## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---|---|---|
| 250V | 80mΩ@10V | 40A |

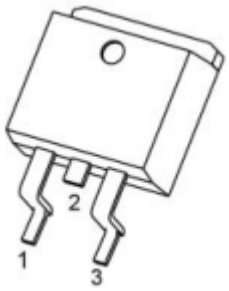
## Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

## Application

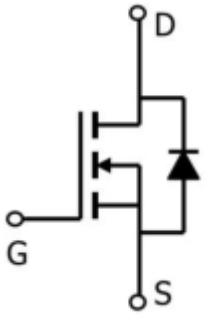
- Power switching application
- DC-DC Converter
- Power Management

## Package

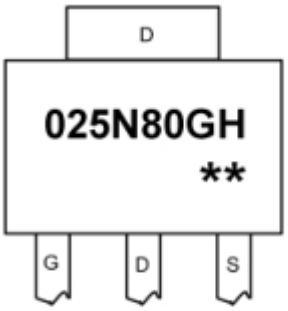



**TO-263(1:G 2:D 3:S)**

## Circuit diagram



## Marking




**025N80GH** : Product code
** : Week code

## Absolute maximum ratings

($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain source voltage | $V_{DS}$ | 250 | V |
| Gate source voltage | $V_{GS}$ | ±20 | V |
| Continuous drain current(Tc=25℃) | $I_D$ | 40 | A |
| Pulsed drain current | $I_{DM}$ | 160 | A |
| Power dissipation(Tc=25℃) | $P_D$ | 357 | W |
| Single pulsed avalanche energy[1)] | $E_{AS}$ | 972 | mJ |
| Thermal resistance, junction-case | $R_{\theta JC}$ | 0.35 | ℃/W |
| Operation and storage temperature | $T_J$ | -55 to 150 | ℃ |

## Electrical characteristics

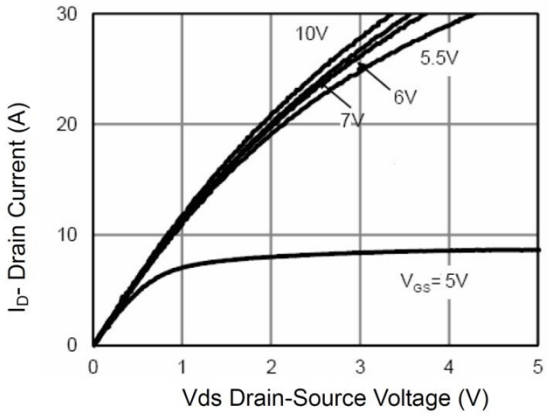
($T_A$=25℃, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-source breakdown voltage | $BV_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 250 | | | V |
| Drain Cut-Off Current | $I_{DSS}$ | $V_{DS}$ =200V,$V_{GS}$ = 0V | | | 1 | uA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±20V , $V_{DS}$=0V | | | ±0.1 | uA |
| Gate-source threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 2 | 3 | 4 | V |
| Drain-source on-resistance | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =20A | | 80 | 100 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=25V, $V_{GS}$=0V, f=1MHz | | 2880 | | pF |
| Output Capacitance | $C_{oss}$ | | | 403 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 35 | | |
| **Switching Characteristics** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=200V, $V_{DS}$=10V, $I_D$ =45A | | 55 | | pF |
| Gate-Source Charge | $Q_{gs}$ | | | 17 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 26 | | |
| Turn-On Delay Time | $T_{d(on)}$ | $V_{GS}$=10V, $V_{DS}$=125V, $I_D$ =45A, $R_G$=10Ω | | 33 | | nS |
| Rise Time | $T_r$ | | | 151 | | |
| Turn-Off Delay Time | $T_{d(off)}$ | | | 61 | | |
| Fall Time | $T_f$ | | | 89 | | |
| **Drain-Source Body Diode Characteristics** | | | | | | |
| Source-Drain Diode Forward Voltage | $V_{SD}$ | $V_{GS}$=0V , $I_S$=1A | | | 1.2 | V |

