

PDFN5060 Plastic-Encapsulate MOSFETS

Features

- VDS=-60V
- ID=-110A
- RDS(on)@VGS=-10V < 7.4mΩ
- RDS(on)@VGS=-4.5V < 10mΩ
- High density cell design for ultra low Rdson
- Advanced Split Gate Trench Technology
- Fast Switching Speedze

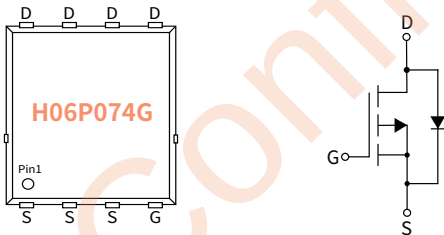
Applications

- Power switching application
- Hard switched and high frequency circuits
- 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
-60 V
Drain Current
-110 Ampere



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, -60), Gate-source Voltage (VGS, V, ±20), Drain Current (ID, A, -110), Pulsed Drain Current (IDM, A, -440), Total Power Dissipation (PD, W, 118), Single pulse avalanche energy (EAS, mJ, 529), Junction temperature (TJ, °C, -55 ~+150), Storage temperature (Tstg, °C, -55 ~+150), Thermal Resistance Junction-to-Case (RθJC, °C / W, 1.06).

● 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	-60	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	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	-2.0	-3.0
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-30A$	m Ω	—	5.5	7.4
	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-30A$		—	7.5	10

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$	pF	—	6185	—
Output Capacitance	C_{oss}			—	1132	—
Reverse Transfer Capacitance	C_{rss}			—	81	—

● Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-30V, I_D=-40A, R_{GEN}=2.6\Omega$	nS	—	15	—
Turn-on Rise Time	t_r		nS	—	52	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	135	—
Turn-off fall Time	t_f		nS	—	168	—
Total Gate Charge	Q_g	$V_{DS}=-30V, I_D=-40A, V_{GS}=-10V$	nC	—	82	—
Gate-Source Charge	Q_{gs}		nC	—	26	—
Gate-Drain Charge	Q_{gd}		nC	—	18	—

● Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=-110, V_{GS}=0V$	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	-110
Reverse Recovery Time	T_{rr}	$I_S=-110A, di/dt=200A/us, T_J=25^\circ C$	nS	—	65	—
Reverse Recovery Charge	Q_{rr}		nC	—	238	—

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=-30V,VG=-10V,L=0.5mH,IAS=-46A,Rg=25Ω .
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

● **Ratings And Characteristics Curves** ($T_a=25^\circ\text{C}$ Unless otherwise specified)

