

PDFN5060 Plastic-Encapsulate MOSFETS

Features

- VDS=40V
- ID=40A
- RDS(on)@VGS=10V < 7.5mΩ
- RDS(on)@VGS=4.5V < 12mΩ
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- Fast Switching Speedze

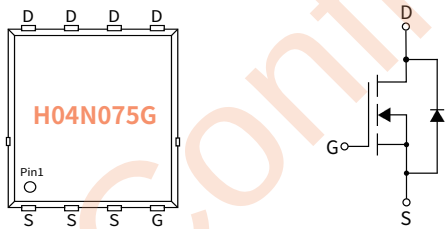
Applications

- Power switching application
- PWM Application
- DC-DC Converter

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
40 V
Drain Current
40 Ampere

PDFN5060



Ordering Information

Table with 7 columns: PACKAGE, PACKAGE CODE, UNIT WEIGHT(g), REEL(pcs), BOX(pcs), CARTON(pcs), DELIVERY MODE. Row 1: PDFN5060, R3, 0.09, 5000, 10000, 80000, 13"

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

Table with 4 columns: PARAMETER, SYMBOL, UNIT, VALUE. Rows include: Drain-source Voltage (VDS, V, 40), Gate-source Voltage (VGS, V, ±20), Drain Current (ID, A, 40), Pulsed Drain Current (IDM, A, 160), Total Power Dissipation (PD, W, 34), Single pulse avalanche energy (EAS, mJ, 39), Junction temperature (TJ, °C, -55 ~+150), Storage temperature (Tstg, °C, -55 ~+150), Thermal Resistance Junction-to-Case (RθJC, °C / W, 3.7).

● 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	40	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	μA	—	—	1.0
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	nA	—	—	± 100
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	V	1.0	1.5	2.5
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	m Ω	—	6.0	7.5
	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=10A$		—	8.5	12

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$	pF	—	623	—
Output Capacitance	C_{oss}			—	311	—
Reverse Transfer Capacitance	C_{rss}			—	21	—

