

1. Description

KNX2908B, uses advanced trench technology to provide excellent $R_{DS(ON)}$, Low gate charge, It can be used in a wide variety of applications.

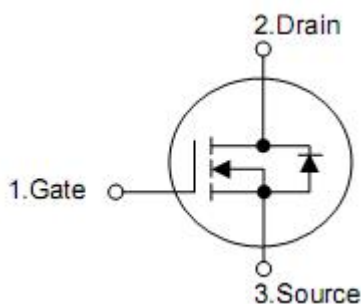
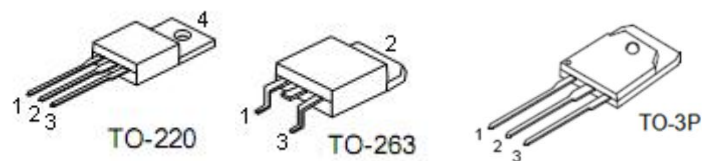
2. Features

- $V_{DS}=80V, I_D=130A$ $R_{DS(ON)}$ (typ.)= $5.0m\Omega$ @ $V_{GS}=10V$
- High density cell design for lower R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

3. Applications

- Power switching application
- Hard switched and High frequency circuits
- Uninterruptible power supply

4. Symbol



| Pin | Function |
|-----|----------|
| 1 | Gate |
| 2 | Drain |
| 3 | Source |
| 4 | Drain |

5. Ordering Information

| Part Number | Package | Brand |
|-------------|---------|-------|
| KNB2908B | TO-263 | KIA |
| KNP2908B | TO-220 | KIA |
| KNH2908B | TO-3P | KIA |

6. Absolute maximum ratings

| Parameter | Symbol | Rating | Units |
|--|----------------|------------|-------|
| Drain-source voltage | V_{DS} | 80 | V |
| Gate-source voltage | V_{GS} | ± 20 | V |
| Continuous drain current | I_D | 130 | A |
| Pulsed drain current ^(Note1) | I_{DM} | 520 | A |
| Single pulse avalanche energy ^(Note2) | E_{AS} | 900 | mJ |
| Derating Factor above 25°C | P_D | 245 | W/°C |
| Operation junction and temperature range | T_J, T_{STG} | -55 to 175 | °C |

7. Thermal characteristics

| Symbol | Parameter | Max | Unit |
|-----------------|--------------------------------------|------|-------|
| $R_{\theta JC}$ | Thermal Resistance, Junction-to-Case | 0.61 | °C /W |

8. Electrical characteristics

 (T_A=25°C, unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|--|---------------------|---|-----|------|------|-------|
| Off Characteristics | | | | | | |
| Drain-source breakdown voltage | BV _{DSS} | V _{GS} =0V, I _D =250μA | 80 | - | - | V |
| Drain-Source Leakage Current | I _{DSS} | V _{DS} =80V, V _{GS} =0V | - | - | 1 | μA |
| Gate-Source Forward Leakage | I _{GSS(F)} | V _{GS} =+20V | - | - | 100 | nA |
| Gate-Source Reverse Leakage | I _{GSS(R)} | V _{GS} =-20V | - | - | -100 | nA |
| On Characteristics | | | | | | |
| Drain-source on-Resistance ^(Note3) | R _{DS(on)} | V _{GS} =10V, I _D =35A | - | 5.0 | 6.0 | mΩ |
| Gate threshold voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 2.0 | 2.9 | 4.0 | V |
| Forward Transconductance | g _{fs} | V _{DS} =5V, I _D =20A | - | 42 | - | S |
| Dynamic Characteristics | | | | | | |
| Total gate charge | Q _g | V _{DD} =40V, V _{GS} =10V I _D =20A | - | 160 | - | nC |
| Gate-source charge | Q _{gs} | | - | 31 | - | |
| Gate-drain charge | Q _{gd} | | - | 50 | - | |
| Turn-on delay time | t _{d(on)} | V _{DD} =30V, I _D =40A, R _{GEN} =3Ω, V _{GS} =10V, | - | 24 | - | ns |
| Rise time | t _r | | - | 41 | - | |
| Turn-off delay time | t _{d(off)} | | - | 75 | - | |
| Fall time | t _f | | - | 25 | - | |
| Switching Characteristics ^(Note 4) | | | | | | |
| Input capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V, f=1MHz | - | 7950 | - | pF |
| Output capacitance | C _{oss} | | - | 460 | - | |
| Reverse transfer capacitance | C _{rss} | | - | 380 | - | |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward voltage | V _{SD} | V _{GS} =0V, I _S =20A | - | - | 1.3 | V |

Note

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition : T_j=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=1Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

Figure 1 Output Characteristics

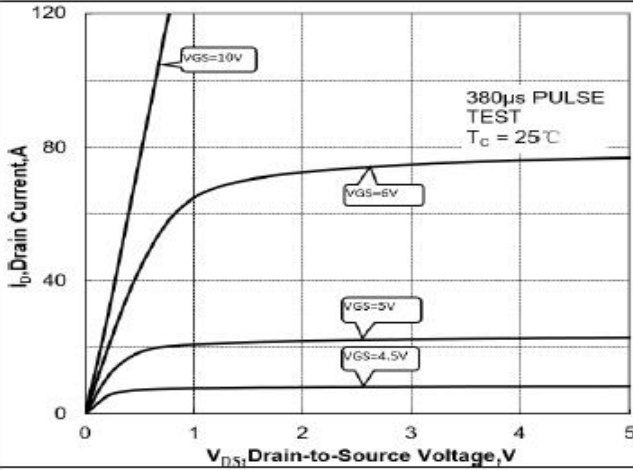


Figure 2 Transfer Characteristics

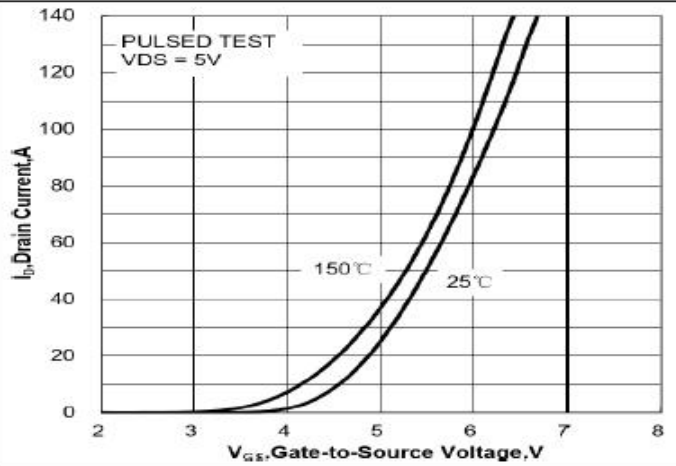


Figure 3 On-Resistance vs. ID and VGS

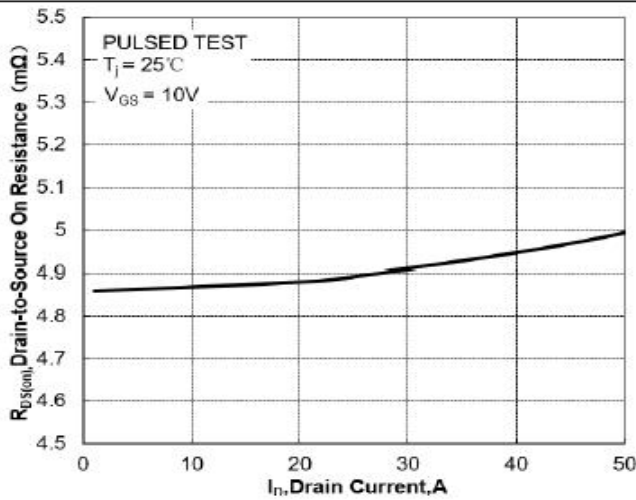


Figure 4 On-Resistance vs. Junction Temperature

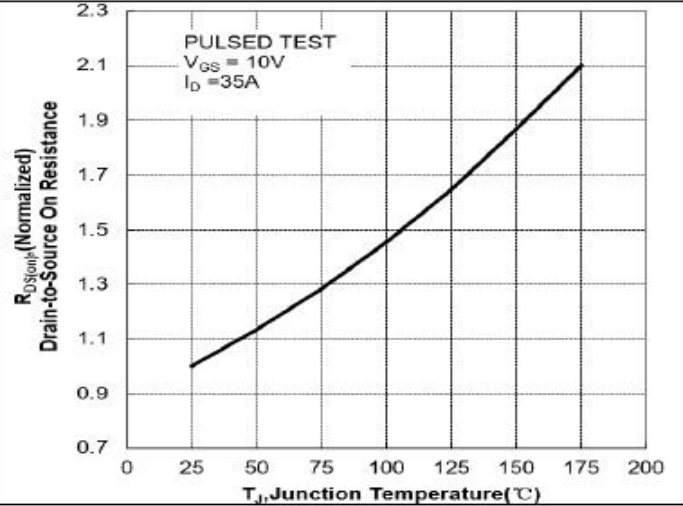


Figure 5 On-Resistance vs. VGS

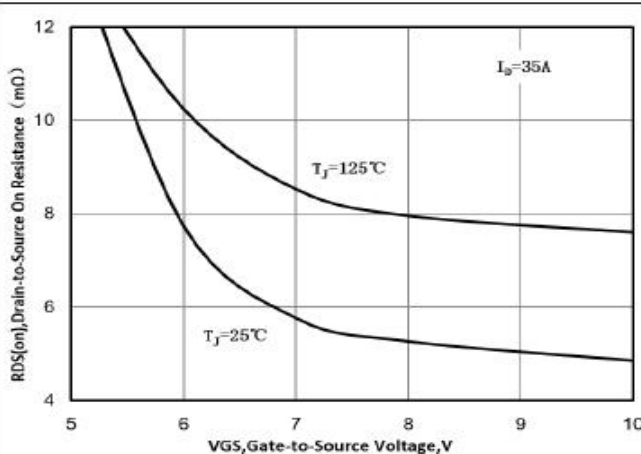


Figure 6 Body Diode Forward Voltage

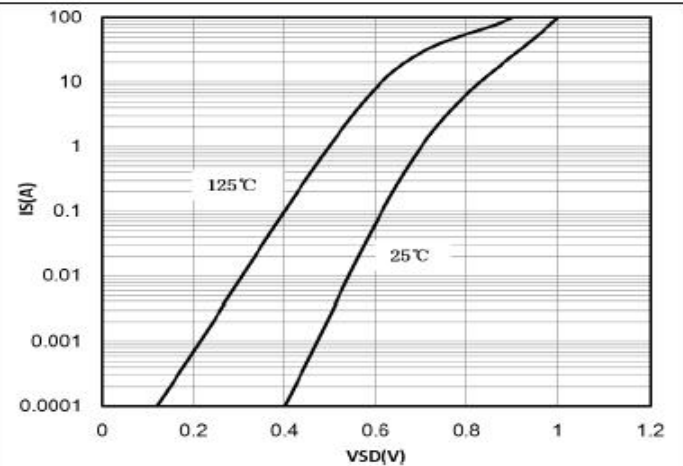


Figure 7 Gate-Charge Characteristics