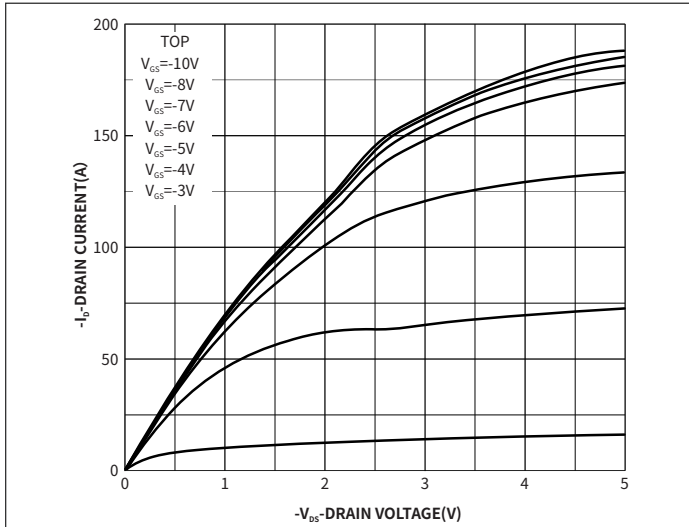


Fig.1 Output Characteristics

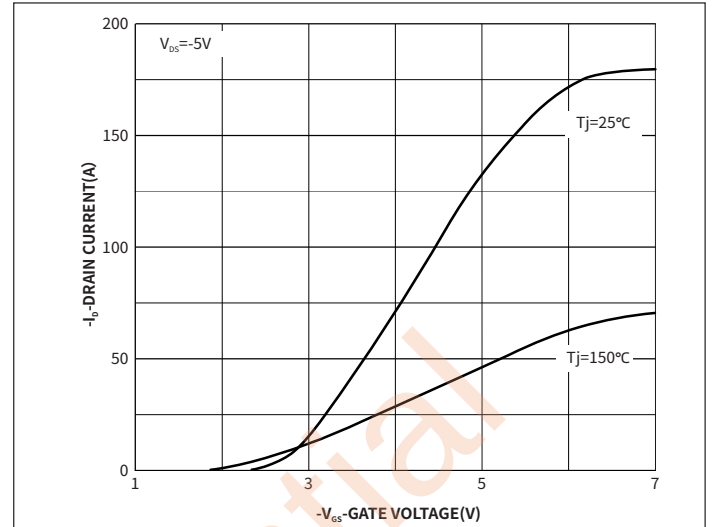


Fig.2 Transfer Characteristics

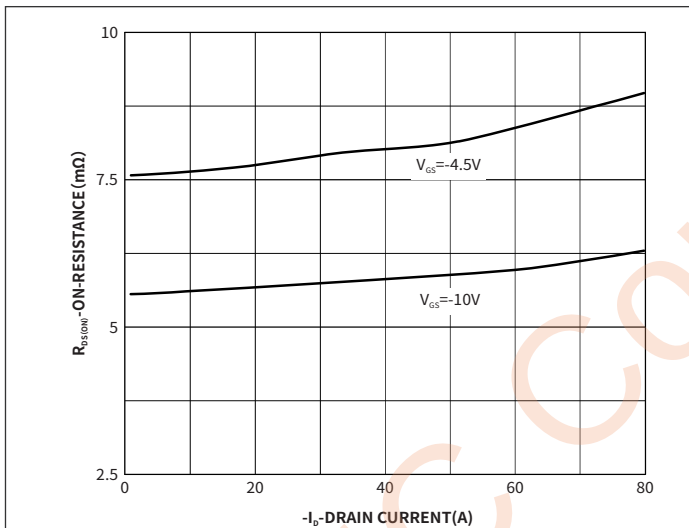


Fig.3 On-Resistance vs. Drain Current and Gate Voltage