● Switching Parameters

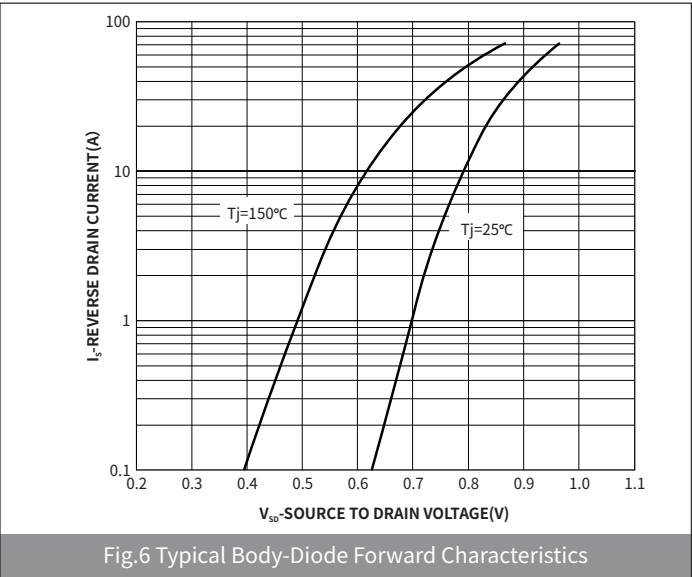
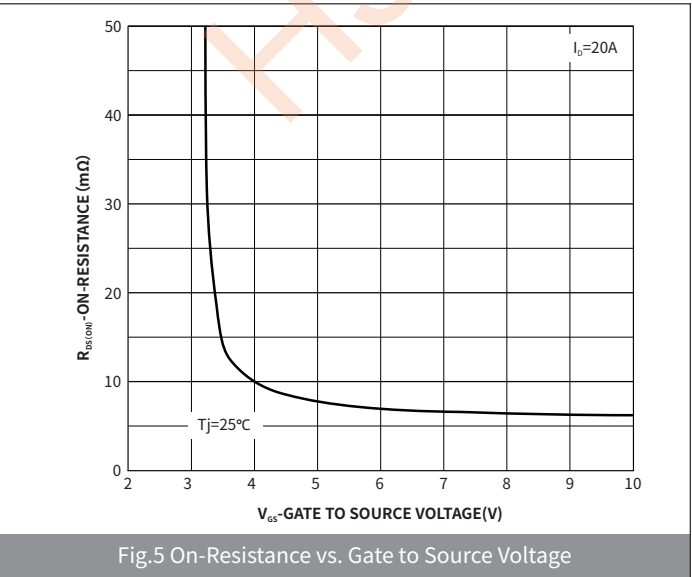
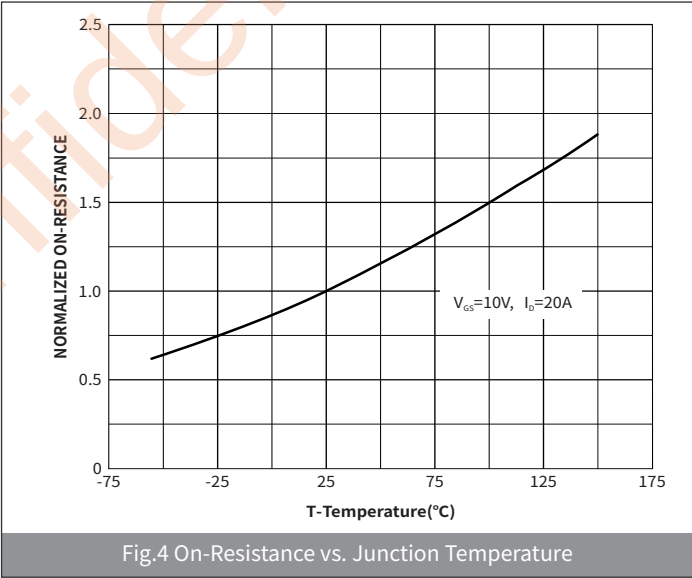
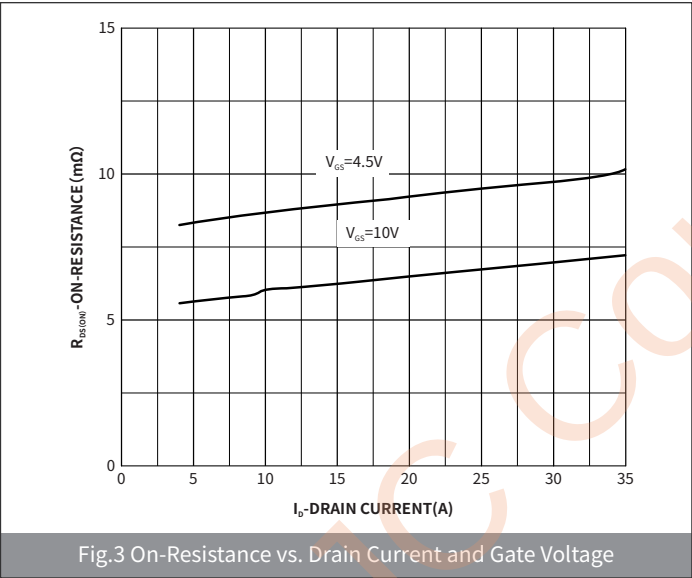
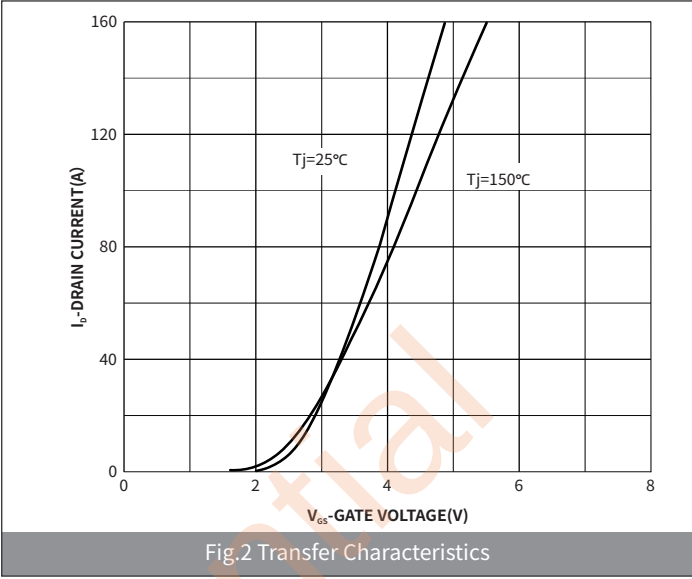
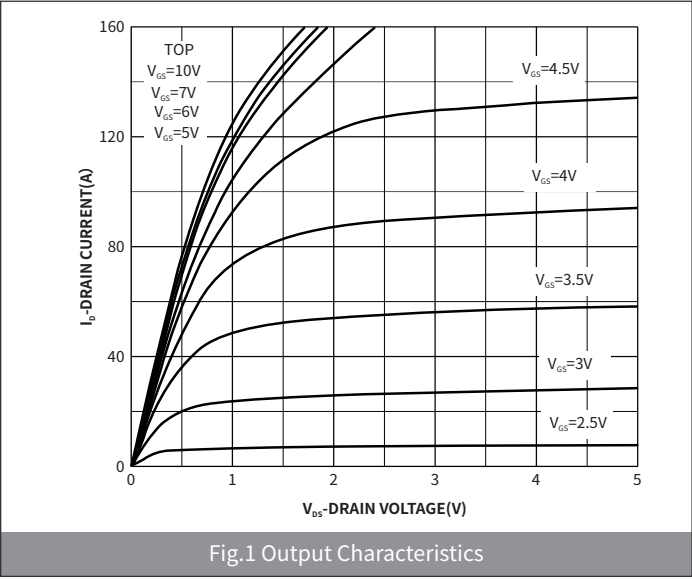
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=20V, I_D=20A, R_{GEN}=1.6\Omega$	nS	—	7	—
Turn-on Rise Time	t_r		nS	—	2.5	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	21	—
Turn-off fall Time	t_f		nS	—	3.5	—
Total Gate Charge	Q_g	$V_{DS}=20V, I_D=20A, V_{GS}=10V$	nC	—	21	—
Gate-Source Charge	Q_{gs}		nC	—	4	—
Gate-Drain Charge	Q_{gd}		nC	—	5	—

