

Features

- Excellent $R_{DS(ON)}$
- Low gate charge

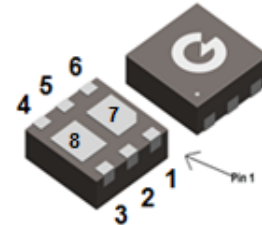
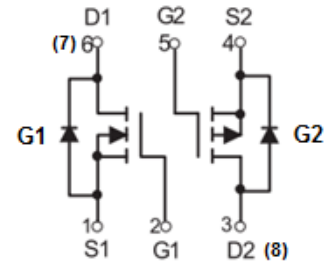
HF

Applications

- Load Switch
- PWM Application

Mechanical Data

- Case: DFN2020-6LC
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



DFN2020-6LC

Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|-------------|-------------|------------------------|--------------|
| GBLH2201DF2 | DFN2020-6LC | 3000 pcs / Tape & Reel | H2201 |

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | G ₁ | G ₂ | Unit |
|--|-----------|----------------|----------------|------|
| Drain-to-Source Voltage | V_{DSS} | 20 | -20 | V |
| Gate-to-Source Voltage | V_{GSS} | ± 12 | ± 12 | V |
| Continuous Drain Current ($T_A = 25^\circ\text{C}$) | I_D | 3 | -3 | A |
| Continuous Drain Current ($T_A = 100^\circ\text{C}$) | I_D | 2 | -2 | A |
| Pulsed Drain Current ^{*1} | I_{DM} | 12 | -12 | A |

Thermal Characteristics

| Parameter | Symbol | G ₁ | G ₂ | Unit |
|--|-----------------|----------------|----------------|--------------------|
| Power Dissipation ($T_A = 25^\circ\text{C}$) | P_D | 0.77 | 1 | W |
| Thermal Resistance Junction-to-Air | $R_{\theta JA}$ | 162 | 125 | $^\circ\text{C/W}$ |
| Operating Junction Temperature Range | T_J | -55 ~ +150 | | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 ~ +150 | | $^\circ\text{C}$ |

Electrical Characteristics-NMOS G₁ (@ T_J = 25°C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|---|--------------------------------------|---|------|------|------|------|
| Static Characteristics | | | | | | |
| V _{DSS} | Drain-Source Breakdown Voltage | V _{GS} = 0V, I _D = 250μA | 20 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} = 20V, V _{GS} = 0V | - | - | 1 | μA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} = ±12V, V _{DS} = 0V | - | - | ±100 | nA |
| On Characteristics | | | | | | |
| R _{DS(ON)} | Static Drain-Source On-resistance *2 | V _{GS} = 4.5V, I _D = 3A | - | - | 55 | mΩ |
| | | V _{GS} = 2.5V, I _D = 2A | - | - | 85 | mΩ |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} = V _{GS} , I _D = 250μA | 0.4 | - | 1.0 | V |
| Dynamic Characteristics | | | | | | |
| C _{ISS} | Input Capacitance | V _{GS} = 0V V _{DS} = 10V f = 1.0MHz | - | 184 | - | pF |
| C _{OSS} | Output Capacitance | | | | | |
| C _{RSS} | Reverse Transfer Capacitance | | | | | |
| Switching Characteristics | | | | | | |
| t _{d(ON)} | Turn-on Delay Time | V _{GS} = 4.5V V _{DD} = 10V R _G = 3Ω I _D = 3A | - | 2.3 | - | ns |
| t _r | Turn-on Rise Time | | | | | |
| t _{d(OFF)} | Turn-Off Delay Time | | | | | |
| t _f | Turn-Off Fall Time | | | | | |
| Q _G | Total Gate-Charge | V _{DD} = 10V V _{GS} = 4.5V I _D = 3A | - | 2.7 | - | nC |
| Q _{GS} | Gate to Source Charge | | | | | |
| Q _{GD} | Gate to Drain (Miller) Charge | | | | | |
| Source-Drain Diode Characteristics | | | | | | |
| V _{SD} | Diode Forward Voltage | I _{SD} = 3A, V _{GS} = 0V | - | - | 1.2 | V |

Notes:

- 1、 Repetitive rating; pulse width limited by maximum junction temperature
- 2、 The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 0.5%

Electrical Characteristics-PMOS G₂ (@ T_A = 25°C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|------|------|------|------|
| Static Characteristics | | | | | | |
| V _{DSS} | Drain-Source Breakdown Voltage | V _{GS} = 0V, I _D = -250μA | -20 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} = -20V, V _{GS} = 0V | - | - | -1 | μA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} = ±12V, V _{DS} = 0V | - | - | ±100 | nA |
| On Characteristics | | | | | | |
| R _{DS(ON)} | Static Drain-Source On-resistance ^{*2} | V _{GS} = -4.5V, I _D = -3A | - | - | 70 | mΩ |
| | | V _{GS} = -2.5V, I _D = -2A | - | - | 100 | mΩ |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} = V _{GS} , I _D = -250μA | -0.5 | - | -1.0 | V |
| Dynamic Characteristics | | | | | | |
| C _{ISS} | Input Capacitance | V _{GS} = 0V V _{DS} = -10V f = 1.0MHz | - | 503 | - | pF |
| C _{OSS} | Output Capacitance | | | | | |
| C _{RSS} | Reverse Transfer Capacitance | | | | | |
| Switching Characteristics | | | | | | |
| t _{d(ON)} | Turn-on Delay Time | V _{GS} = -4.5V, V _{DD} = -10V R _G = 1Ω, R _L = 1.2Ω I _D = -3A | - | 11 | - | ns |
| t _r | Turn-on Rise Time | | | | | |
| t _{d(OFF)} | Turn-Off Delay Time | | | | | |
| t _f | Turn-Off Fall Time | | | | | |
| Q _G | Total Gate-Charge | V _{GS} = -4.5V V _{DD} = -10V I _D = -2A | - | 4.1 | - | nC |
| Q _{GS} | Gate to Source Charge | | | | | |
| Q _{GD} | Gate to Drain (Miller) Charge | | | | | |
| Source-Drain Diode Characteristics | | | | | | |
| V _{SD} | Diode Forward Voltage ^{*2} | I _{SD} = -4.1A, V _{GS} = 0V | - | - | -1.2 | V |
| I _S | Diode Continuous Forward Current | | - | - | -5.1 | A |

Ratings and Characteristics Curves-G₁ (@ T_A = 25°C unless otherwise specified)

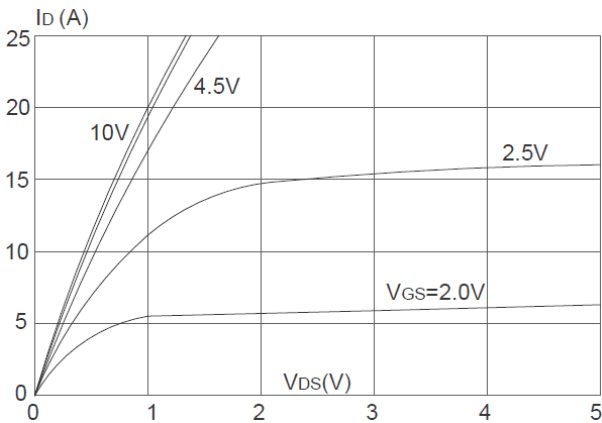


Fig 1 Typical Output Characteristics

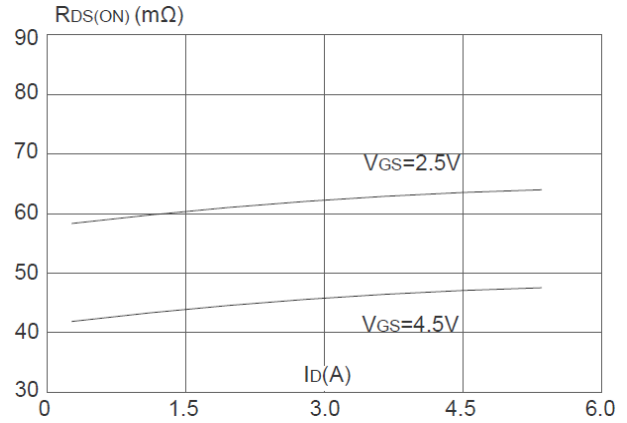


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

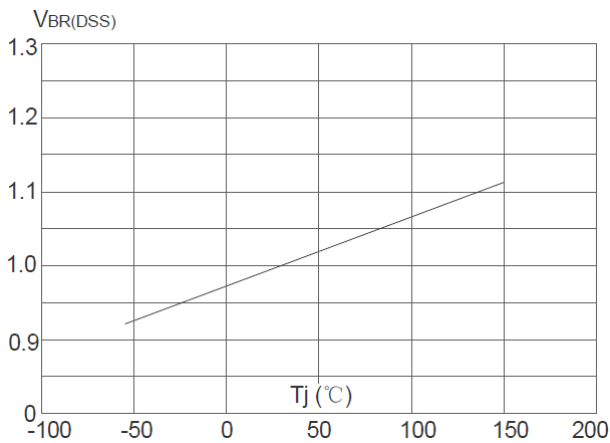


Fig 3 Normalized Breakdown Voltage vs. Junction Temperature

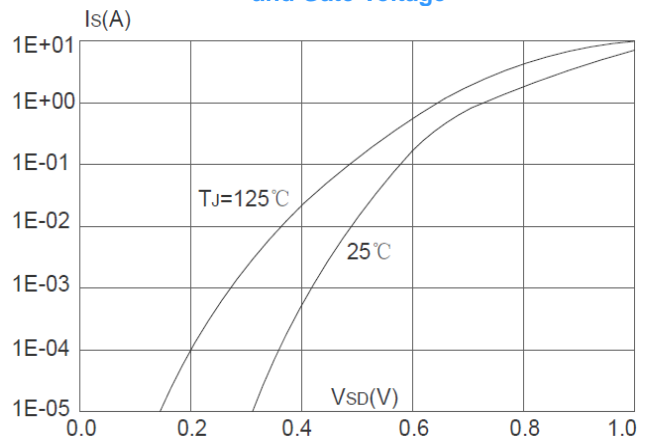


Fig 4 Body-Diode Characteristics

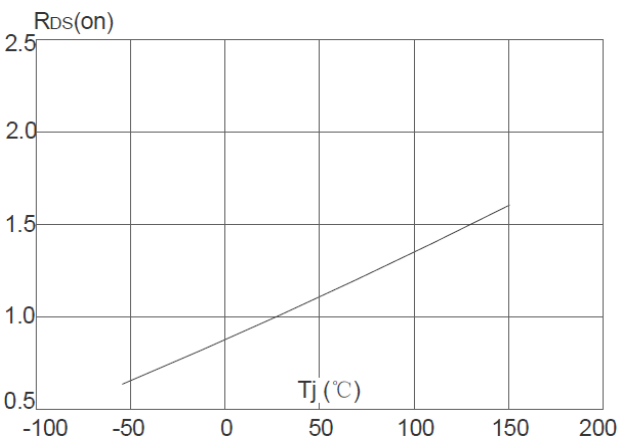


Fig 5 Normalized On-Resistance vs. Junction Temperature

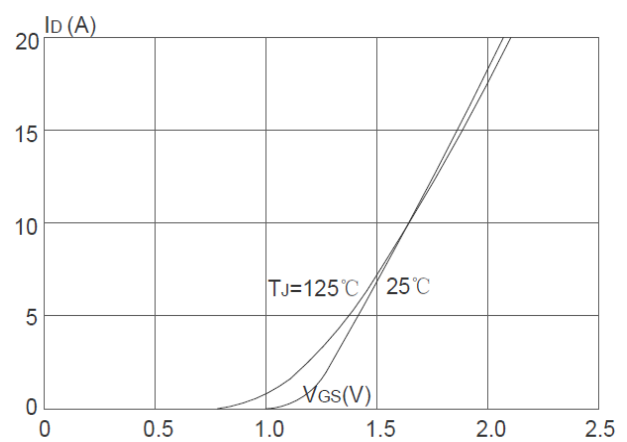


Fig 6 Transfer Characteristics

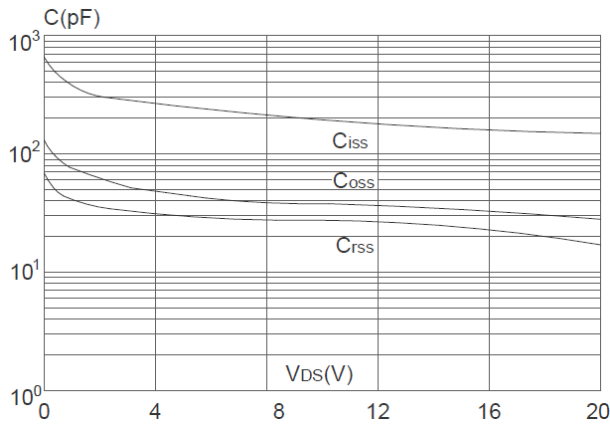


Fig 7 Capacitance Characteristics

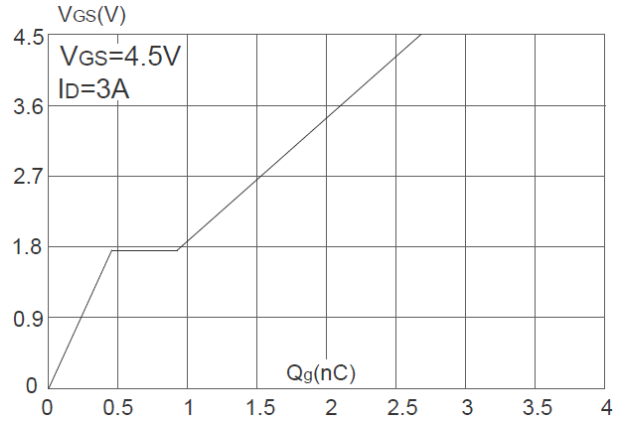


Fig 8 Gate-Charge Characteristics

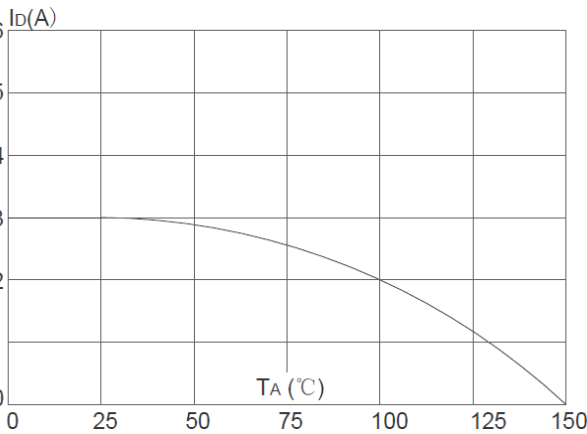


Fig 9 Maximum Continuous Drain Current vs. Ambient Temperature

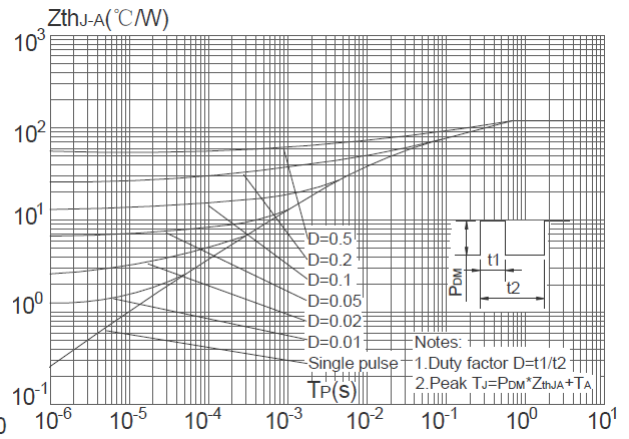


Fig 10 Maximum transient thermal impedance

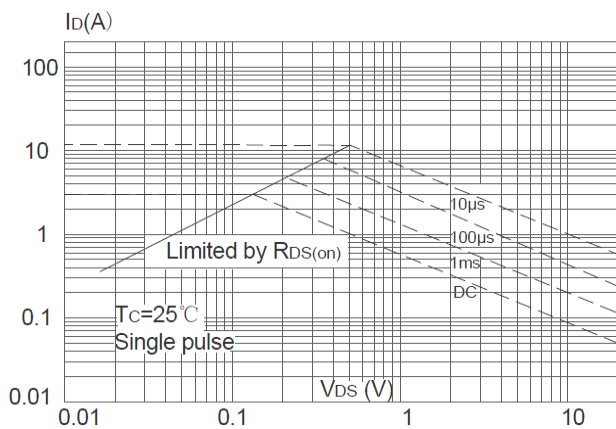


Fig 11 Safe Operation Area

Ratings and Characteristics Curves-G₂ (@ T_A = 25°C unless otherwise specified)

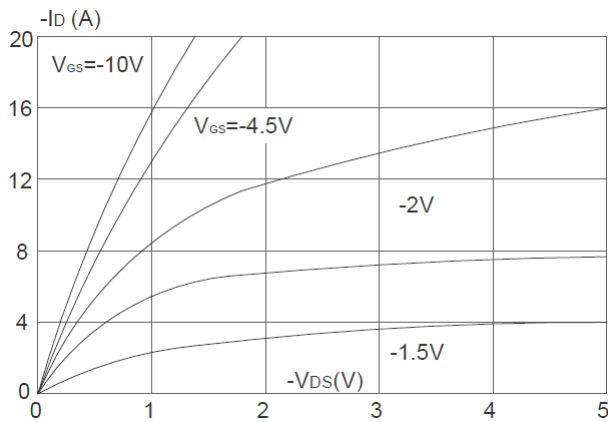


Fig 1 Typical Output Characteristics

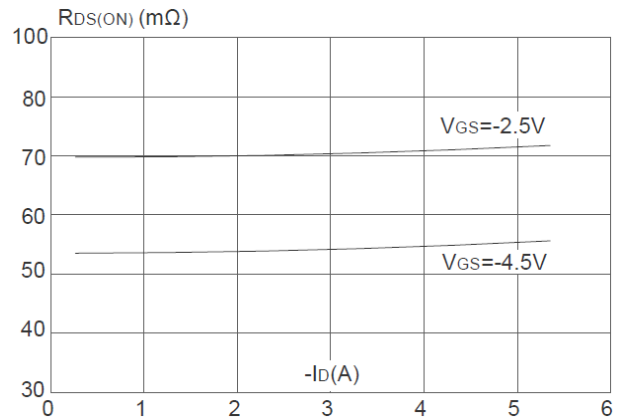


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

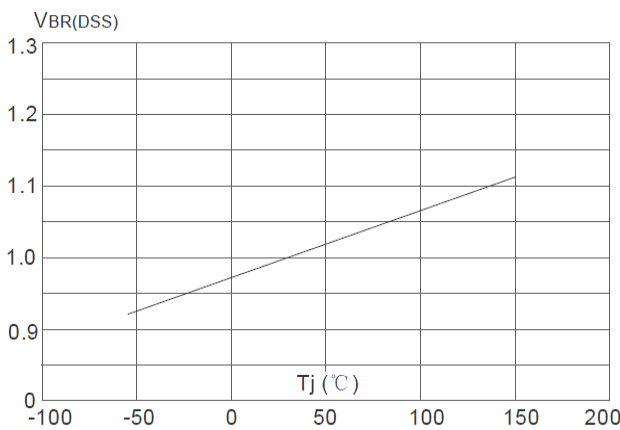


Fig 3 Normalized Breakdown Voltage vs. Junction Temperature

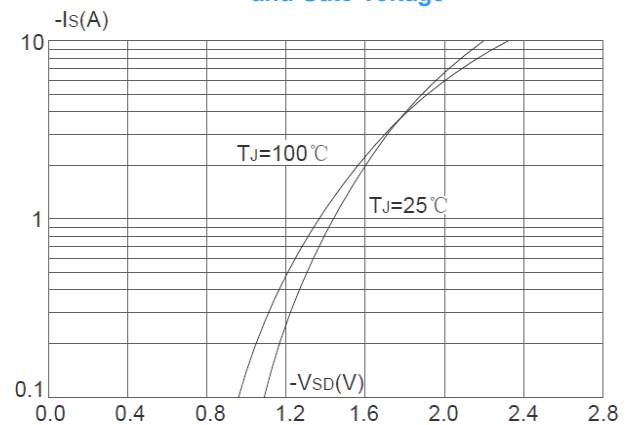


Fig 4 Body-Diode Characteristics

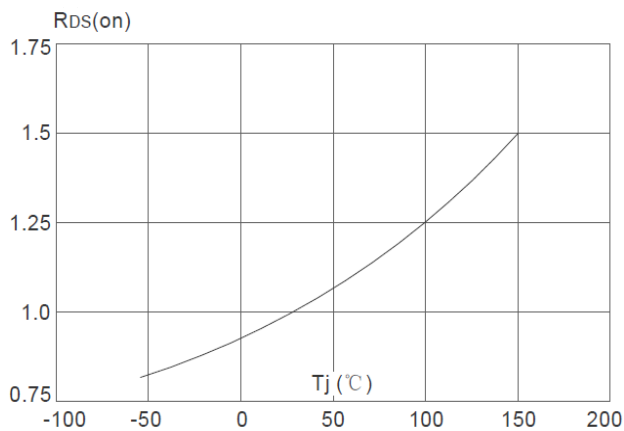


Fig 5 Normalized On-Resistance vs. Junction Temperature

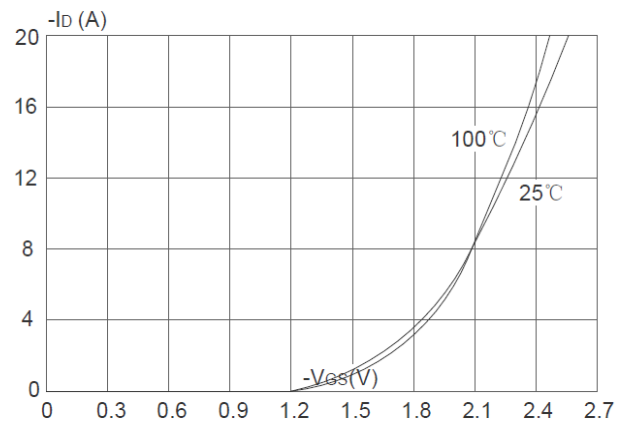


Fig 6 Transfer Characteristics

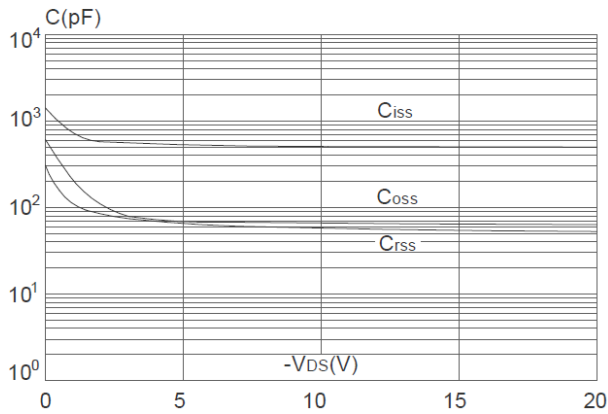


Fig 7 Capacitance Characteristics

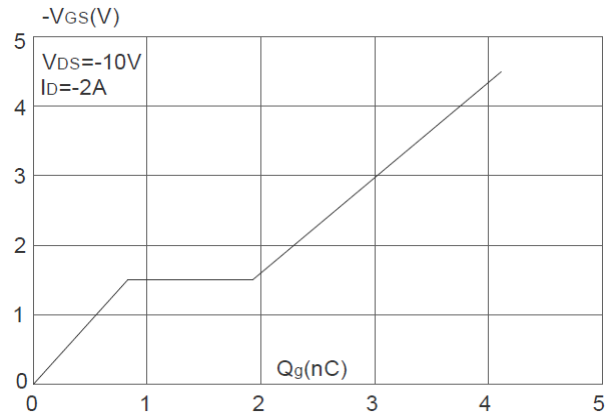


Fig 8 Gate-Charge Characteristics

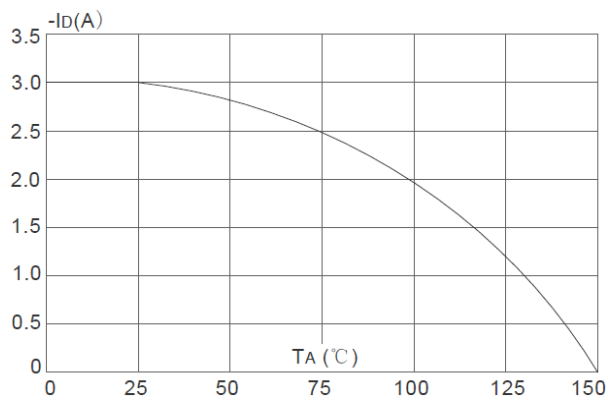


Fig 9 Maximum Continuous Drain Current vs. Ambient Temperature

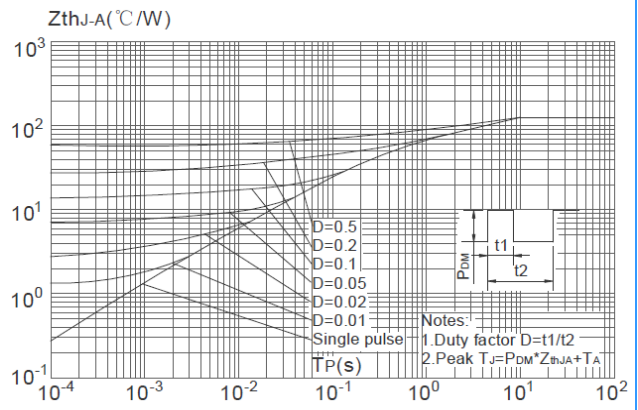


Fig 10 Maximum transient thermal impedance

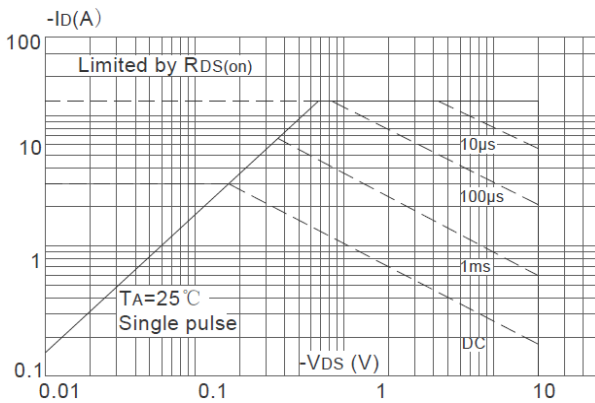
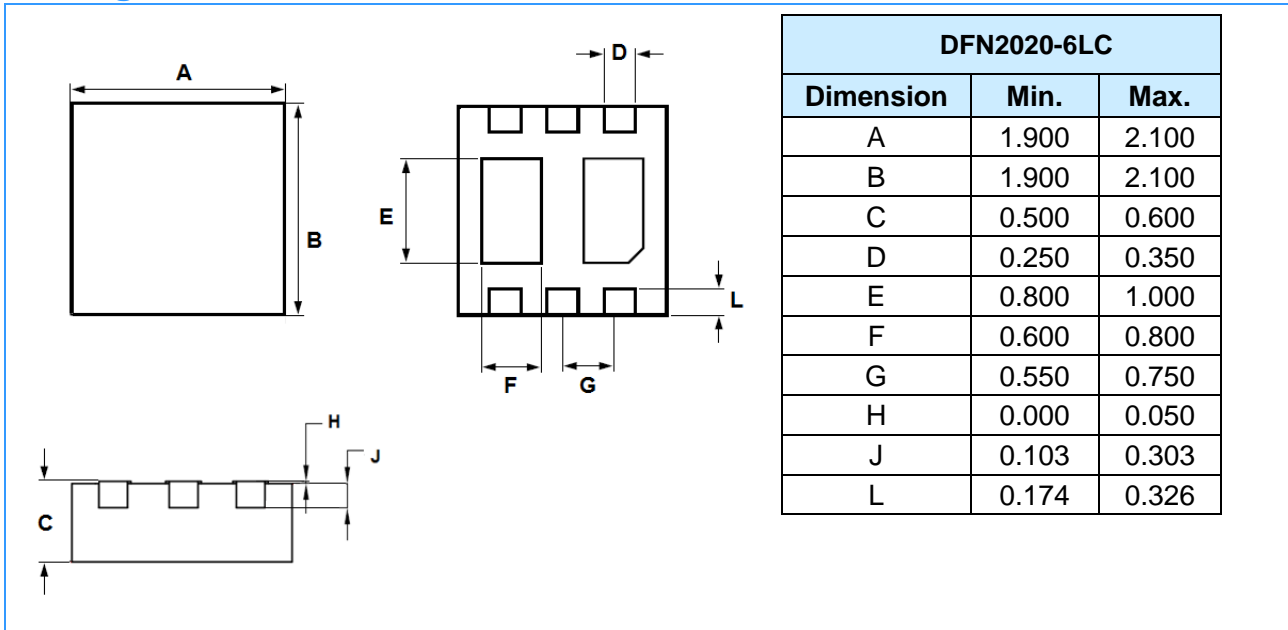
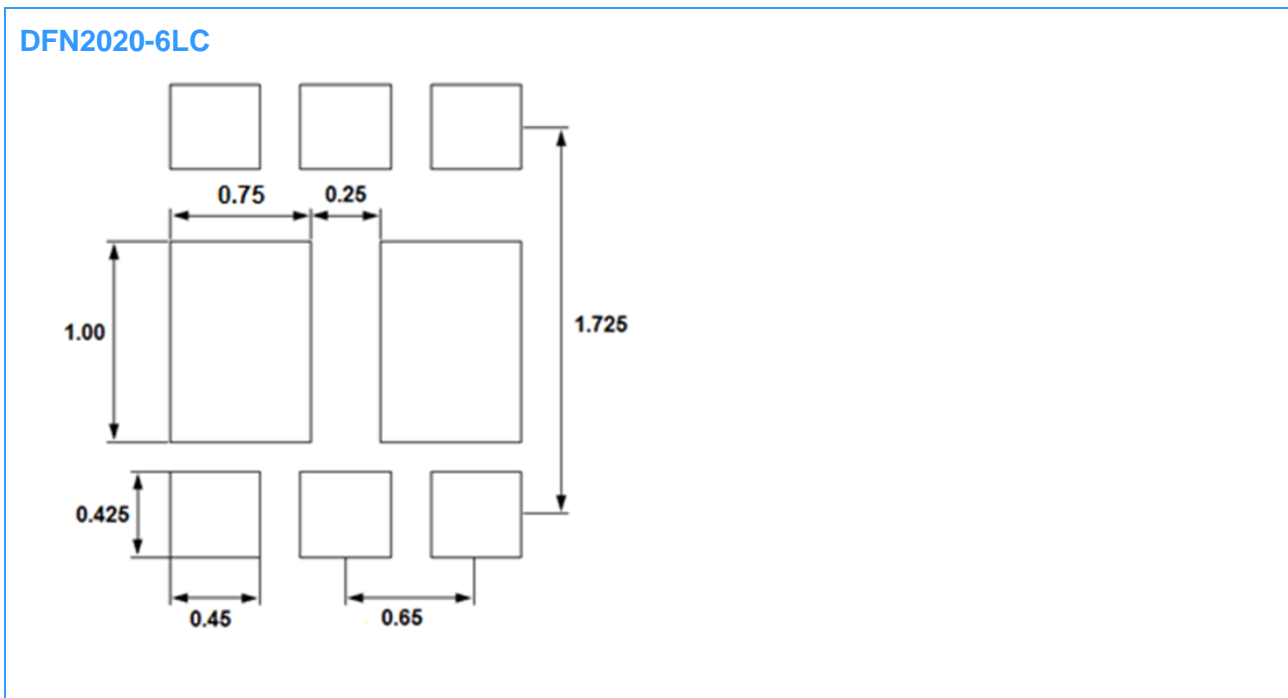


Fig 11 Safe Operation Area

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



Important Notice

Changzhou Galaxy Century Microelectronics (GME) reserves the right to make changes without further notice to any product information (copyrighted) herein to make corrections, modifications, improvements, or other changes. GME does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others.