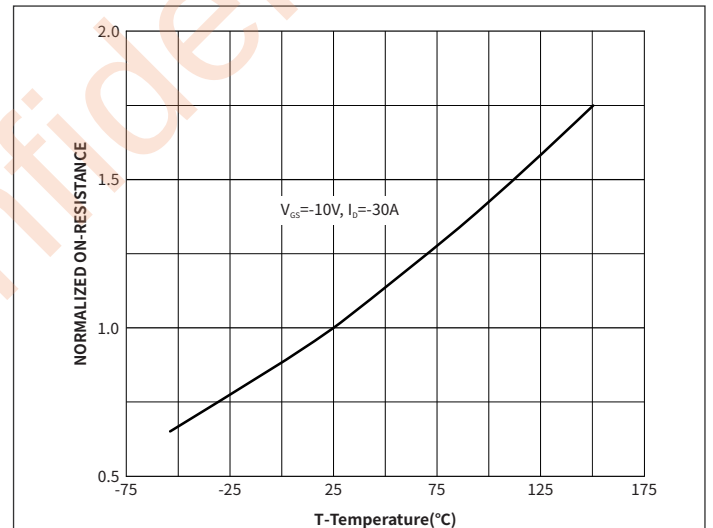


Fig.4 On-Resistance vs. Junction Temperature

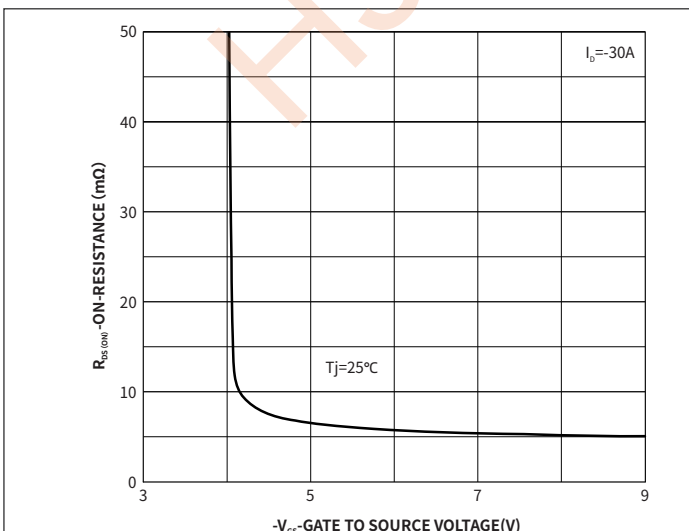


Fig.5 On-Resistance vs. Gate to Source Voltage

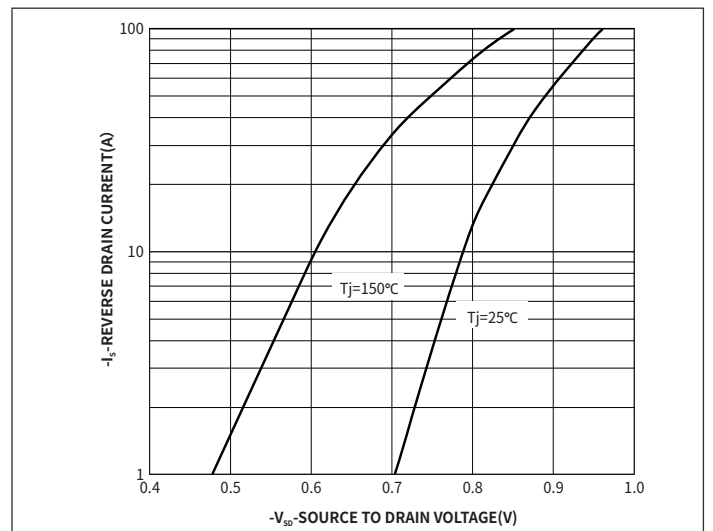