● Drian-Source Diode Characteristics

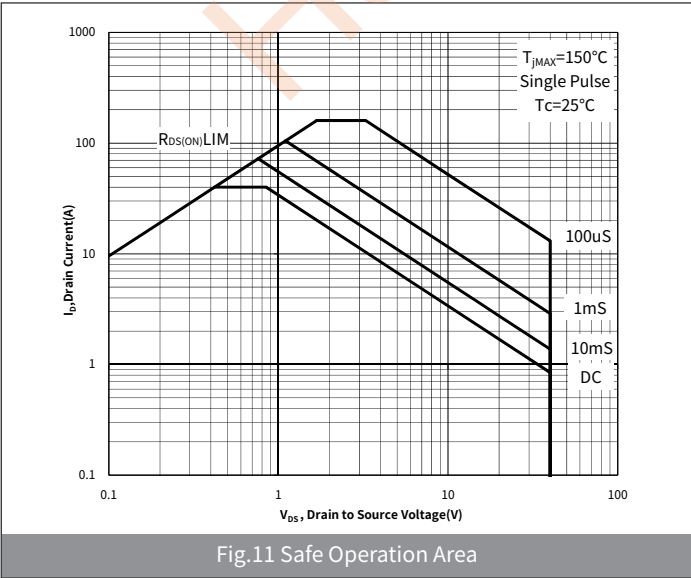
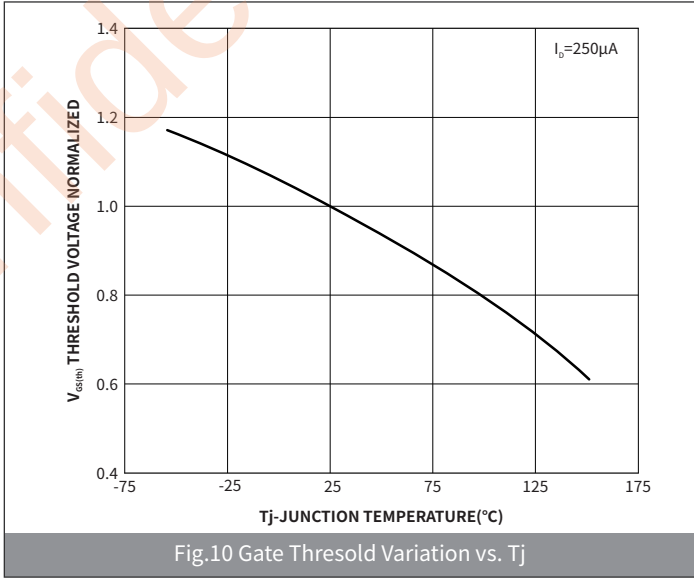
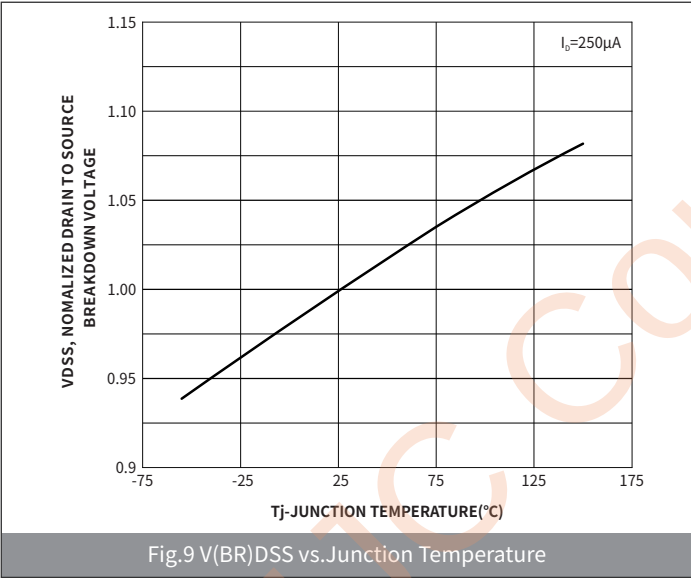
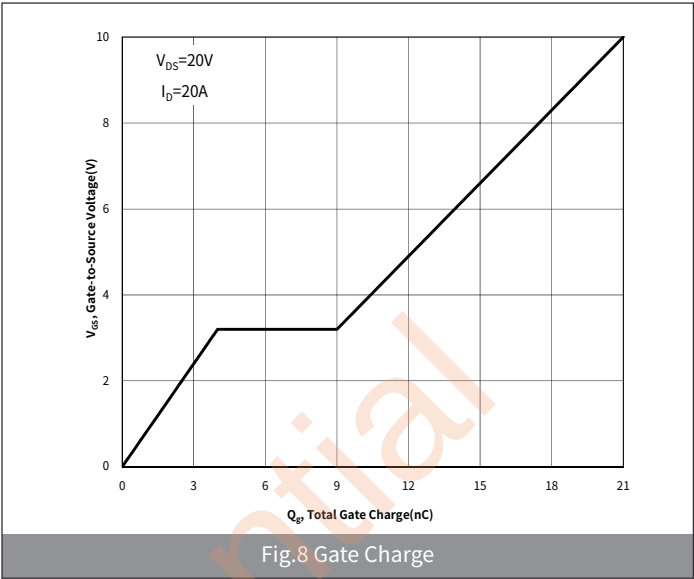
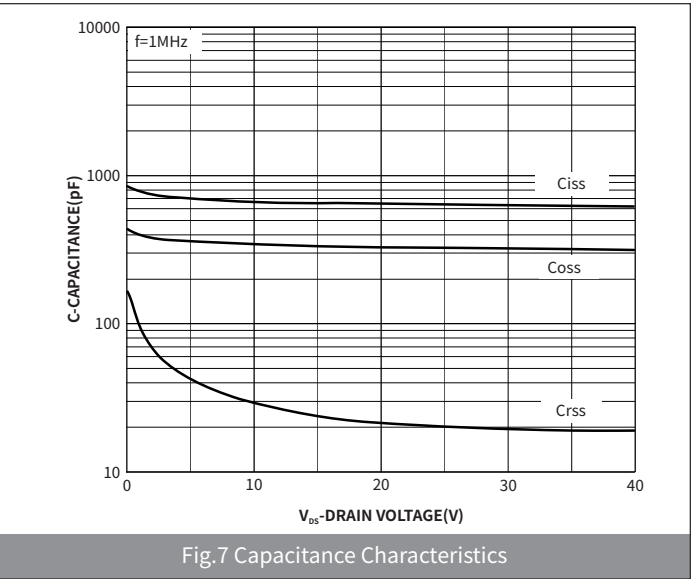
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=40, V_{GS}=0V$	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	40
Reverse Recovery Time	T_{rr}	$I_S=40A, di/dt=100A/us, T_J=25^\circ C$	nS	—	28	—
Reverse Recovery Charge	Q_{rr}		nC	—	16	—