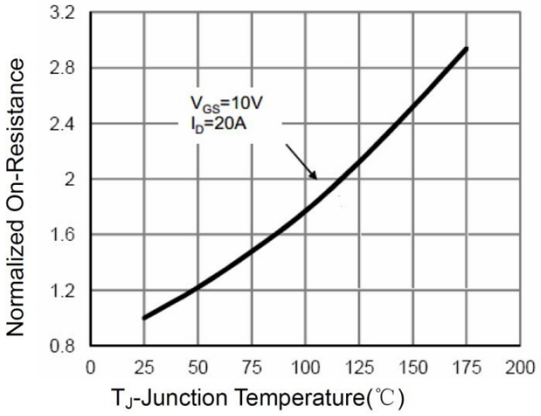
**Note：**

1. $E_{AS}$ is tested at starting $T_j$ = 25℃, $V_{DD}$=75V,$V_{GS}$ = 10V,L = 0.5mH, Rg=25mΩ;

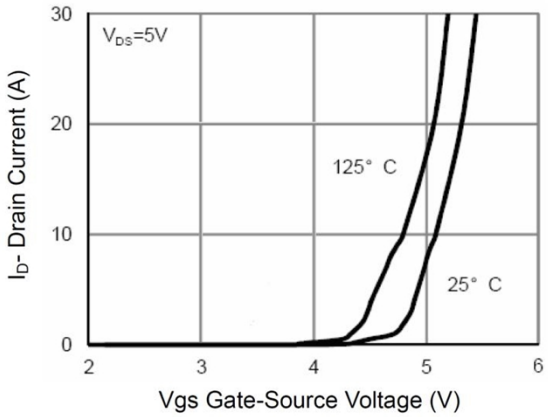
## Typical Characteristics



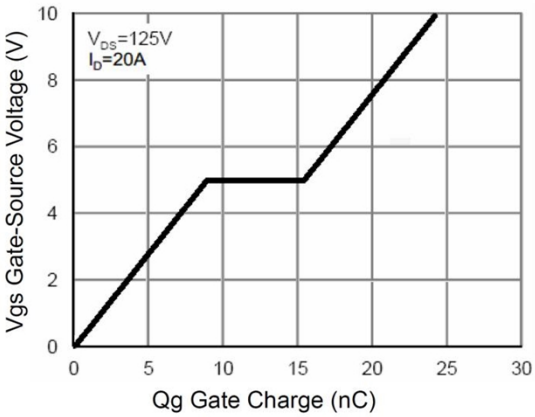

**Output Characteristics**



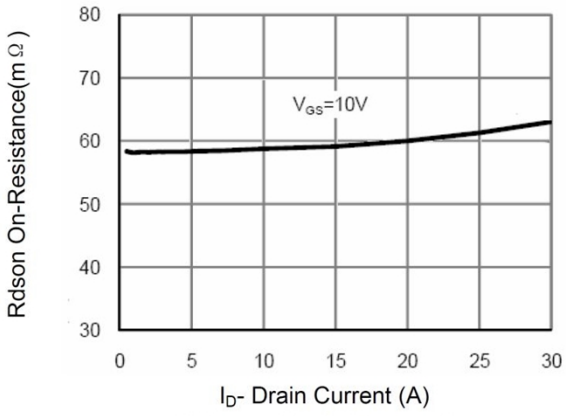

**Rdson-Junction Temperature**



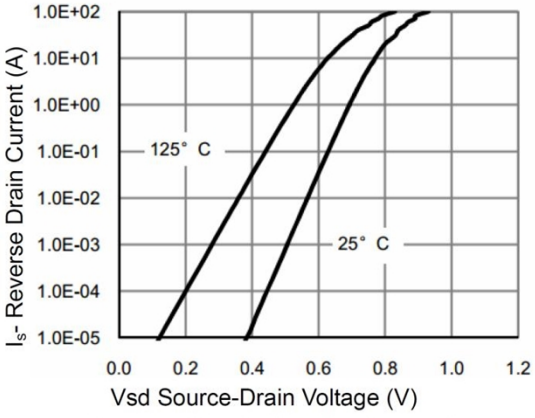

**Transfer Characteristics**



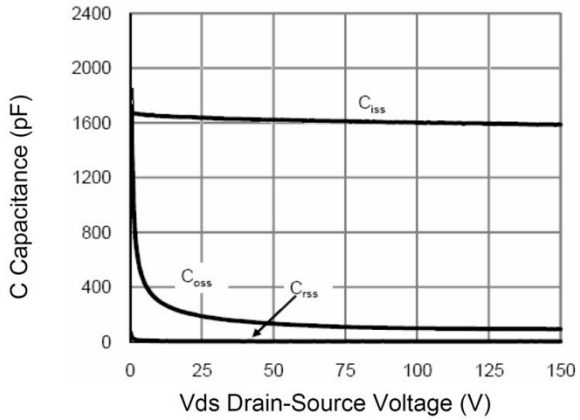

**Gate Charge**



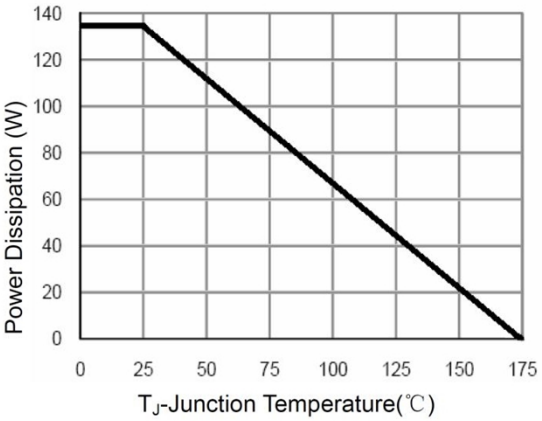

