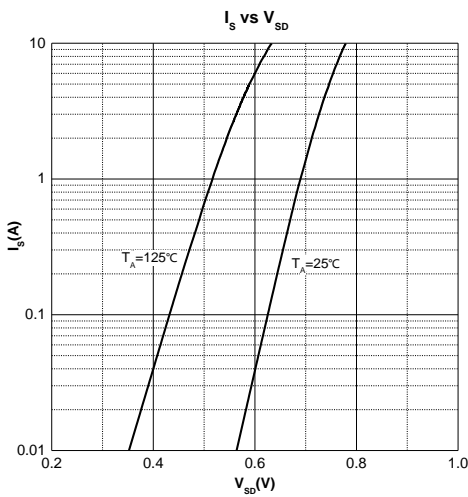
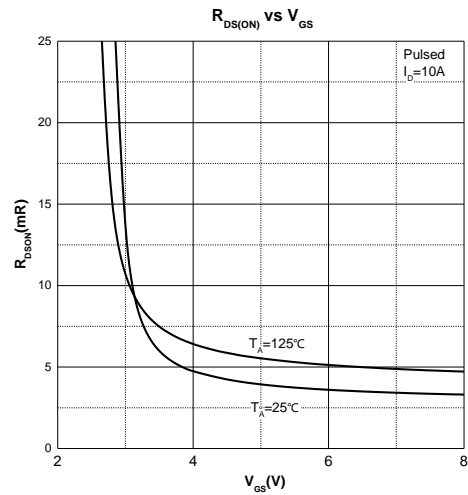
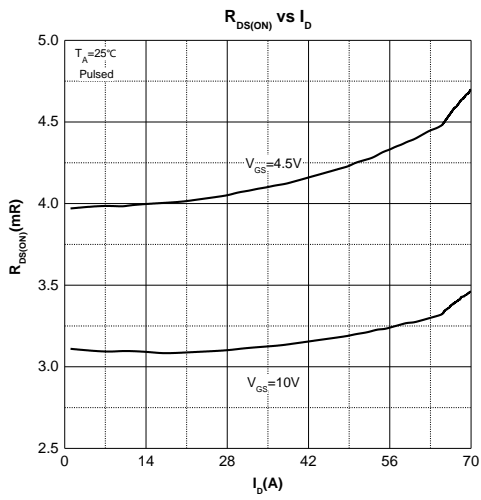
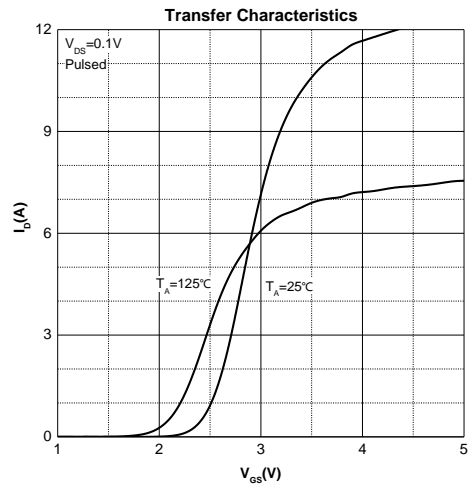
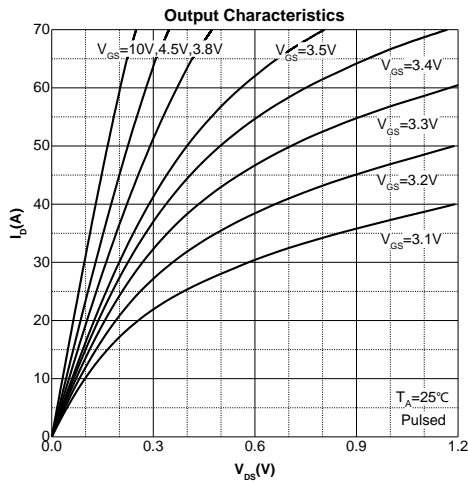
## MOSFET ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