Note :
(1) Repetitive Rating: Pulse width limited by maximum junction temperature.
(2) EAS condition : Tj=25°C ,VDD=20V,VG=10V,L=0.5mH,IAS=12.6A,Rg=25Ω.
(3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

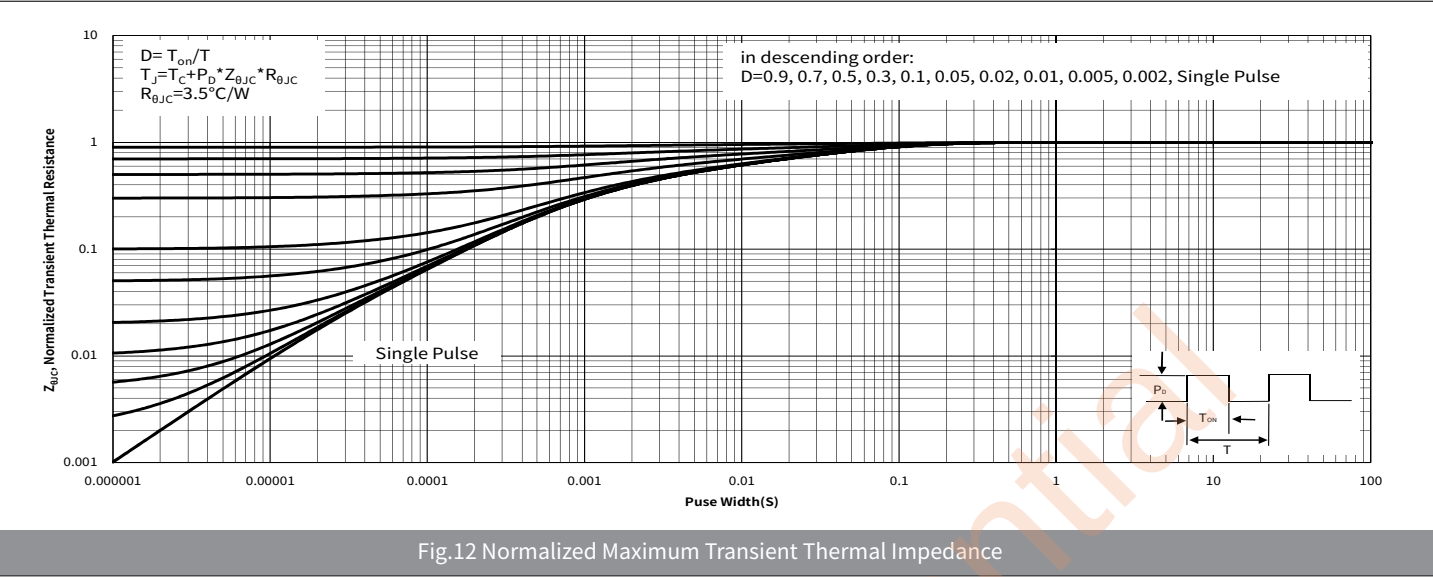
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