**Rdson- Drain Current**



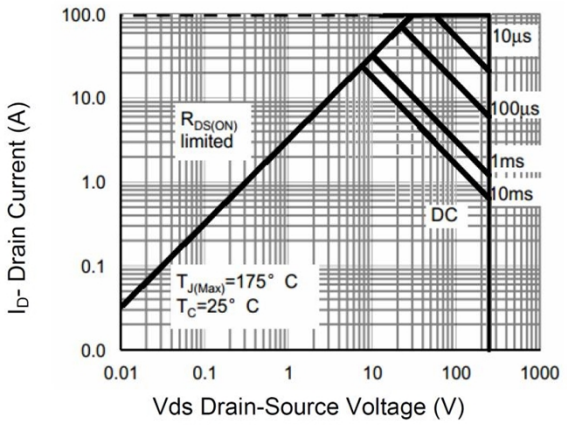

**Source- Drain Diode Forward**



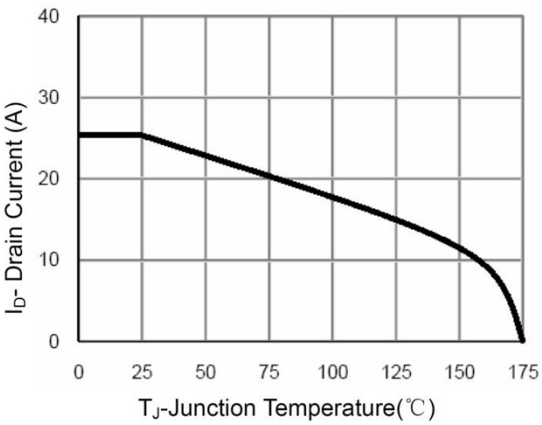

**Capacitance vs Vds**



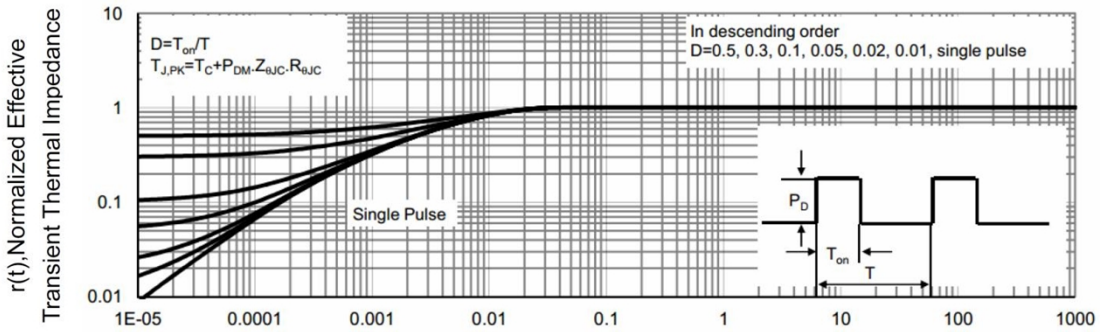

**Power De-rating**




**Safe Operation Area**

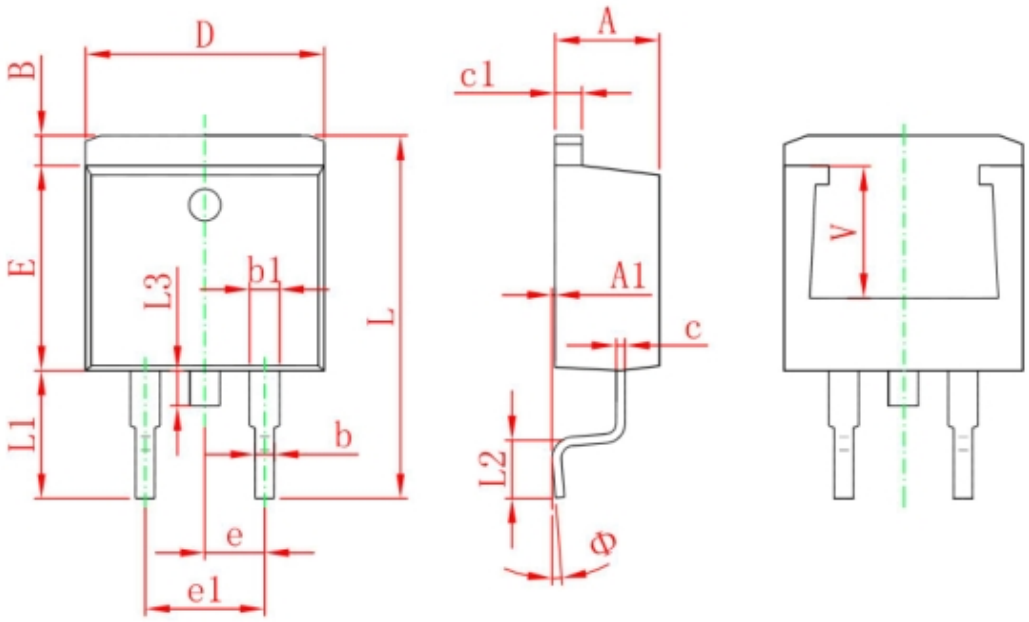



**Current De-rating**




**Normalized Maximum Transient Thermal Impedance**

## TO-263 Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 4.470 | 4.670 | 0.176 | 0.184 |
| A1 | 0.000 | 0.150 | 0.000 | 0.006 |
| B | 1.120 | 1.420 | 0.044 | 0.056 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | 0.012 | 0.021 |
| c1 | 1.170 | 1.370 | 0.046 | 0.054 |
| D | 10.010 | 10.310 | 0.394 | 0.406 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| e | 2.540 TYP. | | 0.100 TYP. | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| L | 14.940 | 15.500 | 0.588 | 0.610 |
| L1 | 4.950 | 5.450 | 0.195 | 0.215 |
| L2 | 2.340 | 2.740 | 0.092 | 0.108 |
| L3 | 1.300 | 1.700 | 0.051 | 0.067 |
| Φ | 0° | 8° | 0° | 8° |
| V | 5.600 REF. | | 0.220 REF. | |