

PDFN5060 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=30V$
- $I_D=85A$
- $R_{DS(on)}@V_{GS}=10V < 5m\Omega$
- $R_{DS(on)}@V_{GS}=4.5V < 7m\Omega$
- High density cell design for ultra low Rdson
- Voltage controlled small signal switch
- Fast Switching Speedze

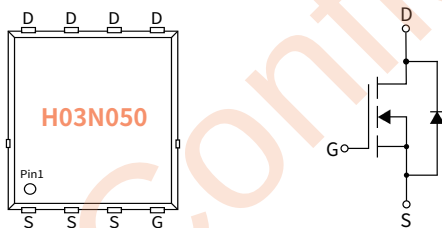
Applications

- Motor Control
- DC-DC Converters

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
30 V

Drain Current
85 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	V_{DS}	V	30
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	85
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	340
Total Power Dissipation	P_D	W	48
Single pulse avalanche energy ⁽²⁾	EAS	mJ	121
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	2.6

● 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	30	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	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	—	3.5	5
	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=10A$		—	5	7

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	pF	—	2650	—
Output Capacitance	C_{oss}			—	345	—
Reverse Transfer Capacitance	C_{rss}			—	305	—

● Switching Parameters

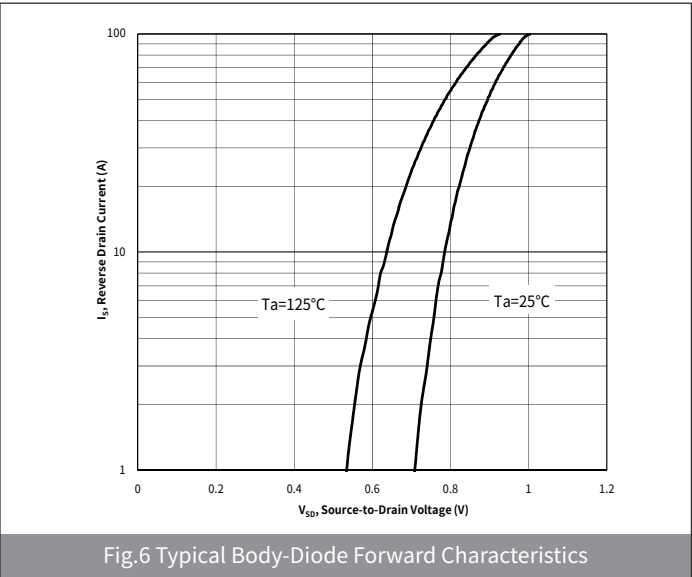
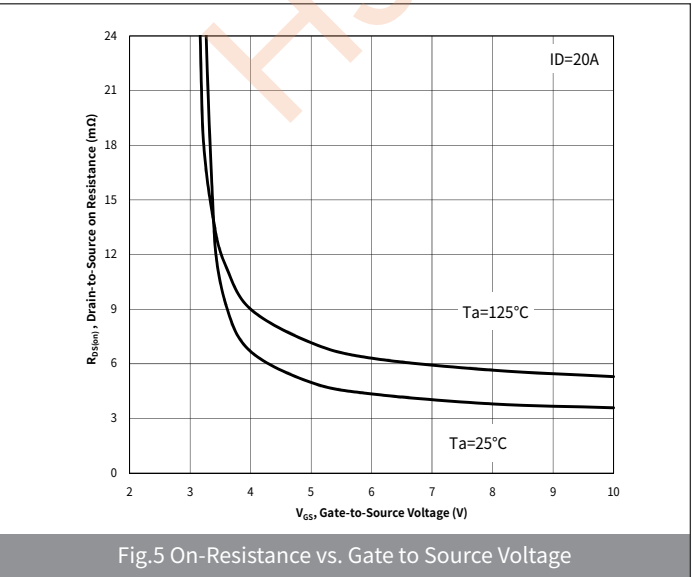
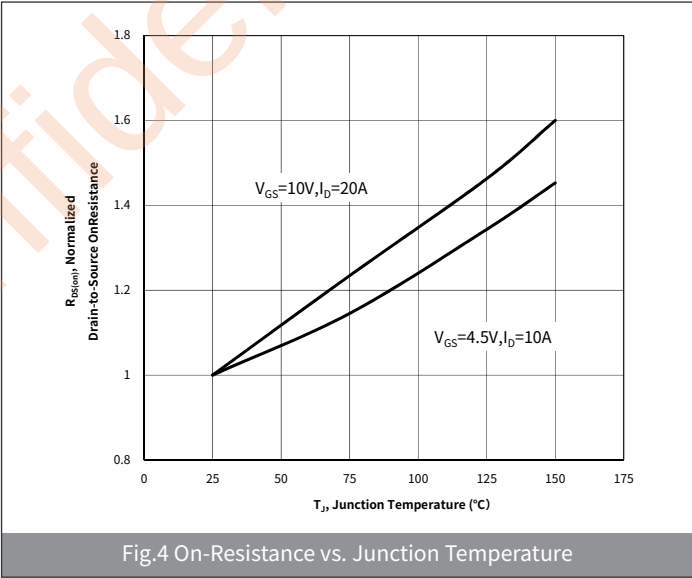
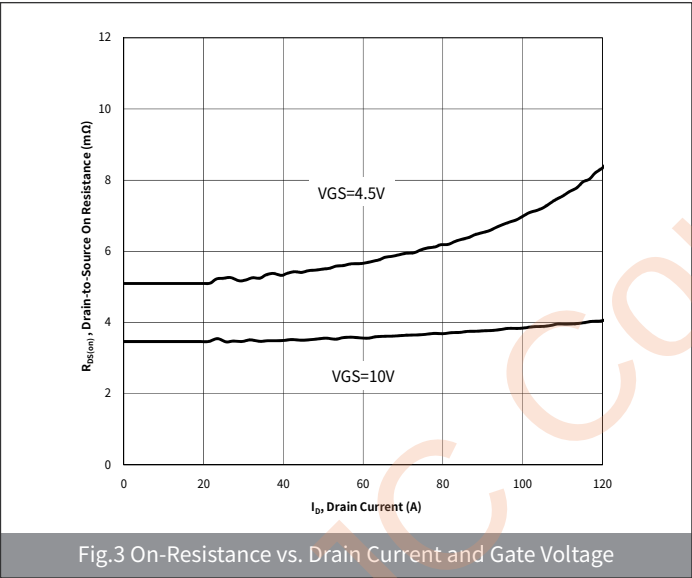
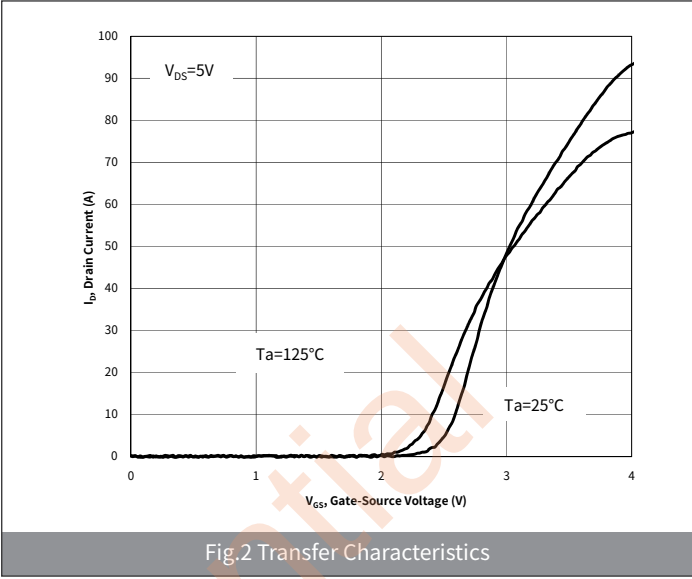
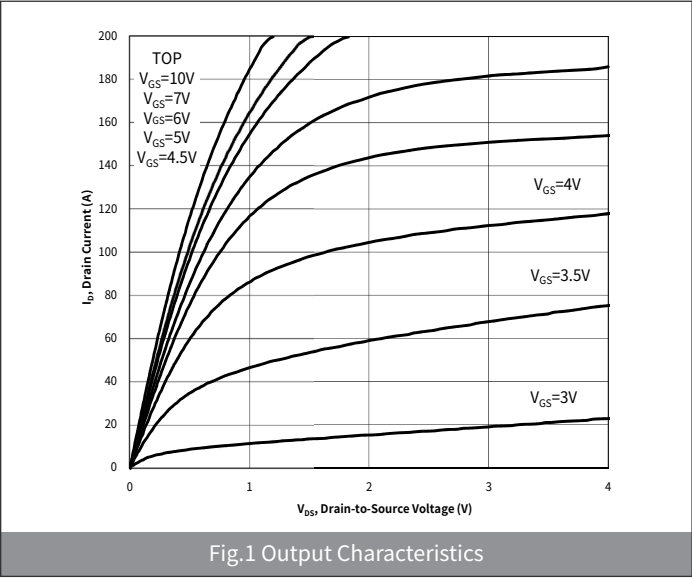
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=15V, I_D=20A, R_{GEN}=3\Omega$	nS	—	12	—
Turn-on Rise Time	t_r		nS	—	15	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	40	—
Turn-off fall Time	t_f		nS	—	14	—
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=30A, V_{GS}=10V$	nC	—	60	—
Gate-Source Charge	Q_{gs}		nC	—	8.2	—
Gate-Drain Charge	Q_{gd}		nC	—	7.4	—

