

PDFN5060 Plastic-Encapsulate MOSFETS

Features

- VDS=100V
- ID=60A
- RDS(on)@VGS=10V < 11mΩ
- RDS(on)@VGS=4.5V < 16mΩ
- High density cell design for ultra low Rdson
- Voltage controlled small signal switch
- Fast Switching Speedze

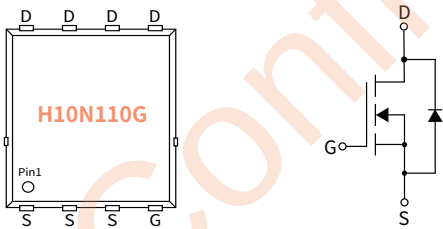
Applications

- Power Switching Application
- Battery management
- Uninterruptible power supply

Mechanical Data

- Case: PDFN5060
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Drain-source Voltage
100 V
Drain Current
60 Ampere

PDFN5060



Ordering Information

| PACKAGE  | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|----------|--------------|----------------|-----------|----------|-------------|---------------|
| PDFN5060 | R3           | 0.09           | 5000      | 10000    | 80000       | 13"           |

Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER                           | SYMBOL | UNIT   | VALUE     |
|-------------------------------------|--------|--------|-----------|
| Drain-source Voltage                | VDS    | V      | 100       |
| Gate-source Voltage                 | VGS    | V      | ±20       |
| Drain Current                       | ID     | A      | 60        |
| Pulsed Drain Current (1)            | IDM    | A      | 240       |
| Total Power Dissipation             | PD     | W      | 89        |
| Single pulse avalanche energy (2)   | EAS    | mJ     | 173       |
| Junction temperature                | TJ     | °C     | -55 ~+150 |
| Storage temperature                 | Tstg   | °C     | -55 ~+150 |
| Thermal Resistance Junction-to-Case | RθJC   | °C / W | 1.4       |

● Static Parameter Characteristics (Tj=25°C Unless otherwise specified)

| PARAMETER                                        | SYMBOL       | Condition                     | UNIT       | Min | Typ | Max       |
|--------------------------------------------------|--------------|-------------------------------|------------|-----|-----|-----------|
| Drain-Source Breakdown Voltage                   | $BV_{DSS}$   | $V_{GS}=0V, I_D=250\mu A$     | V          | 100 | —   | —         |
| Zero Gate Voltage Drain Current                  | $I_{DSS}$    | $V_{DS}=100V, V_{GS}=0V$      | $\mu A$    | —   | —   | 1.0       |
| Gate-Body Leakage Current                        | $I_{GSS}$    | $V_{GS}=\pm 20V, V_{DS}=0V$   | nA         | —   | —   | $\pm 100$ |
| Gate Threshold Voltage                           | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | V          | 1.0 | 1.9 | 2.5       |
| Static Drain-Source On-Resistance <sup>(3)</sup> | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=20A$         | m $\Omega$ | —   | 8.5 | 11        |
|                                                  | $R_{DS(ON)}$ | $V_{GS}=4.5V, I_D=15A$        |            | —   | 12  | 16        |

● Dynamic Parameters

| PARAMETER                    | SYMBOL    | Condition                       | UNIT | Min | Typ  | Max |
|------------------------------|-----------|---------------------------------|------|-----|------|-----|
| Input Capacitance            | $C_{iss}$ | $V_{DS}=50V, V_{GS}=0V, f=1MHz$ | pF   | —   | 1355 | —   |
| Output Capacitance           | $C_{oss}$ |                                 |      | —   | 285  | —   |
| Reverse Transfer Capacitance | $C_{rss}$ |                                 |      | —   | 8.5  | —   |

