

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 100V          | 4mΩ@10V         | 145A  |

### Feature

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

### Application

- Power Switching Application

### MARKING:

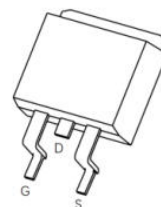


T043N10N = Device Code

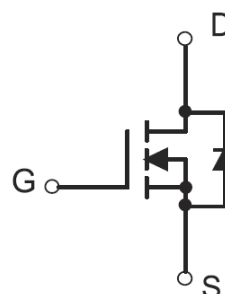
XX = Date Code

Solid Dot = Green Indicator

TO-263-2L



Schematic diagram



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

| Parameter                                                |                           | Symbol          | Value     | Unit               |
|----------------------------------------------------------|---------------------------|-----------------|-----------|--------------------|
| Drain - Source Voltage                                   |                           | $V_{DS}$        | 100       | V                  |
| Gate - Source Voltage                                    |                           | $V_{GS}$        | ±20       | V                  |
| Continuous Drain Current <sup>1</sup>                    | $T_C = 25^\circ\text{C}$  | $I_D$           | 145       | A                  |
|                                                          | $T_C = 100^\circ\text{C}$ | $I_D$           | 94        | A                  |
| Pulsed Drain Current <sup>2</sup>                        |                           | $I_{DM}$        | 580       | A                  |
| Single Pulsed Avalanche Current <sup>3</sup>             |                           | $I_{AS}$        | 39        | A                  |
| Single Pulsed Avalanche Energy <sup>3</sup>              |                           | $E_{AS}$        | 761       | mJ                 |
| Power Dissipation <sup>5</sup>                           |                           | $P_D$           | 208       | W                  |
| $T_C = 25^\circ\text{C}$                                 |                           |                 |           |                    |
| Thermal Resistance from Junction to Ambient <sup>6</sup> |                           | $R_{\theta JA}$ | 38        | $^\circ\text{C/W}$ |
| Thermal Resistance from Junction to Case                 |                           | $R_{\theta JC}$ | 0.6       | $^\circ\text{C/W}$ |
| Junction Temperature                                     |                           | $T_J$           | 150       | $^\circ\text{C}$   |
| Storage Temperature                                      |                           | $T_{STG}$       | -55~ +150 | $^\circ\text{C}$   |