| Parameter                                   | Symbol        | Test Condition  | Min | Type | Max       | Unit       |
|---|---------------|---|-----|------|-----------|------------|
| <b>Off Characteristics</b>                  |               |   |     |      |           |            |
| Drain - Source Breakdown Voltage            | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                 | 30  |      |           | V          |
| Zero Gate Voltage Drain Current             | $I_{DSS}$     | $V_{DS} = 30V, V_{GS} = 0V$                                   |     |      | 1         | $\mu A$    |
| Gate - Body Leakage Current                 | $I_{GSS}$     | $V_{GS} = \pm 20V, V_{DS} = 0V$                               |     |      | $\pm 100$ | nA         |
| <b>On Characteristics<sup>4</sup></b>       |               |   |     |      |           |            |
| Gate Threshold Voltage                      | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                             | 1.0 | 1.7  | 3.0       | V          |
| Drain-source On-resistance                  | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 10A$                                     |     | 3.0  | 4.0       | m $\Omega$ |
|   |               | $V_{GS} = 4.5V, I_D = 10A$                                    |     | 3.9  | 5.9       |            |
| <b>Dynamic Characteristics</b>              |               |   |     |      |           |            |
| Input Capacitance                           | $C_{iss}$     | $V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$                         |     | 2770 |           | pF         |
| Output Capacitance                          | $C_{oss}$     |   |     | 1130 |           |            |
| Reverse Transfer Capacitance                | $C_{rss}$     |   |     | 397  |           |            |
| Gate Resistance                             | $R_g$         | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$                          |     | 2.6  |           | $\Omega$   |
| <b>Switching Characteristics</b>            |               |   |     |      |           |            |
| Total Gate Charge                           | $Q_g$         | $V_{DS} = 30V, V_{GS} = 10V, I_D = 20A$                       |     | 40.8 |           | nC         |
| Gate-source Charge                          | $Q_{gs}$      |   |     | 9.9  |           |            |
| Gate-drain Charge                           | $Q_{gd}$      |   |     | 5.4  |           |            |
| Turn-on Delay Time                          | $t_{d(on)}$   | $V_{DD} = 15V, V_{GS} = 10V,$<br>$I_D = 18A, R_G = 2.7\Omega$ |     | 19   |           | ns         |
| Turn-on Rise Time                           | $t_r$         |   |     | 14   |           |            |
| Turn-off Delay Time                         | $t_{d(off)}$  |   |     | 55   |           |            |
| Turn-off Fall Time                          | $t_f$         |   |     | 10   |           |            |
| <b>Source - Drain Diode Characteristics</b> |               |   |     |      |           |            |
| Diode Forward Voltage <sup>3</sup>          | $V_{SD}$      | $V_{GS} = 0V, I_S = 10A$                                      |     |      | 1.2       | V          |

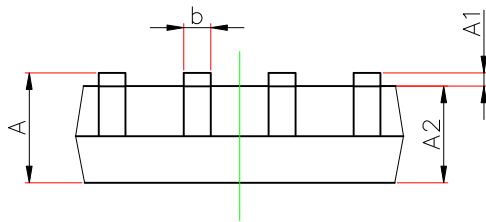
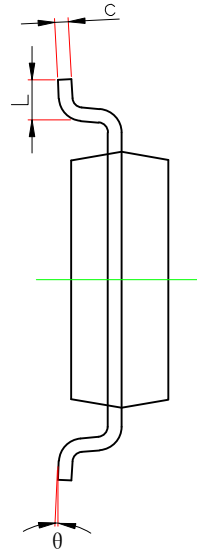
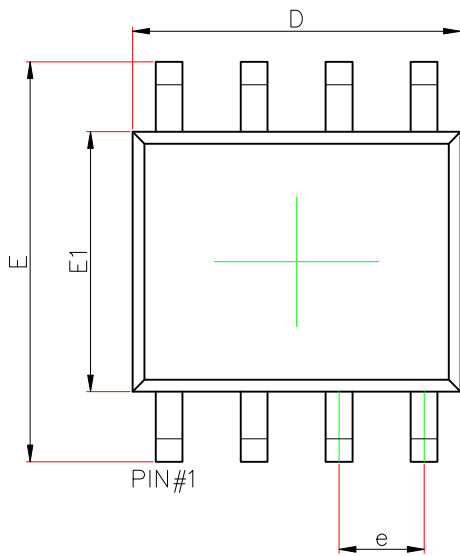
Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
- 3.EAS condition:  $V_{DD} = 15V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ\text{C}$ .
- 4.Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- 5.The power dissipation  $P_D$  is limited by  $T_{J(MAX)} = 150^\circ\text{C}$ .And device mounted on a large heatsink
- 6.Device mounted on  $1in^2$  FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ .

**Typical Characteristics**



## SOP8 Package Information



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min.                      | Max.  | Min.                 | Max.  |
| A        | 1.350                     | 1.750 | 0.053                | 0.069 |
| A1       | 0.100                     | 0.250 | 0.004                | 0.010 |
| A2       | 1.350                     | 1.550 | 0.053                | 0.061 |
| b        | 0.330                     | 0.510 | 0.013                | 0.020 |
| c        | 0.156                     | 0.250 | 0.006                | 0.010 |
| D        | 4.700                     | 5.100 | 0.185                | 0.201 |
| e        | 1.270(BSC)                |       | 0.050(BSC)           |       |
| E        | 5.800                     | 6.200 | 0.228                | 0.244 |
| E1       | 3.700                     | 4.100 | 0.146                | 0.161 |
| L        | 0.400                     | 1.270 | 0.016                | 0.05  |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |