

Features

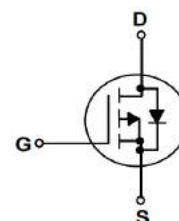
- P-Channel
- Fast Switching
- High Power and current handing capability
- Lead free product is acquired
- 100% EAS Tested

| | | |
|--------------------------------|-----|------------|
| V_{DS} | -60 | V |
| $R_{DS(on),TYP@ V_{GS}=-10V}$ | 11 | m Ω |
| $R_{DS(on),TYP@ V_{GS}=-4.5V}$ | 12 | m Ω |
| I_D | -60 | A |

DFN5x6



| Part ID | Package Type | Marking | Packing |
|----------|--------------|----------|--------------|
| ZT11P06G | DFN5x6 | ZT11P06G | 5000pcs/Reel |



Absolute Maximum Ratings $T_A = 25^\circ\text{C}$, unless otherwise specified

| Symbol | Parameter | Rating | Unit | |
|--|---|----------------------------------|--------------------|---|
| Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted) | | | | |
| V_{GS} | Gate-Source Voltage | ± 20 | V | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | -60 | V | |
| T_J | Maximum Junction Temperature | 175 | $^\circ\text{C}$ | |
| T_{STG} | Storage Temperature Range | -55 to 175 | $^\circ\text{C}$ | |
| I_{DM} | Drain Current-Continuous@ Current-Pulsed (Note 1) | $T_C = 25^\circ\text{C}$ -240 | A | |
| Mounted on Large Heat Sink | | | | |
| I_D | Drain Current-Continuous | $T_C = 25^\circ\text{C}$ | -60 | A |
| | | $T_C = 100^\circ\text{C}$ | -41 | A |
| P_D | Maximum Power Dissipation | $T_C = 25^\circ\text{C}$ | 107 | W |
| | | $T_C = 100^\circ\text{C}$ | 53 | W |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case | 1.4 | $^\circ\text{C/W}$ | |
| Drain-Source Avalanche Ratings | | | | |
| EAS | Avalanche Energy, Single Pulsed (Note 2) | 484 | mJ | |

Electrical Characteristics (T_J=25°C unless otherwise noted)

| Symbol | Parameter | Condition | Min | Typ | Max | Unit |
|---|-----------------------------------|---|------|------|------|------|
| Static Electrical Characteristics @ T_J=25°C (unless otherwise stated) | | | | | | |
| V(BR)DSS | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =-250μA | -60 | -72 | -- | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =-60V, V _{GS} =0V | -- | -- | -1 | μA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} =±20V, V _{DS} =0V | -- | -- | ±100 | nA |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =-250μA | -1.0 | -1.7 | -2.6 | V |
| R _{DS(on)} | Drain-Source On-State Resistance | V _{GS} =-10V, I _D =-20A | -- | 11 | 13 | mΩ |
| R _{DS(on)} | Drain-Source On-State Resistance | V _{GS} =-4.5V, I _D =-15A | -- | 12 | 15 | mΩ |
| g _{FS} | Forward Transconductance | V _{DS} =-5V, I _D =-20A | -- | 38 | -- | S |
| Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =-25V, V _{GS} =0V, f=1MHz | -- | 8700 | -- | pF |
| C _{oss} | Output Capacitance | | -- | 290 | -- | pF |
| C _{rss} | Reverse Transfer Capacitance | | -- | 210 | -- | pF |
| Q _g | Total Gate Charge | V _{DS} =-30V, I _D =-20A, V _{GS} =-10V | -- | 140 | -- | nC |
| Q _{gs} | Gate-Source Charge | | -- | 19 | -- | nC |
| Q _{gd} | Gate-Drain Charge | | -- | 28 | -- | nC |
| Switching Characteristics | | | | | | |
| T _{d(on)} | Turn-on Delay Time | V _{DS} =-30V, R _L =1.5Ω, R _G =3Ω, V _{GS} =-10V | -- | 26 | -- | ns |
| T _r | Turn-on Rise Time | | -- | 21 | -- | ns |
| T _{d(off)} | Turn-Off Delay Time | | -- | 138 | -- | ns |
| T _f | Turn-Off Fall Time | | -- | 30 | -- | ns |
| Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated) | | | | | | |
| I _{SD} | Source-Drain Current (Body Diode) | | -- | -- | -60 | A |
| V _{SD} | Forward on voltage (Note 3) | I _S =-20A, V _{GS} =0V | -- | -- | -1.2 | V |
| T _{rr} | Reverse Recovery Time | T _J =25°C, I _F =-20A, V _{GS} =0V | -- | 56 | -- | ns |
| Q _{rr} | Reverse Recovery Charge | di/dt=100A/μs | -- | 63 | -- | nC |

Notes :

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.E_{AS} condition: T_J=25°C, V_{DD}=40V, V_G=-10V, R_G=25Ω, L=0.5mH.
- 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Electrical And Thermal Characteristics (Curves)

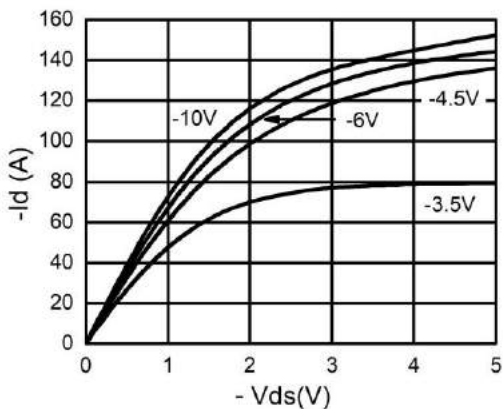


Figure 1. Output Characteristics

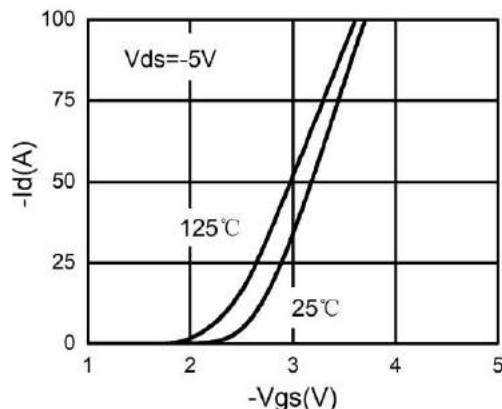


Figure 4. Transfer Characteristics

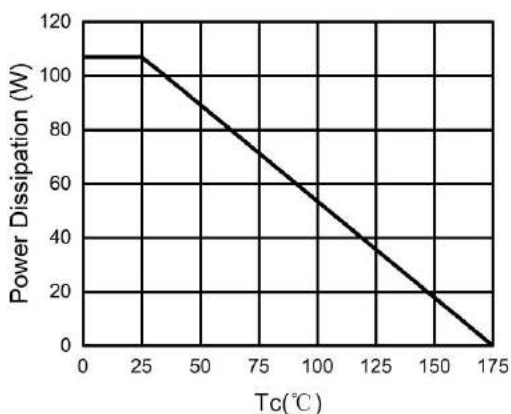


Figure 2. Power Dissipation

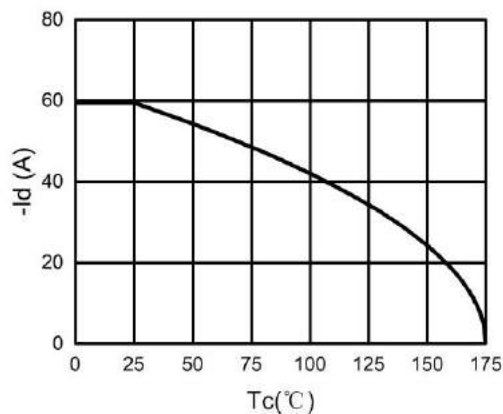


Figure 5. Drain Current

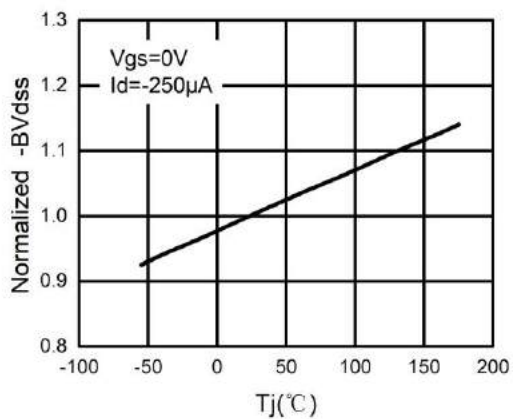


Figure 3. BV_{dss} vs Junction Temperature

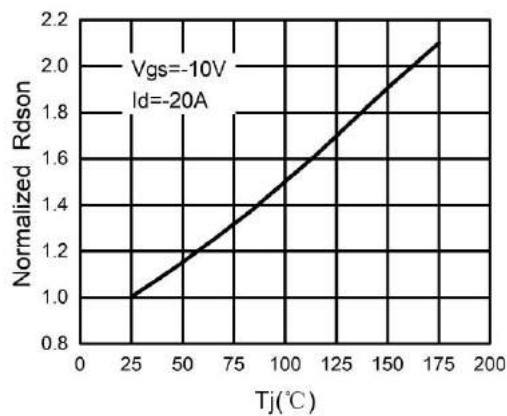


Figure 6. $R_{DS(on)}$ vs Junction Temperature

Typical Electrical And Thermal Characteristics (Curves)

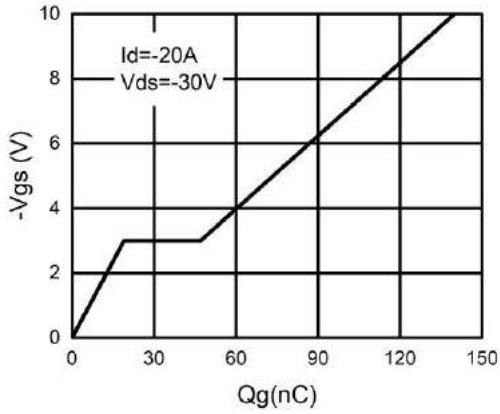


Figure 7. Gate Charge Waveforms

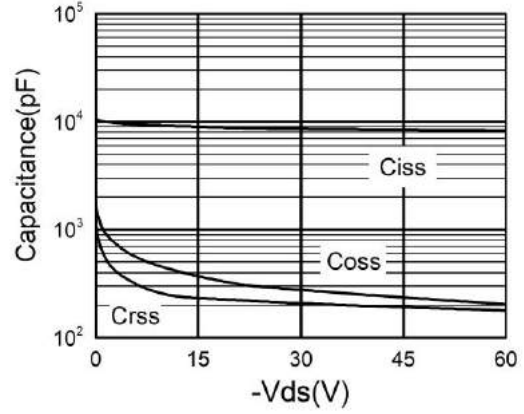


Figure 9. Capacitance

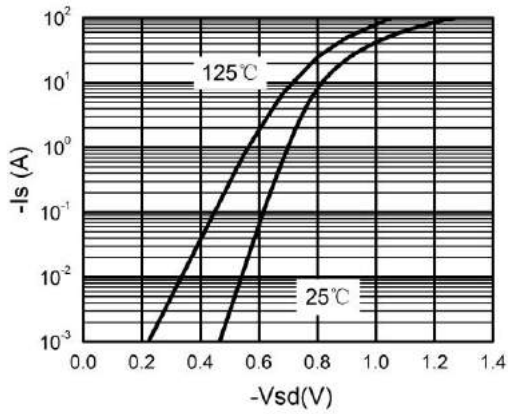


Figure 8. Body-Diode Characteristics

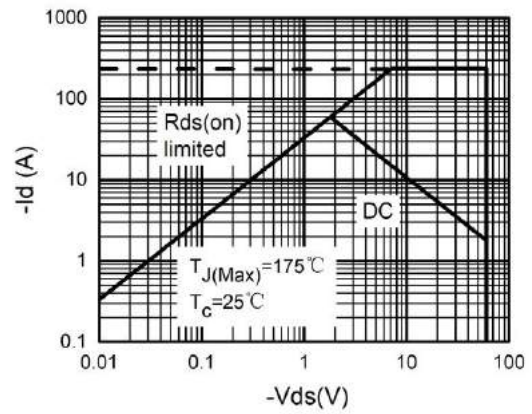
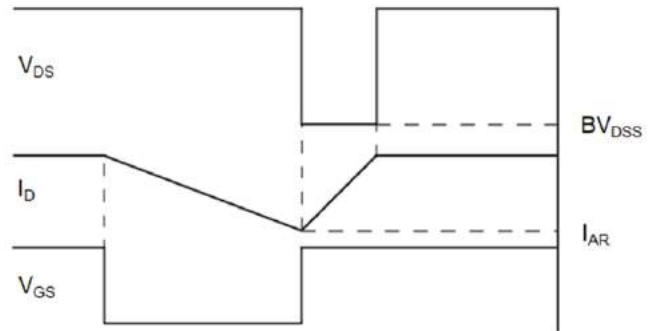
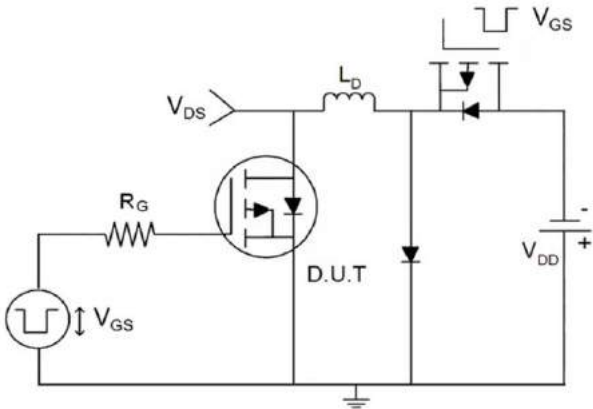


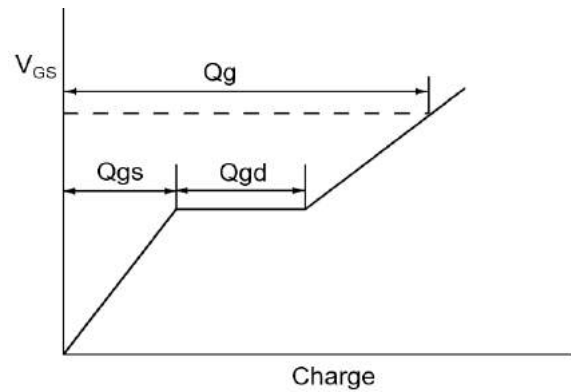
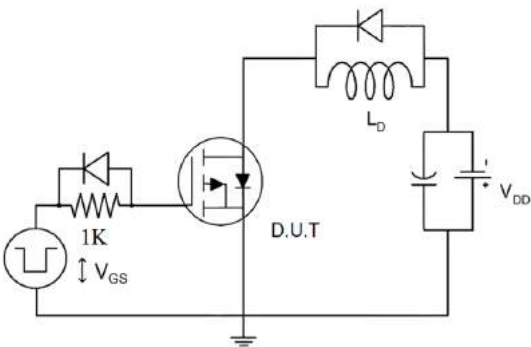
Figure 10. Maximum Safe Operating Area

Test Circuit

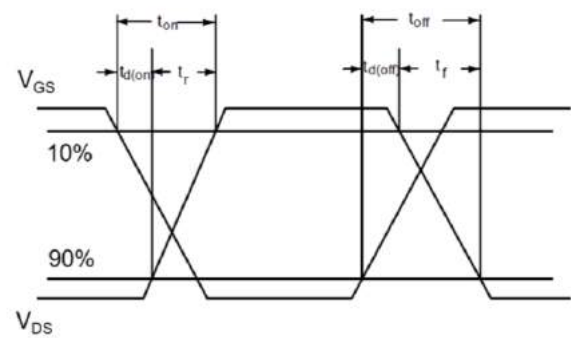
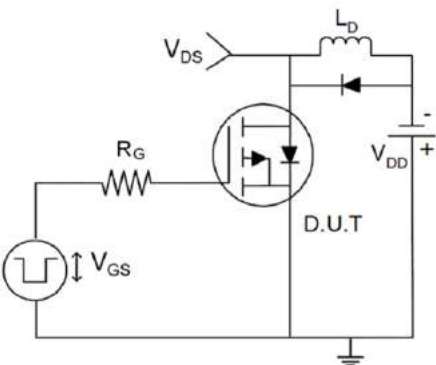
1) E_{AS} Test Circuits