● Drian-Source Diode Characteristics

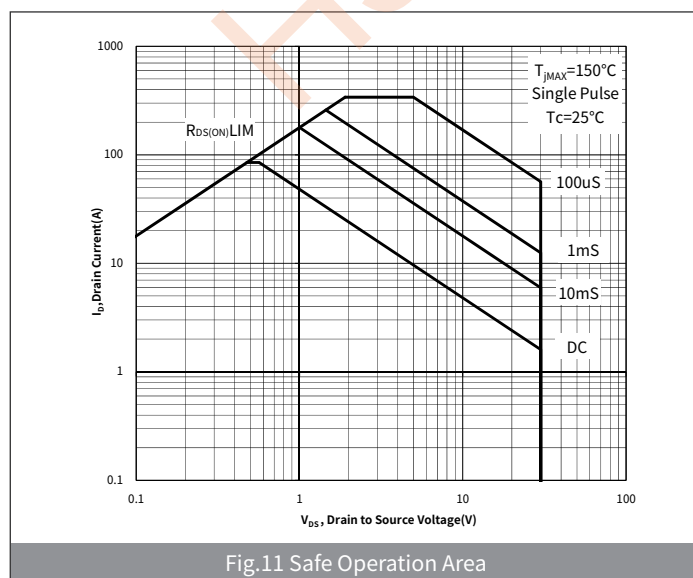
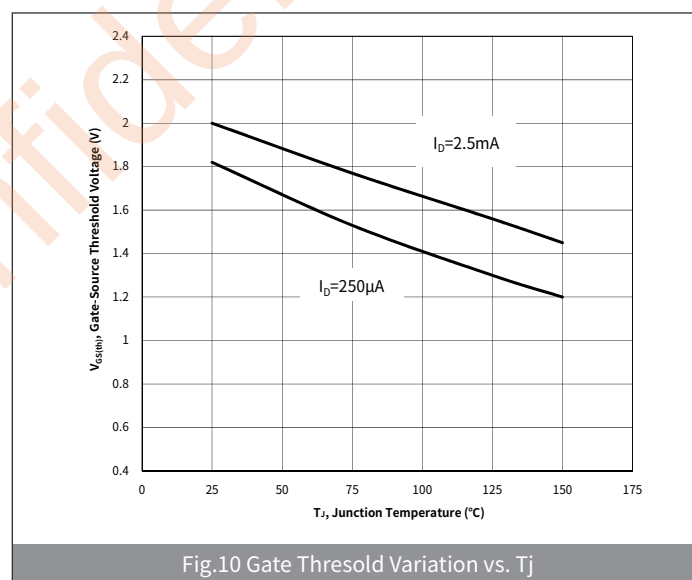
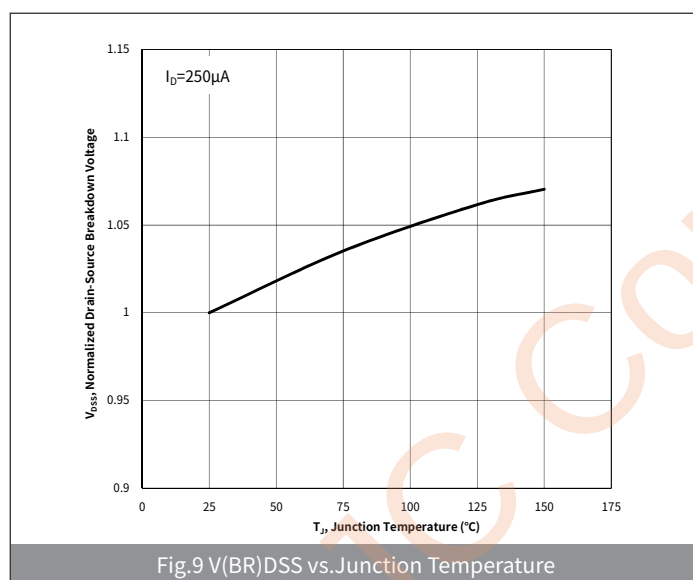
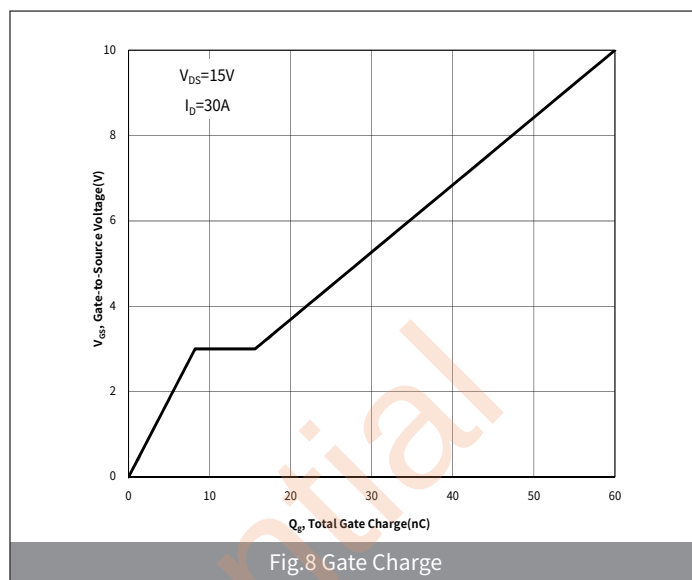
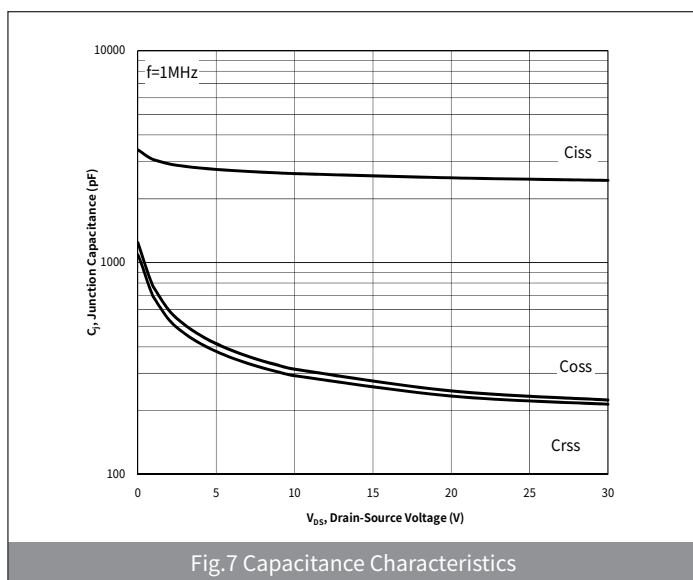
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=85A, V_{GS}=0V$	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	85
Reverse Recovery Time	V_{rr}	$I_S=85A, di/dt=100A/us, T_J=25^\circ C$	nS	—	11	—
Reverse Recovery Charge	Q_{rr}		nC	—	3	—