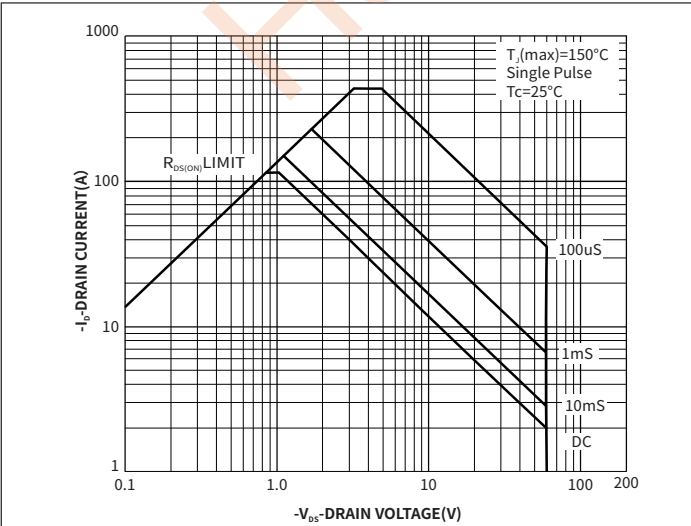
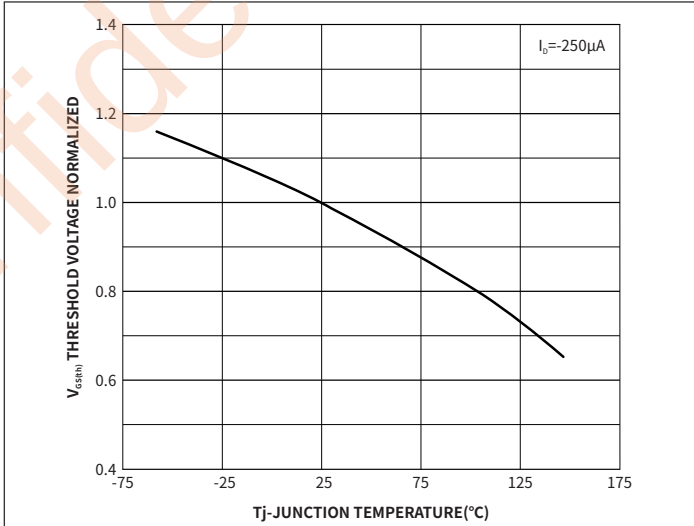
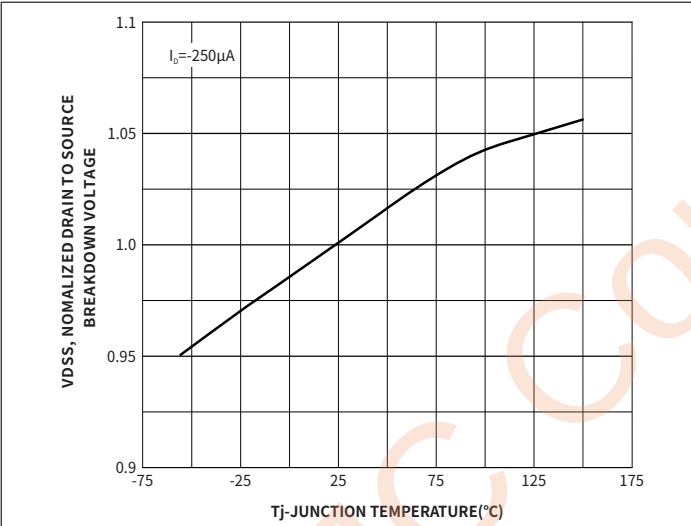
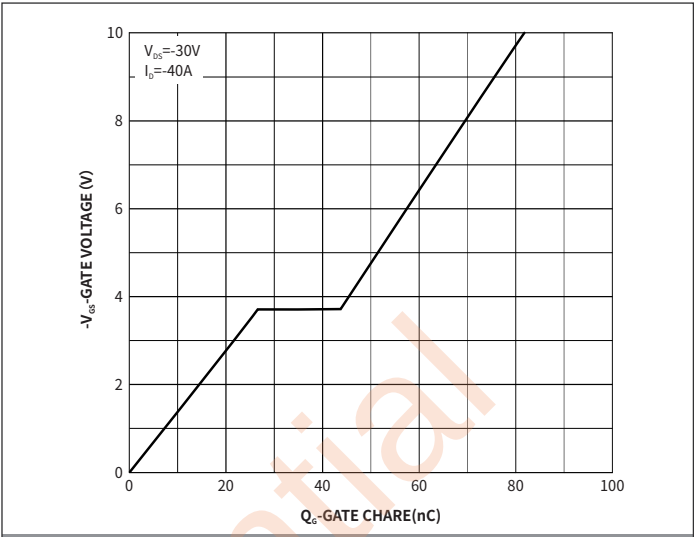
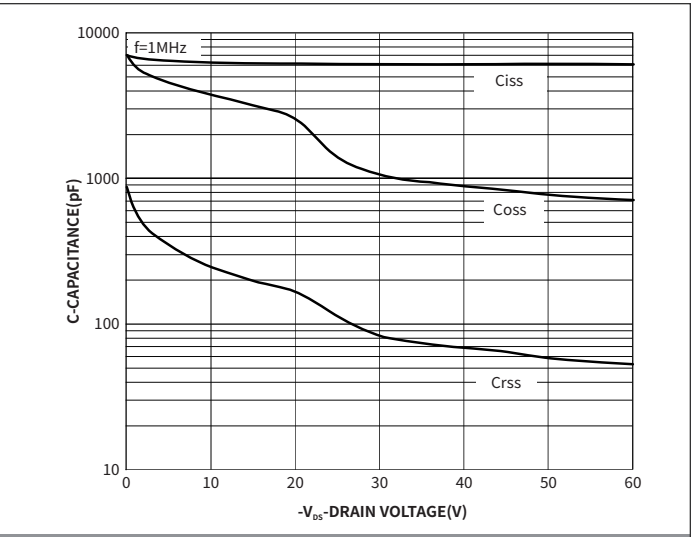