● Switching Parameters

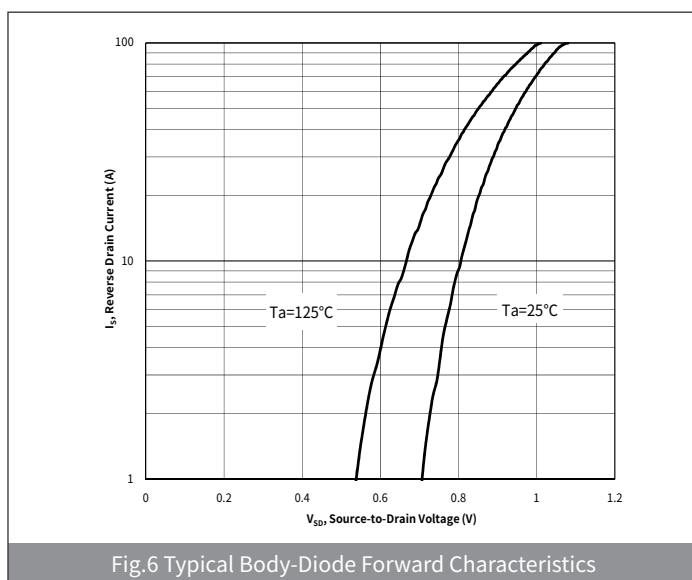
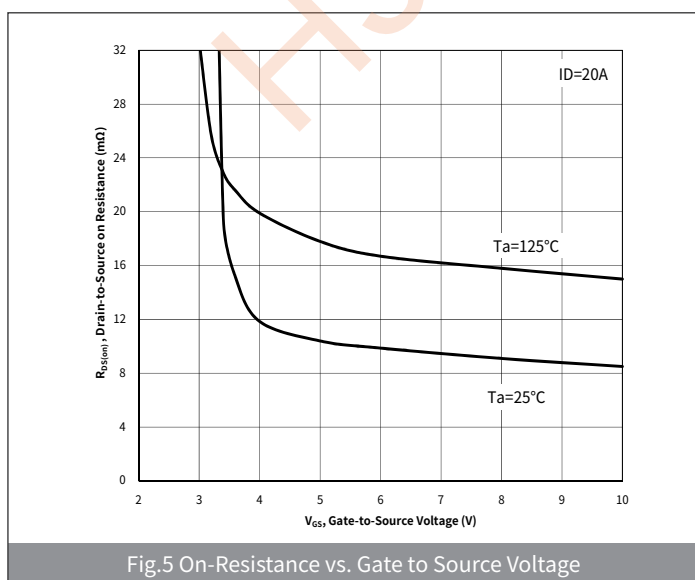
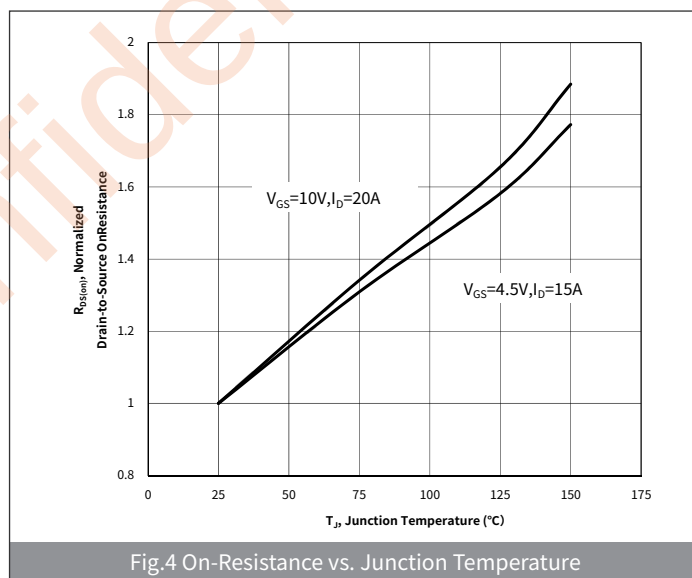
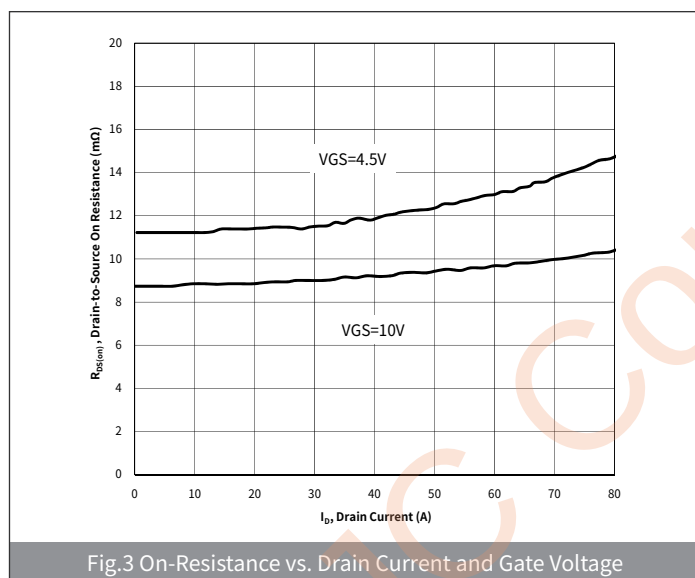
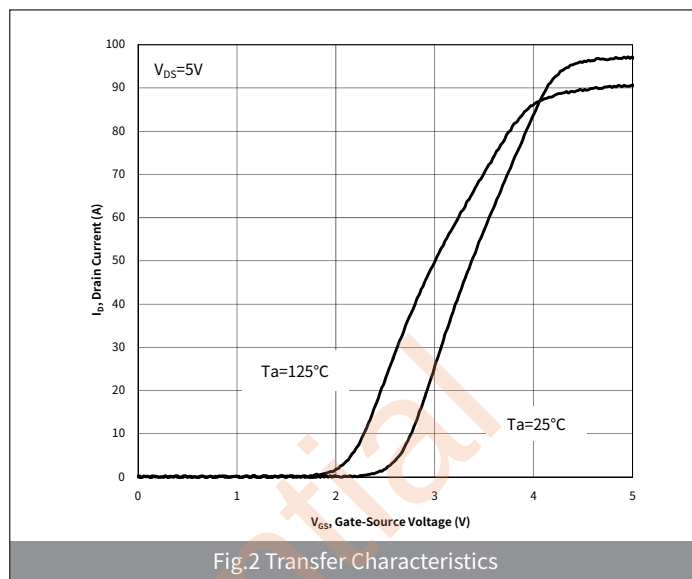
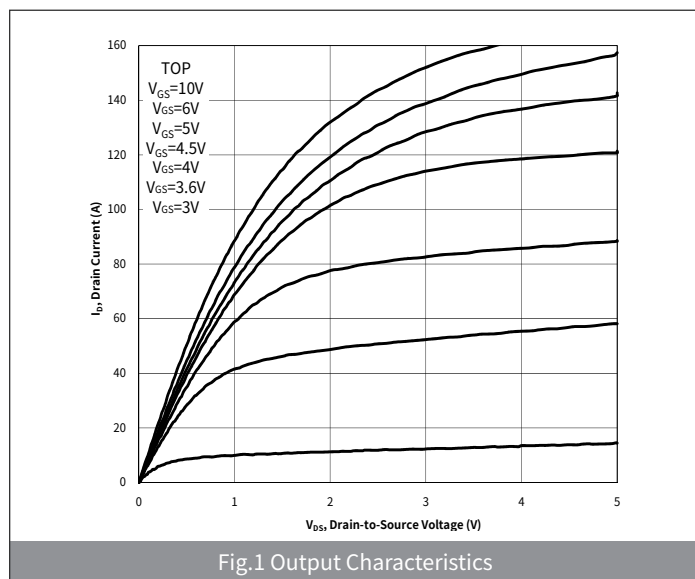
| PARAMETER           | SYMBOL       | Condition                                            | UNIT | Min | Typ  | Max |
|---------------------|--------------|------------------------------------------------------|------|-----|------|-----|
| Turn-on Delay Time  | $t_{D(on)}$  | $V_{GS}=10V, V_{DD}=50V, I_D=50A, R_{GEN}=4.7\Omega$ | nS   | —   | 9.5  | —   |
| Turn-on Rise Time   | $t_r$        |                                                      | nS   | —   | 19   | —   |
| Turn-off Delay Time | $t_{D(off)}$ |                                                      | nS   | —   | 37   | —   |
| Turn-off fall Time  | $t_f$        |                                                      | nS   | —   | 32   | —   |
| Total Gate Charge   | $Q_g$        | $V_{DS}=50V, I_D=50A, V_{GS}=10V$                    | nC   | —   | 32   | —   |
| Gate-Source Charge  | $Q_{gs}$     |                                                      | nC   | —   | 4.8  | —   |
| Gate-Drain Charge   | $Q_{gd}$     |                                                      | nC   | —   | 11.3 | —   |