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=15V,VG=10V,L=0.5mH,IAS=22A,Rg=25Ω.
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

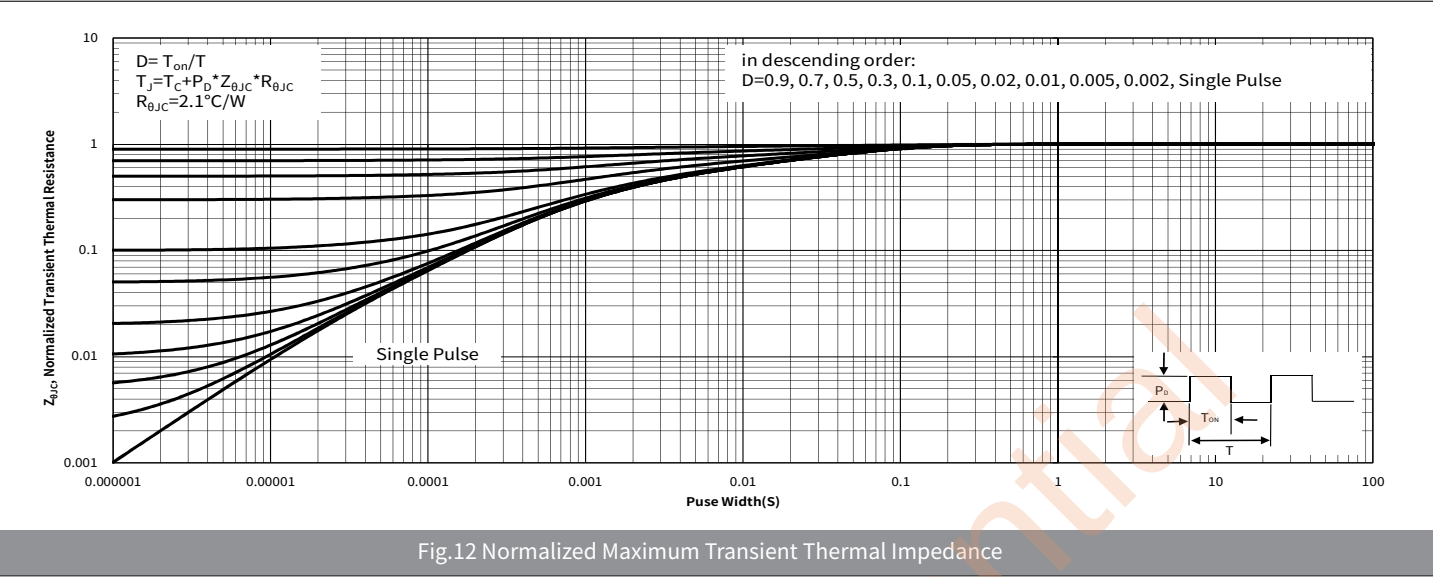
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