Fig.6 Typical Body-Diode Forward Characteristics

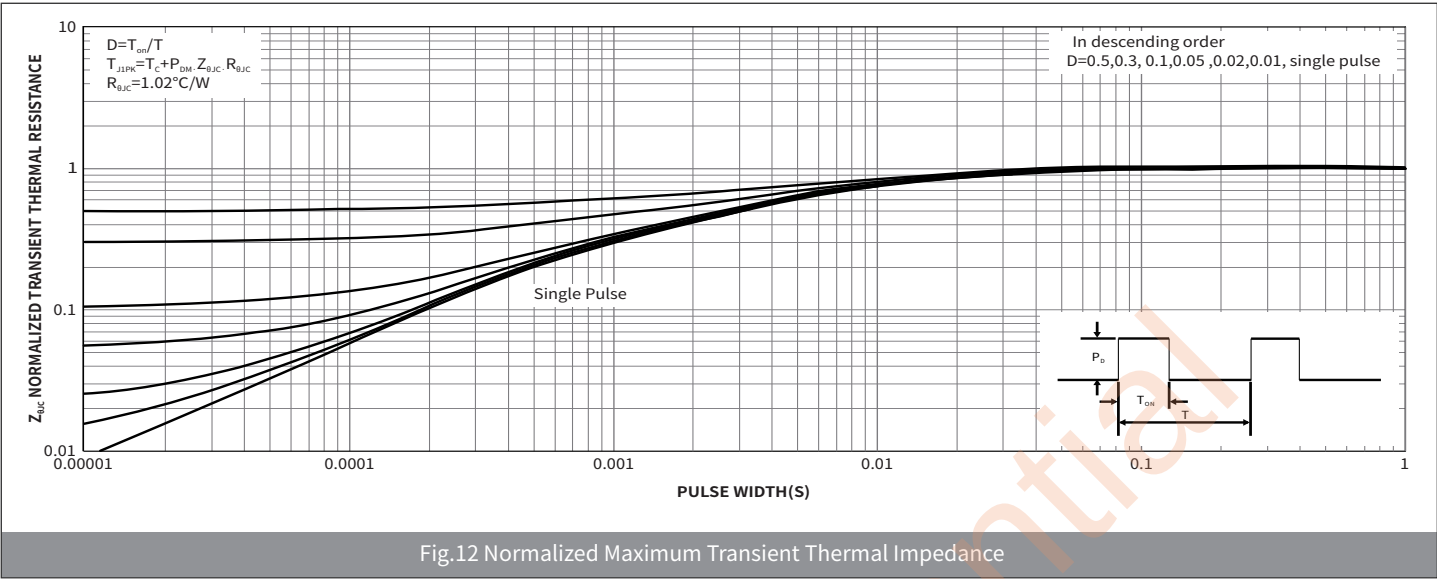
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