● Drian-Source Diode Characteristics

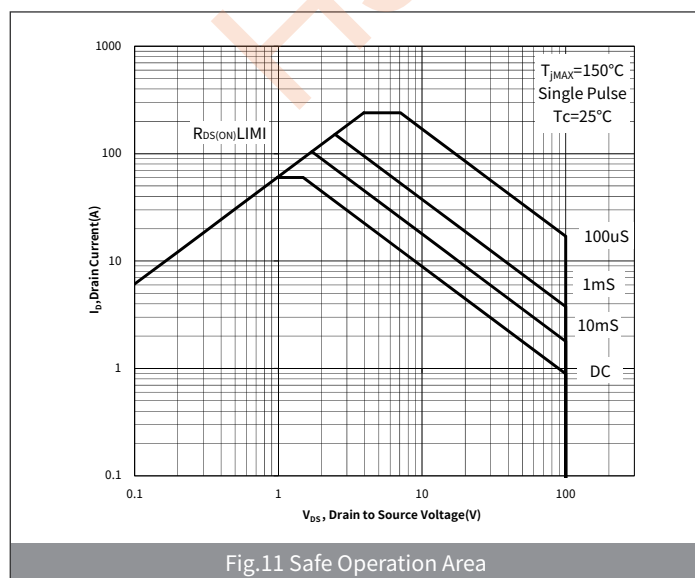
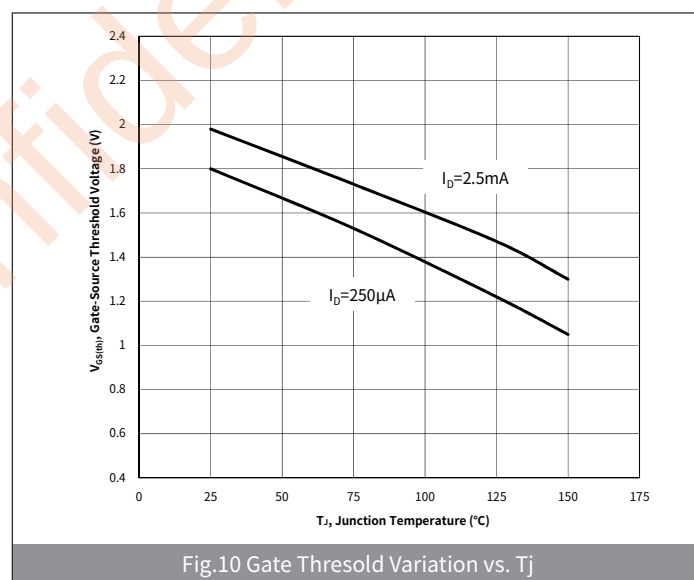
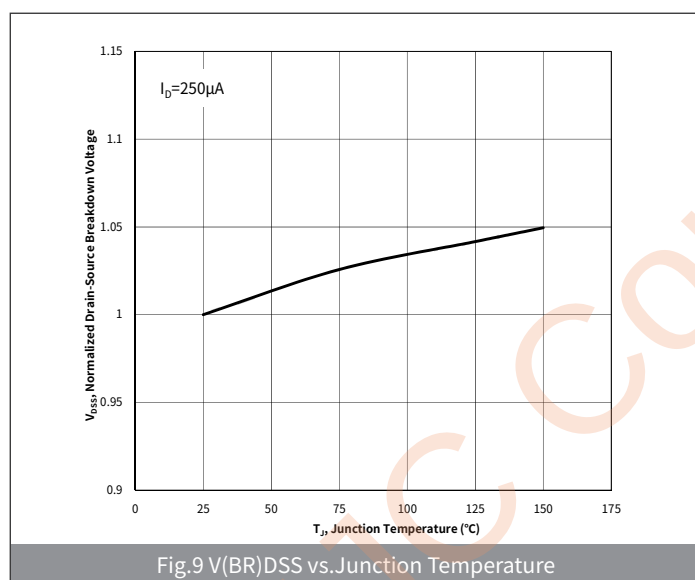
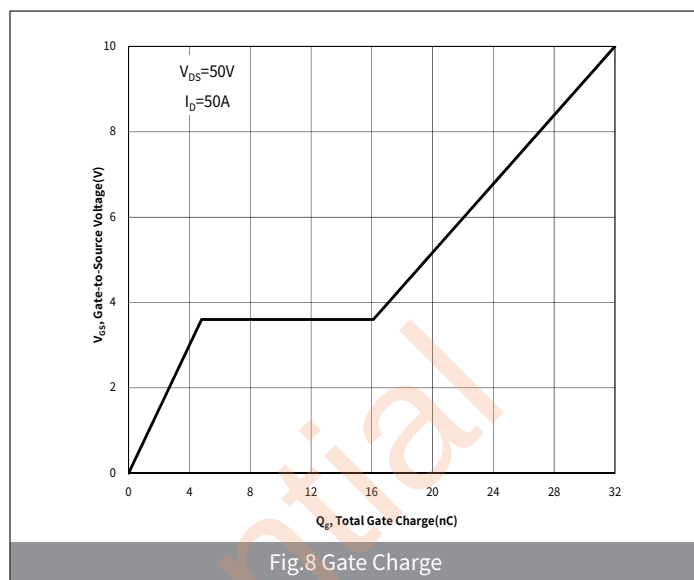
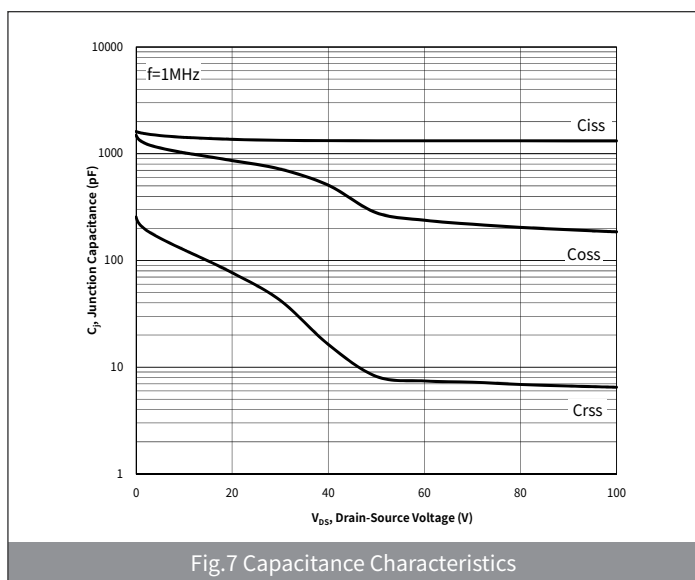
| PARAMETER                             | SYMBOL   | Condition                                | UNIT | Min | Typ | Max |
|---------------------------------------|----------|------------------------------------------|------|-----|-----|-----|
| Diode Forward Voltage                 | $V_{SD}$ | $I_S=60A, V_{GS}=0V$                     | V    | —   | —   | 1.2 |
| Maximum Body-Diode Continuous Current | $I_S$    | —                                        | A    | —   | —   | 60  |
| Reverse Recovery Time                 | $V_{rr}$ | $I_S=60A, di/dt=100A/us, T_J=25^\circ C$ | nS   | —   | 49  | —   |
| Reverse Recovery Charge               | $Q_{rr}$ |                                          | nC   | —   | 78  | —   |

Note :  
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.  
(2)EAS condition : Tj=25°C ,VDD=50V,VG=10V,L=0.3mH,IAS=34A,Rg=25Ω.  
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

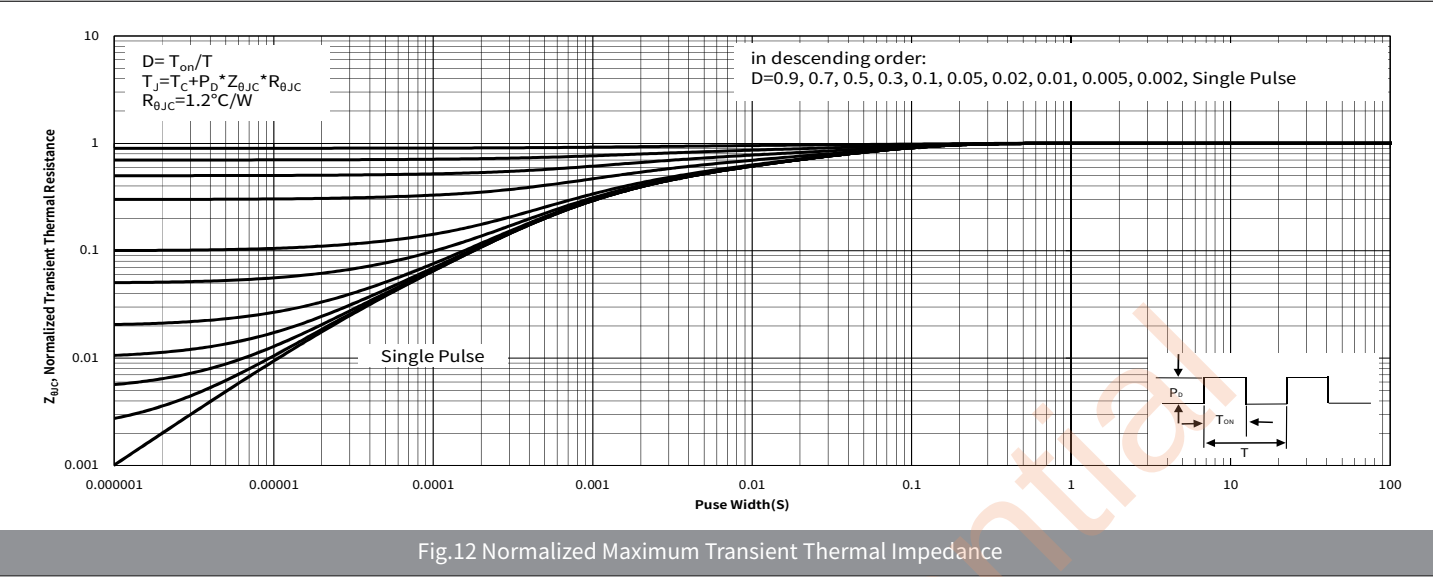
## ● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



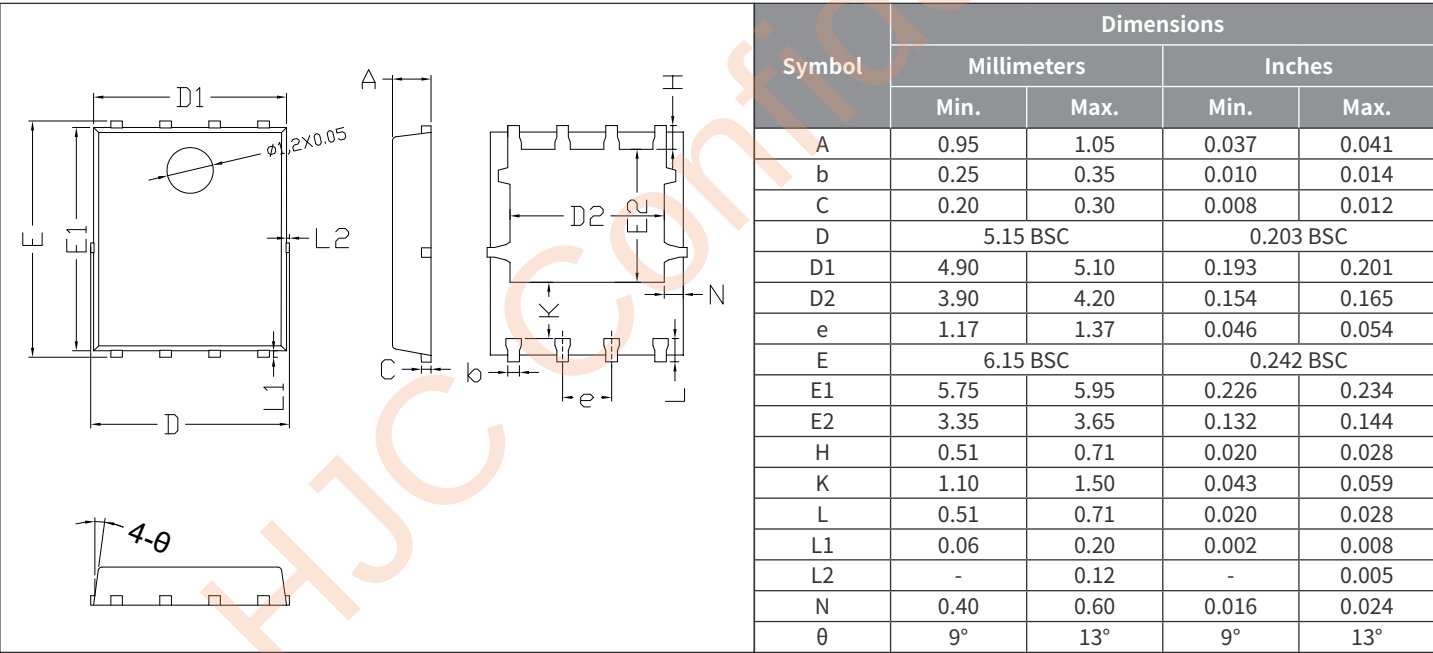
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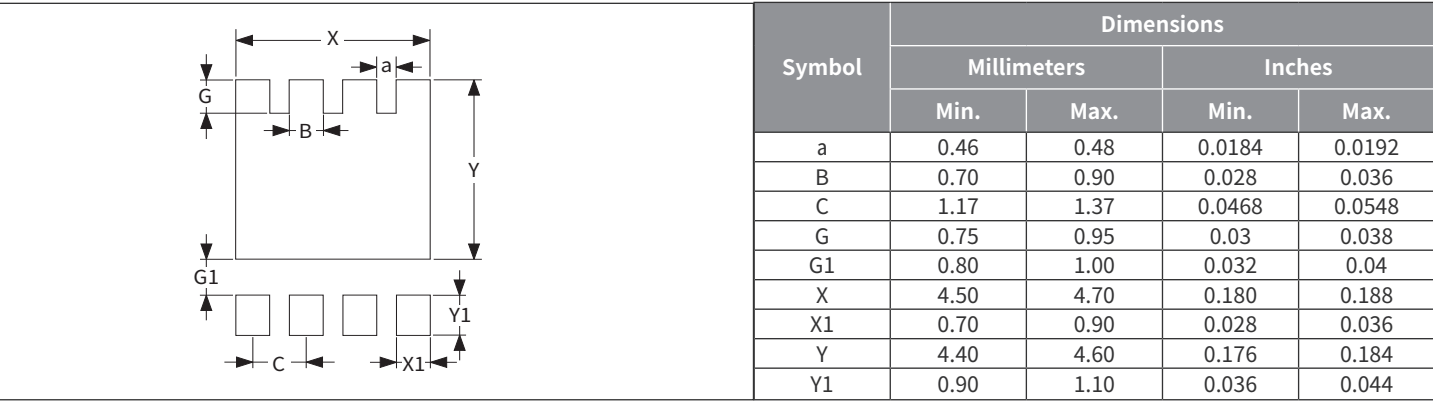
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Package Outline Dimensions (PDFN5060)



Suggested Pad Layout



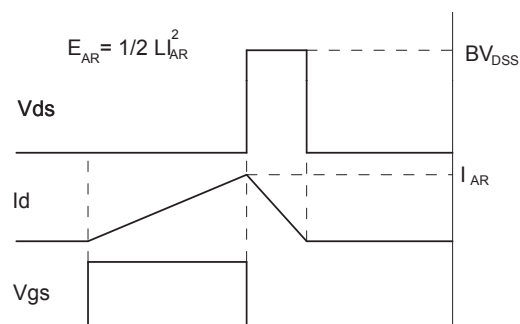
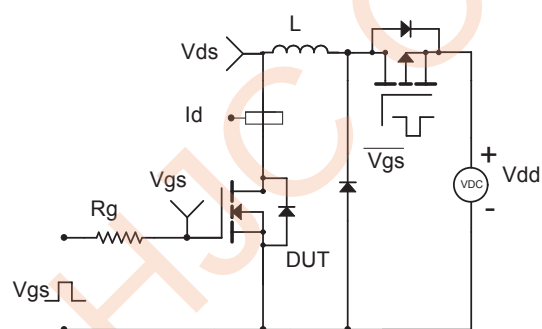
## 1. Gate Charge Test Circuit & Waveforms



## 2. Resistive Switching Test Circuit & Waveforms



## 3. Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



## 4. Diode Recovery Test Circuit & Waveforms