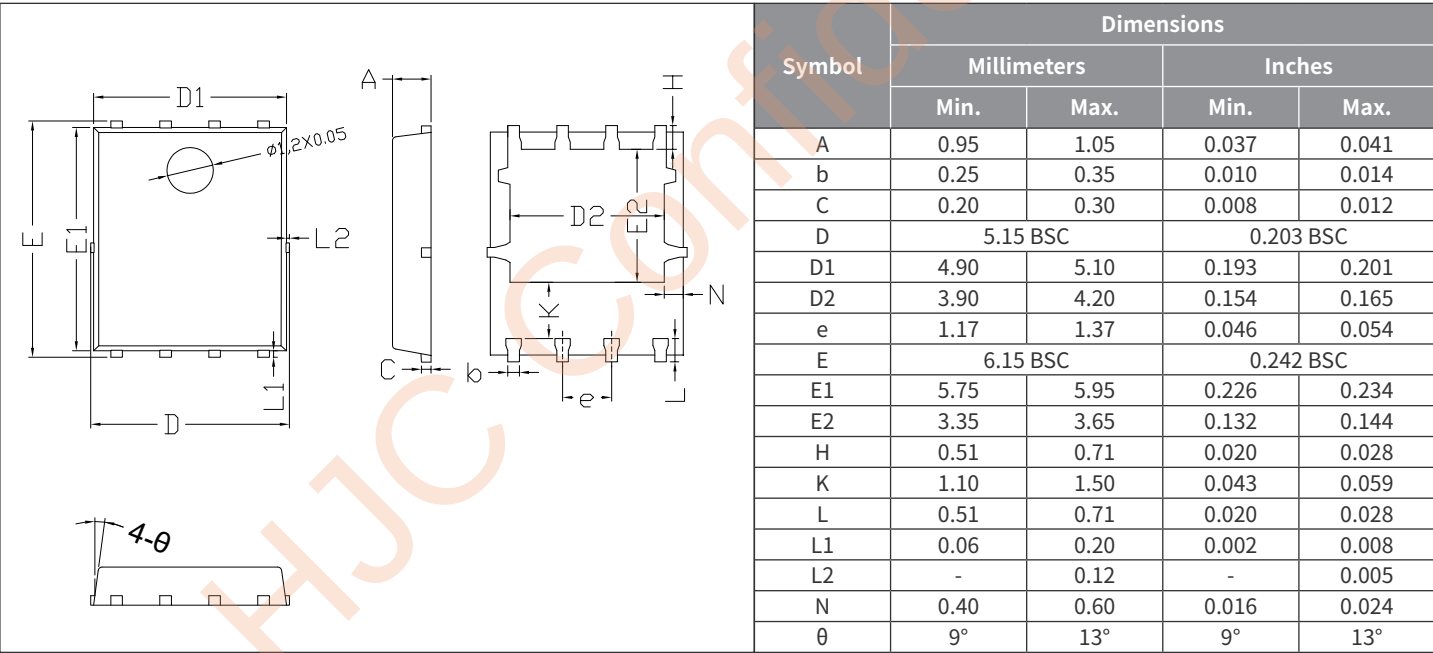
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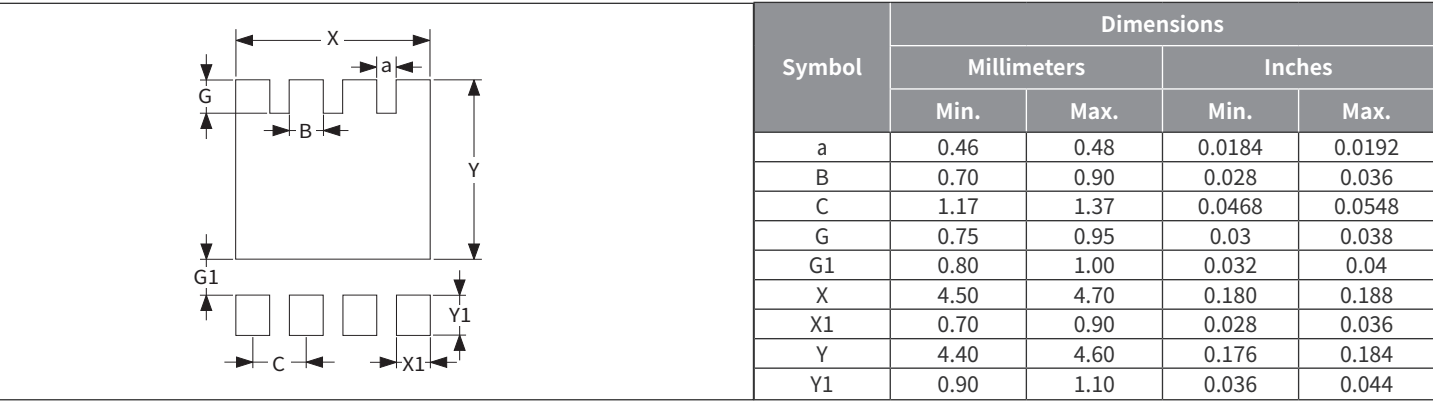
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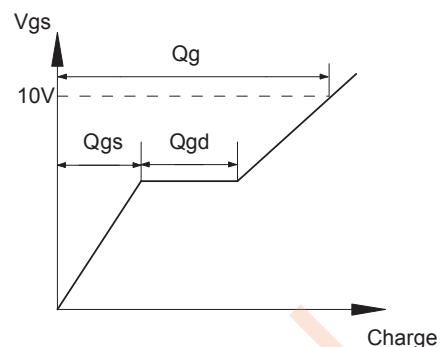
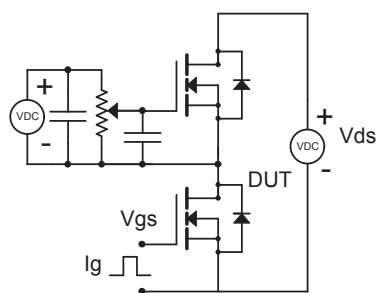
● Package Outline Dimensions (PDFN5060)