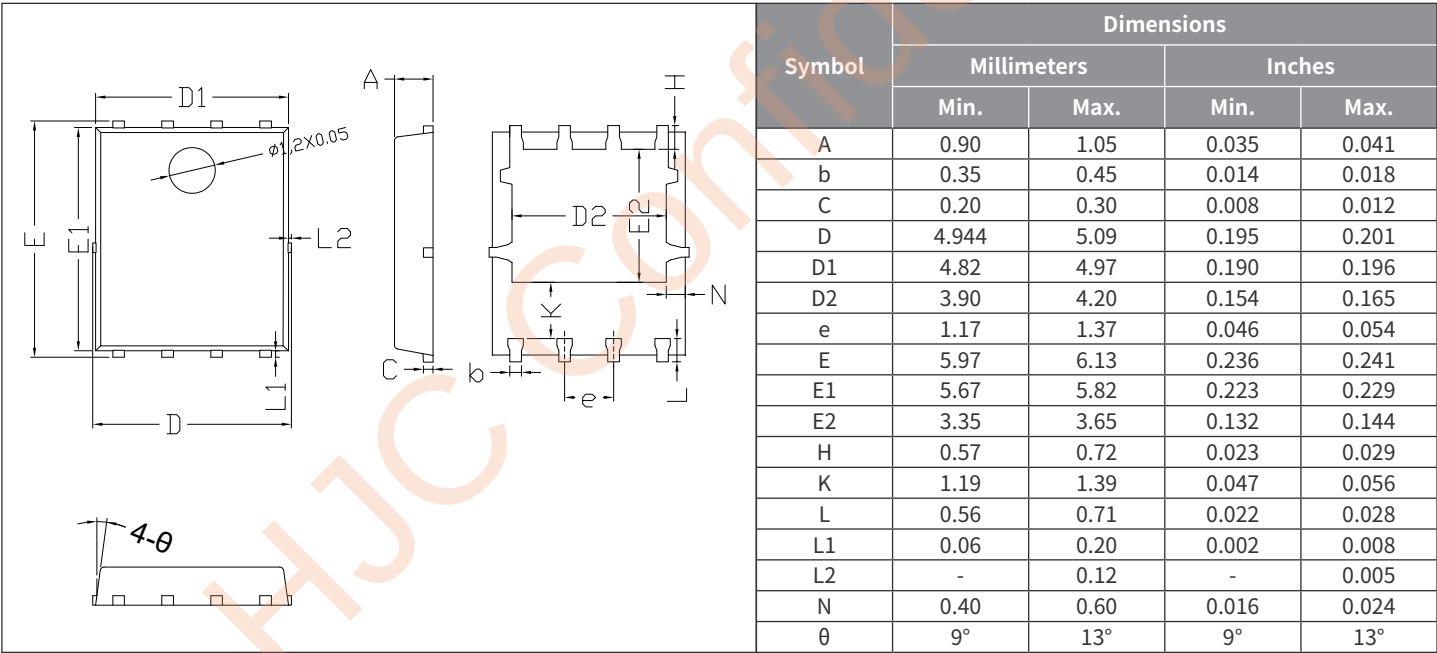
HD506P074SG

P-CHANNEL MOSFET

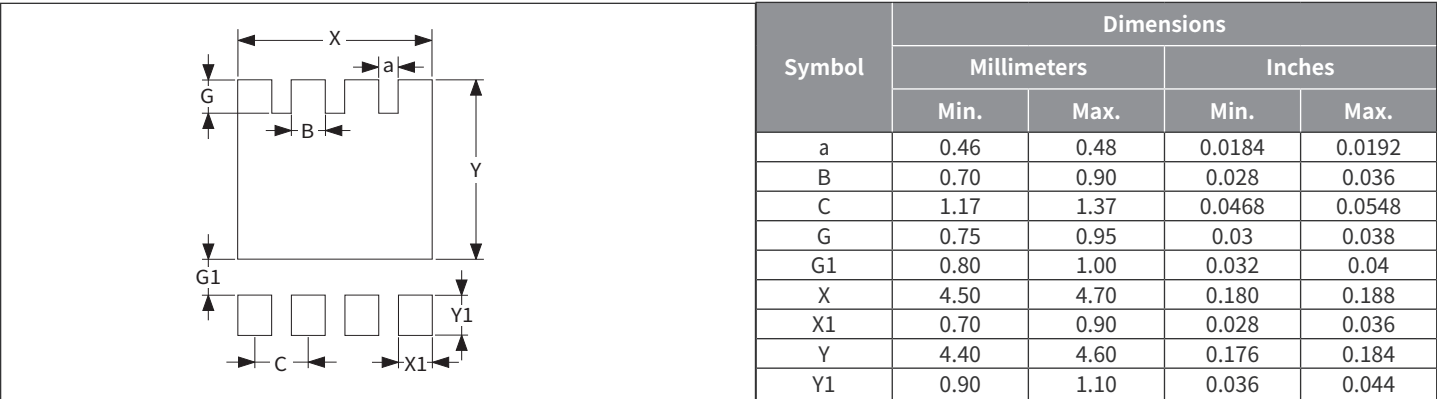
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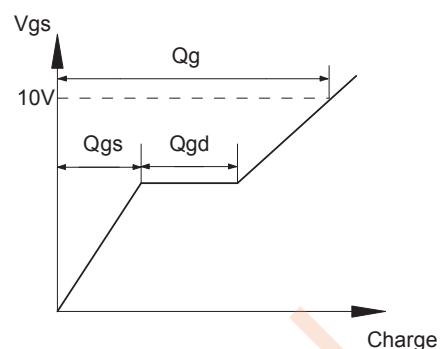
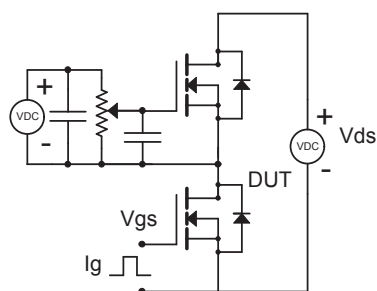