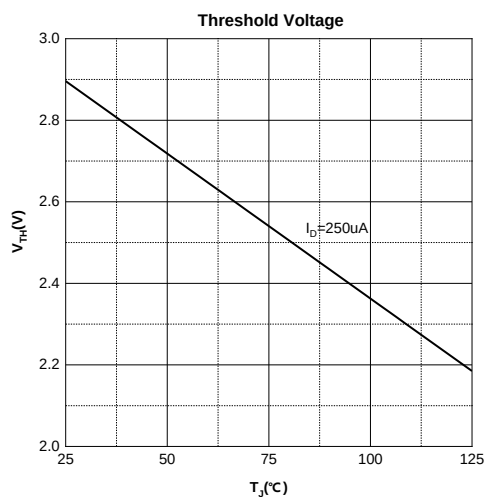
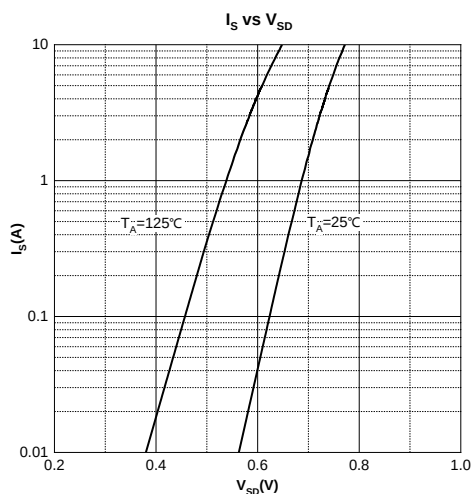
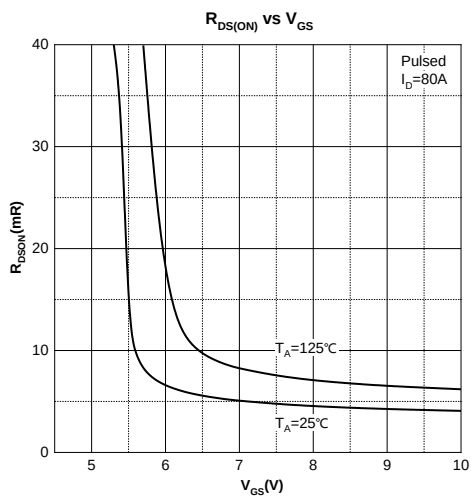
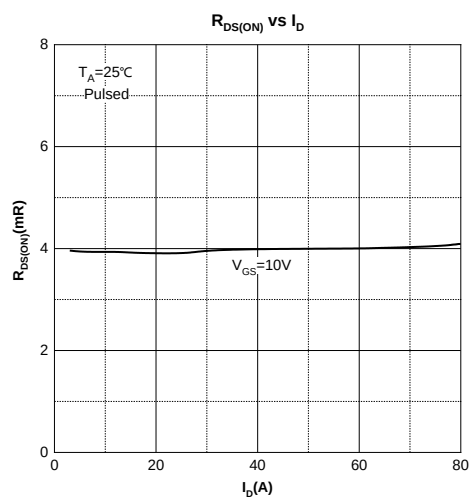
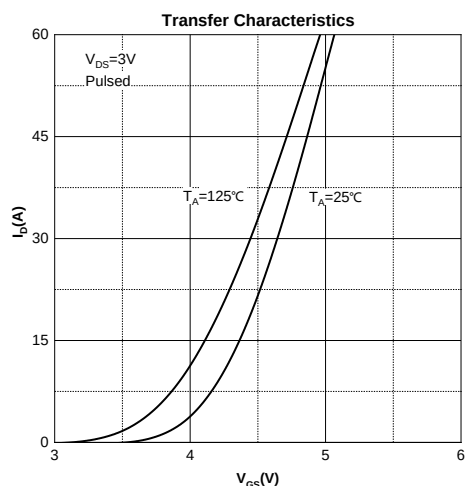
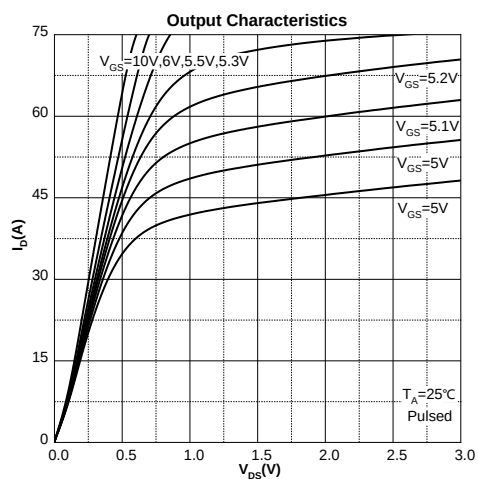
**MOSFET ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$  unless otherwise noted)**

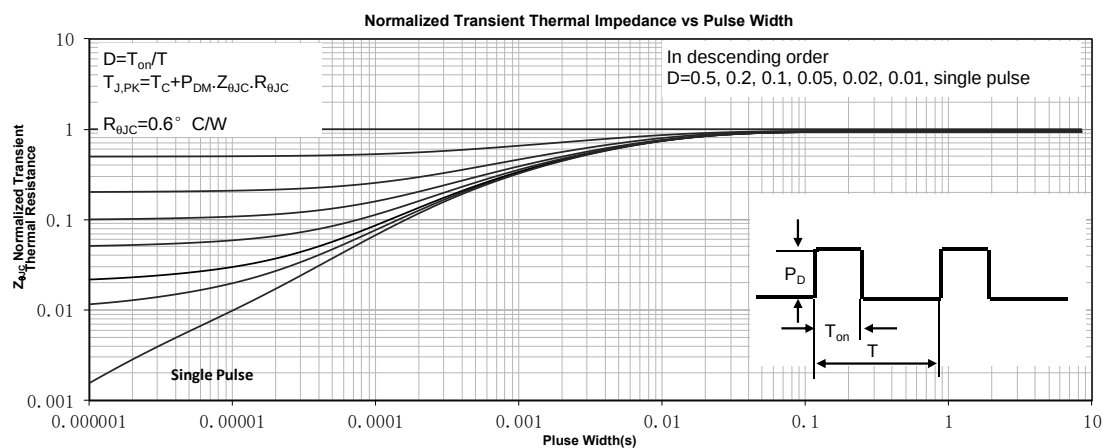
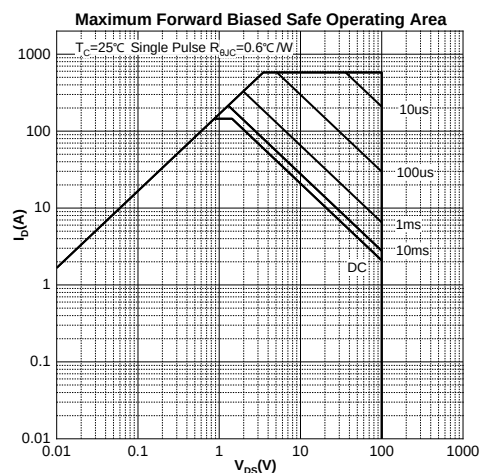
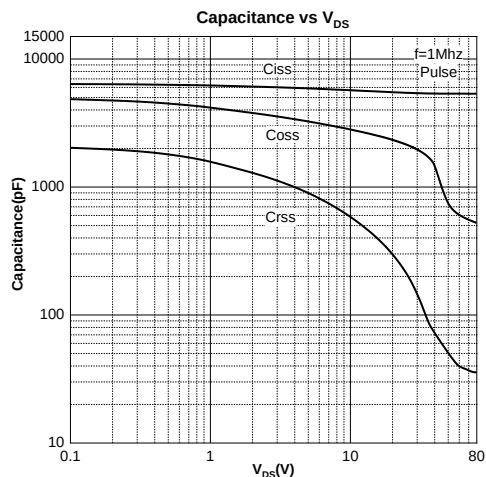
| Parameter                            | Symbol        | Test Condition                                               | Min | Type | Max       | Unit       |
|--------------------------------------|---------------|--------------------------------------------------------------|-----|------|-----------|------------|
| Off Characteristics                  |               |                                                              |     |      |           |            |
| Drain - Source Breakdown Voltage     | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                | 100 |      |           | V          |
| Zero Gate Voltage Drain Current      | $I_{DSS}$     | $V_{DS} = 100V, V_{GS} = 0V$                                 |     |      | 1         | $\mu A$    |
| Gate - Body Leakage Current          | $I_{GSS}$     | $V_{GS} = \pm 20V, V_{DS} = 0V$                              |     |      | $\pm 100$ | nA         |
| On Characteristics <sup>4</sup>      |               |                                                              |     |      |           |            |
| Gate Threshold Voltage               | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                            | 2   | 3    | 4         | V          |
| Drain-source On-resistance           | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 10A$                                    |     | 4    | 5.3       | m $\Omega$ |
| Dynamic Characteristics              |               |                                                              |     |      |           |            |
| Input Capacitance                    | $C_{iss}$     | $V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$                        |     | 5421 |           | pF         |
| Output Capacitance                   | $C_{oss}$     |                                                              |     | 771  |           |            |
| Reverse Transfer Capacitance         | $C_{rss}$     |                                                              |     | 98   |           |            |
| Gate Resistance                      | $R_g$         | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$                         |     | 1.4  |           | $\Omega$   |
| Switching Characteristics            |               |                                                              |     |      |           |            |
| Total Gate Charge                    | $Q_g$         | $V_{DS} = 50V, V_{GS} = 10V, I_D = 20A$                      |     | 97   |           | nC         |
| Gate-source Charge                   | $Q_{gs}$      |                                                              |     | 21   |           |            |
| Gate-drain Charge                    | $Q_{gd}$      |                                                              |     | 30   |           |            |
| Turn-on Delay Time                   | $t_{d(on)}$   | $V_{DD} = 50V, V_{GS} = 10V, R_L = 2.5\Omega, R_G = 3\Omega$ |     | 33   |           | ns         |
| Turn-on Rise Time                    | $t_r$         |                                                              |     | 40   |           |            |
| Turn-off Delay Time                  | $t_{d(off)}$  |                                                              |     | 66   |           |            |
| Turn-off Fall Time                   | $t_f$         |                                                              |     | 32   |           |            |
| Source - Drain Diode Characteristics |               |                                                              |     |      |           |            |
| Diode Forward Voltage <sup>4</sup>   | $V_{SD}$      | $V_{GS} = 0V, I_S = 10A$                                     |     |      | 1.2       | V          |

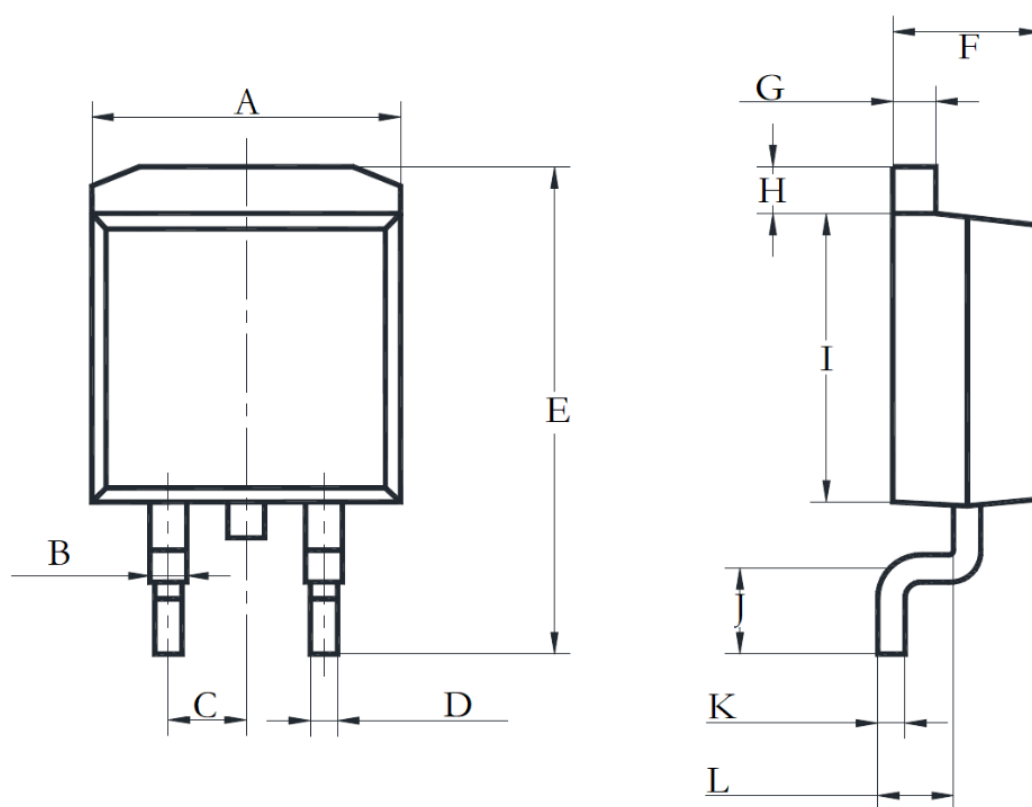
Notes :

- 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:  $V_{DD} = 50V, V_{GS} = 10V, L = 1mH, R_G = 25\Omega$  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





**TO-263-2L Package Information**


| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min.                      | Max.   | Min.                 | Max.  |
| A      | 9.600                     | 10.500 | 0.378                | 0.413 |
| B      | 1.000                     | 1.400  | 0.039                | 0.055 |
| C      | 2.540REF                  |        | 0.100REF             |       |
| D      | 0.680                     | 0.940  | 0.027                | 0.037 |
| E      | 14.600                    | 15.880 | 0.575                | 0.625 |
| F      | 4.400                     | 4.800  | 0.173                | 0.189 |
| G      | 1.140                     | 1.400  | 0.045                | 0.055 |
| H      | 1.140                     | 1.400  | 0.045                | 0.055 |
| I      | 8.250                     | 9.650  | 0.325                | 0.380 |
| J      | 2.290                     | 2.790  | 0.090                | 0.110 |
| K      | 0.360                     | 0.650  | 0.014                | 0.026 |
| L      | 2.030                     | 2.790  | 0.080                | 0.110 |