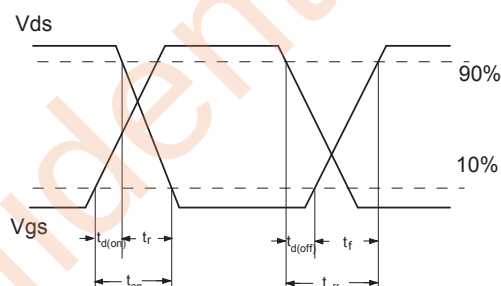
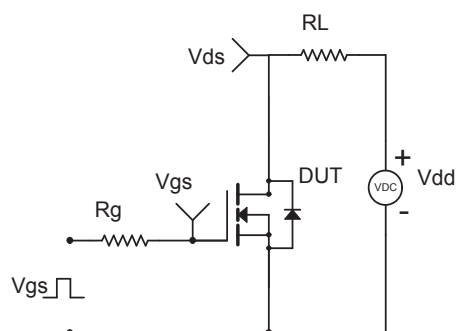
● Suggested Pad Layout



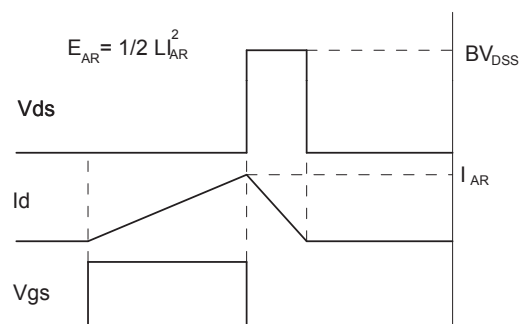
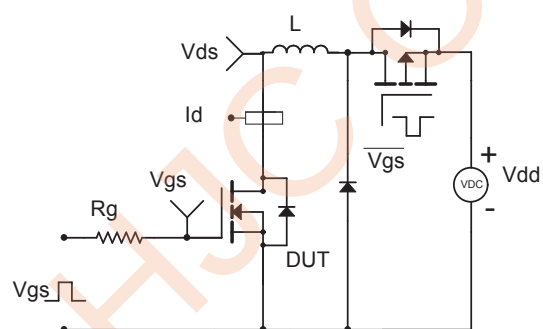
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