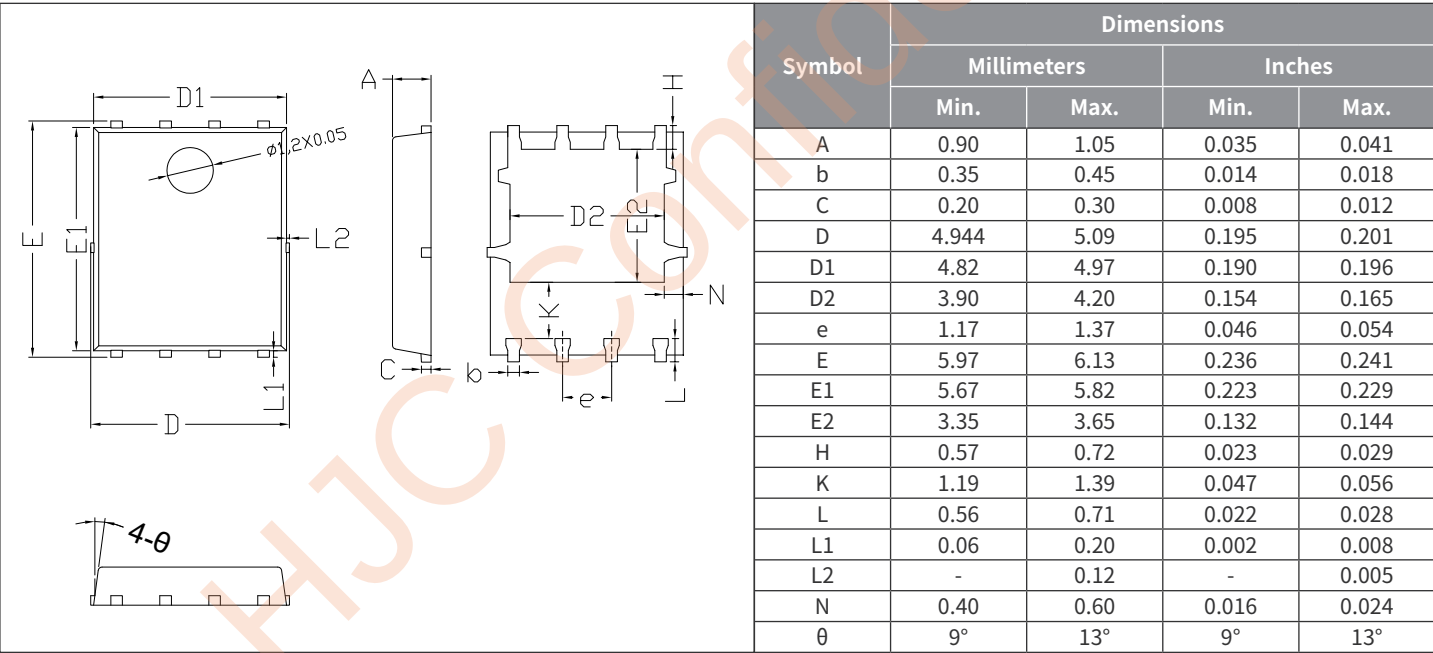
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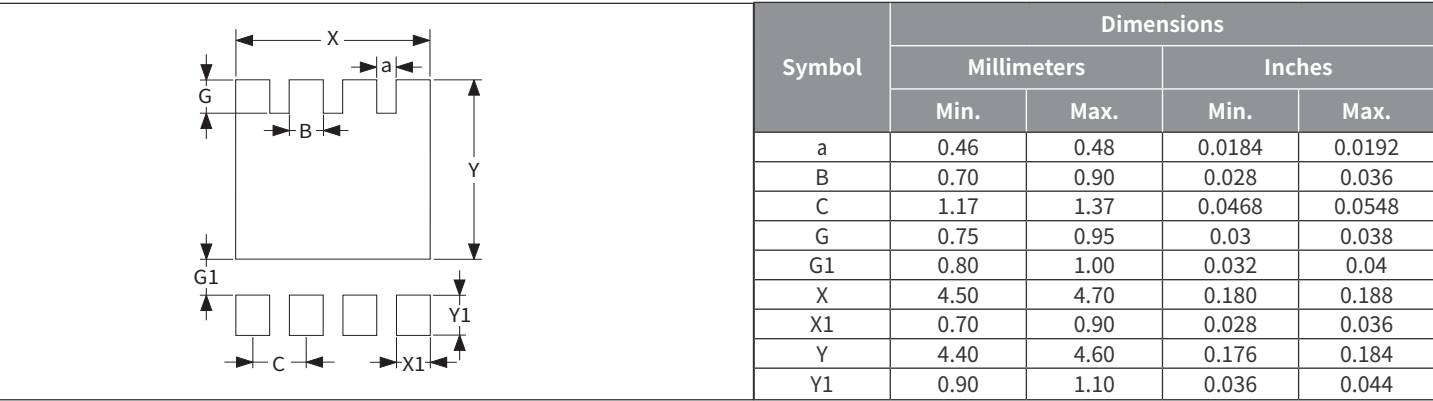
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Package Outline Dimensions (PDFN5060)



Suggested Pad Layout



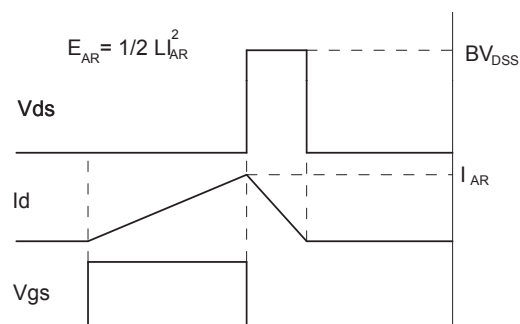
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