● Package Outline Dimensions (PDFN5060)



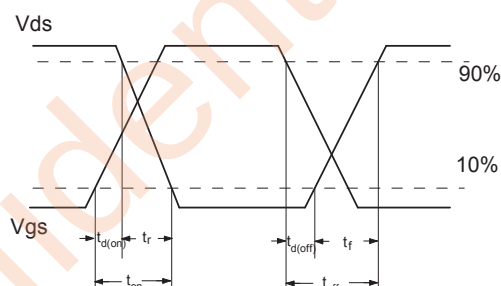
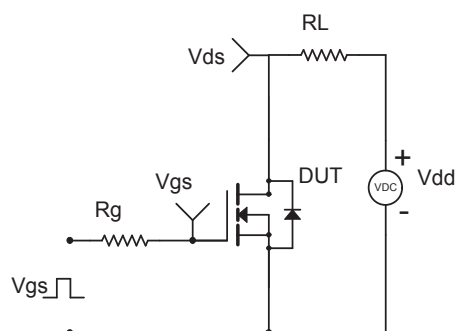
● Suggested Pad Layout



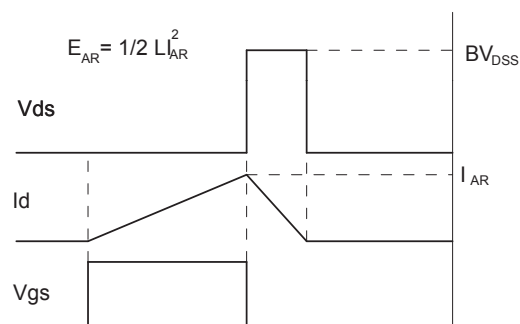
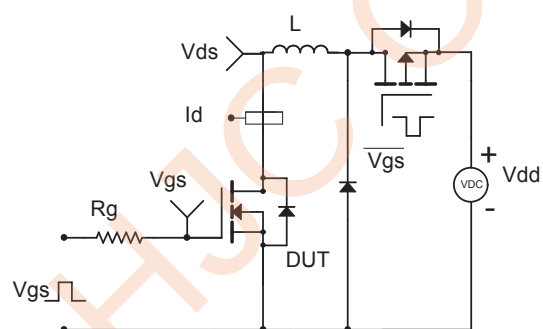
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