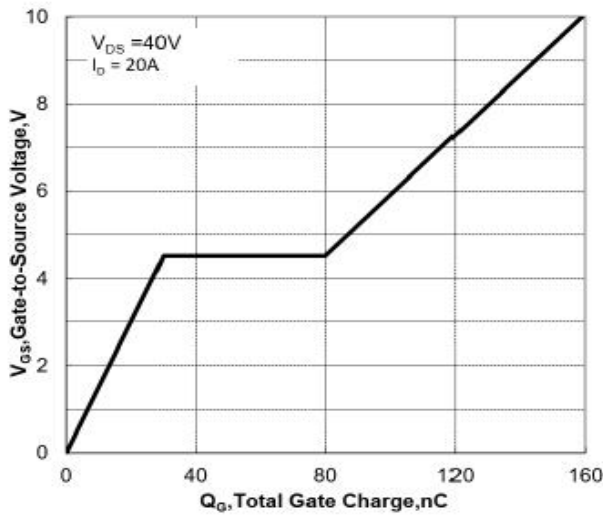


Figure 8 Capacitance Characteristics

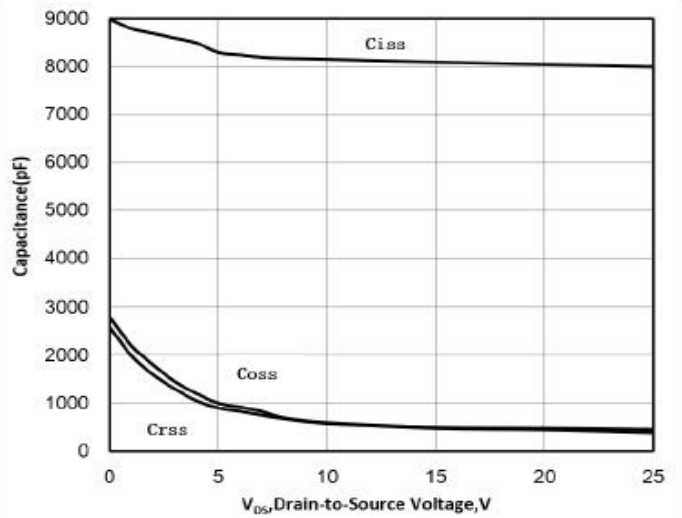


Figure 9 Maximum Forward Biased Safe Operation Area

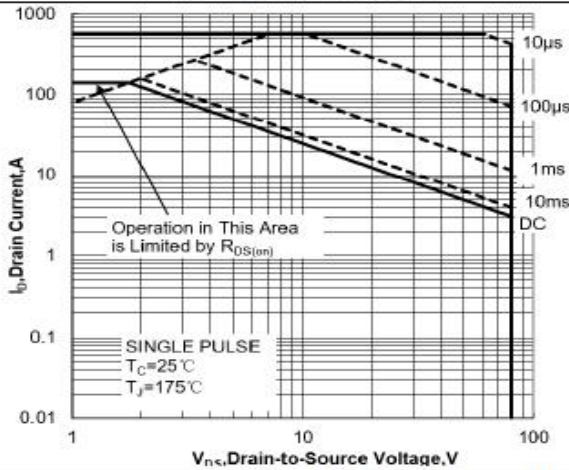


Figure 10 Single Pulse Power Rating Junction-to-Ambient

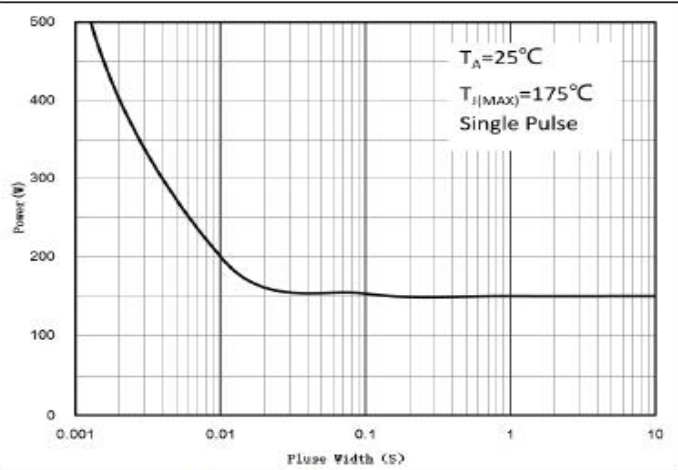


Figure 11 Normalized Maximum Transient Thermal Impedance