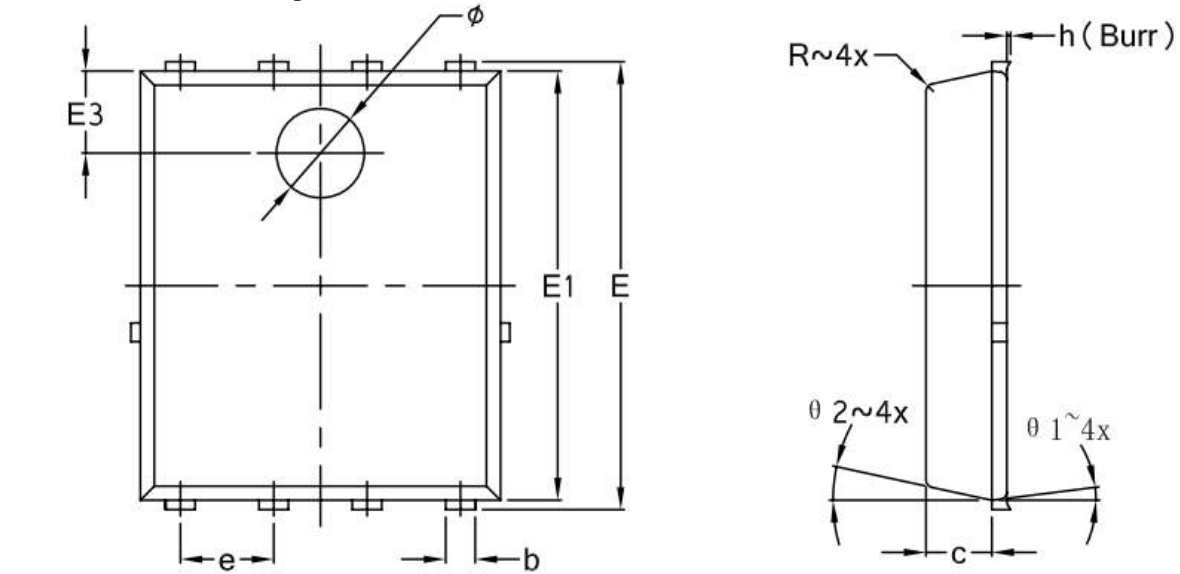
2) Gate Charge Test Circuit



3) Switch Time Test Circuit



DFN5x6-8L Package Information



| SYMBOL | COMMON | | | |
|---------|----------|-------|------------|--------|
| | MM | | INCH | |
| | MIN. | MAX. | MIN. | MAX. |
| A | 1.03 | 1.17 | 0.0406 | 0.0461 |
| b | 0.35 | 0.46 | 0.0138 | 0.0181 |
| c | 0.84 | 0.95 | 0.0331 | 0.0374 |
| D | 4.83 | 5.37 | 0.1902 | 0.2114 |
| D1 | 4.14 | 4.28 | 0.1630 | 0.1685 |
| D2 | 4.83 | 4.97 | 0.1902 | 0.1957 |
| E | 6.03 | 6.13 | 0.2374 | 0.2413 |
| E1 | 5.68 | 5.82 | 0.2236 | 0.2291 |
| E2 | 1.65 | — | 0.0650 | — |
| E3 | 1.03 | 1.17 | 0.0406 | 0.0461 |
| e | 1.27 BSC | | 0.0500 BSC | |
| L | 0.05 | 0.25 | 0.0020 | 0.0098 |
| L1 | 0.40 | 0.48 | 0.0157 | 0.0189 |
| L2 | 0.40 | 0.48 | 0.0157 | 0.0189 |
| H | 3.315 | 3.475 | 0.1305 | 0.1368 |
| I | — | 0.16 | — | 0.0063 |
| phi | 1.13 | 1.27 | 0.0445 | 0.0500 |
| R | 0.10 | | 0.0039 | |
| theta 1 | 7° REF | | 7° REF | |
| theta 2 | 12° REF | | 12° REF | |
| h | 0.08 MAX | | 0.0031 | |

Customer Service

Sales and Service:

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