

PDFN3030 Plastic-Encapsulate MOSFETS

Features

- VDS=40V
- ID=48A
- RDS(on)@VGS=10V < 6.5mΩ
- RDS(on)@VGS=4.5V < 8mΩ
- Trench Power LV MOSFET technology
- Voltage controlled small signal switch
- Fast Switching Speedze

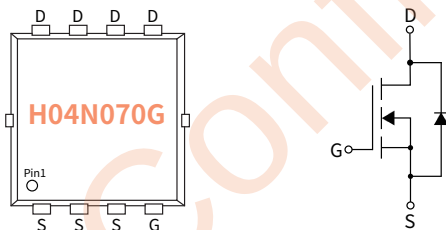
Applications

- DC-DC Converters
- Portable equipment application
- Motor Control

Mechanical Data

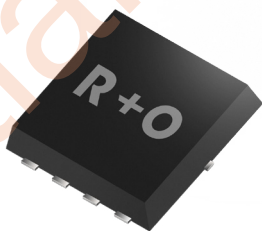
- Case: PDFN3030
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Drain-source Voltage
40 V
Drain Current
48 Ampere

PDFN3030



Ordering Information

Table with 7 columns: PACKAGE, PACKAGE CODE, UNIT WEIGHT(g), REEL(pcs), BOX(pcs), CARTON(pcs), DELIVERY MODE. Row 1: PDFN3030, R3, 0.0218, 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, 48), Pulsed Drain Current (IDM, A, 192), Total Power Dissipation (PD, W, 48), Single pulse avalanche energy (EAS, mJ, 110), Junction temperature (TJ, °C, -55 ~+150), Storage temperature (Tstg, °C, -55 ~+150), Thermal Resistance Junction-to-Case (RθJC, °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 =250μA	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} = ±20V, V _{DS} =0V	nA	—	—	±100
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	V	1.0	1.5	2.5
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(ON)}	V _{GS} = 10V, I _D =20A	mΩ	—	4.8	6.5
		V _{GS} = 4.5V, I _D =10A		—	6.2	8

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHZ	pF	—	910	—
Output Capacitance	C _{oss}			—	478	—
Reverse Transfer Capacitance	C _{rss}			—	12.5	—

● Switching Parameters

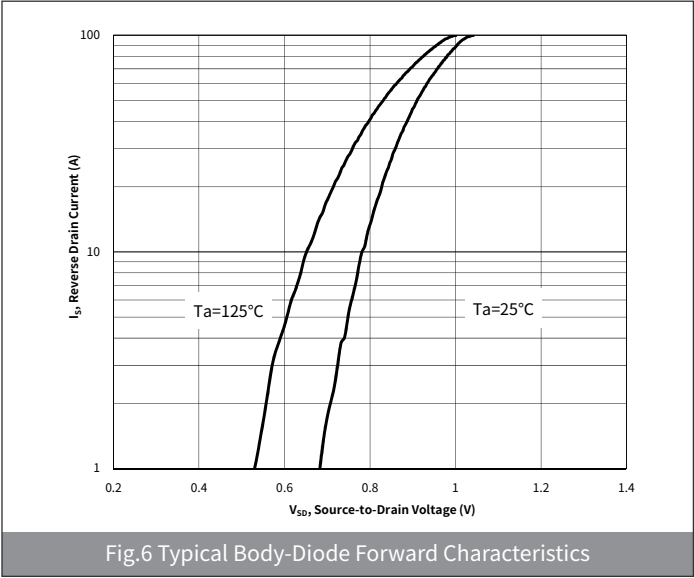
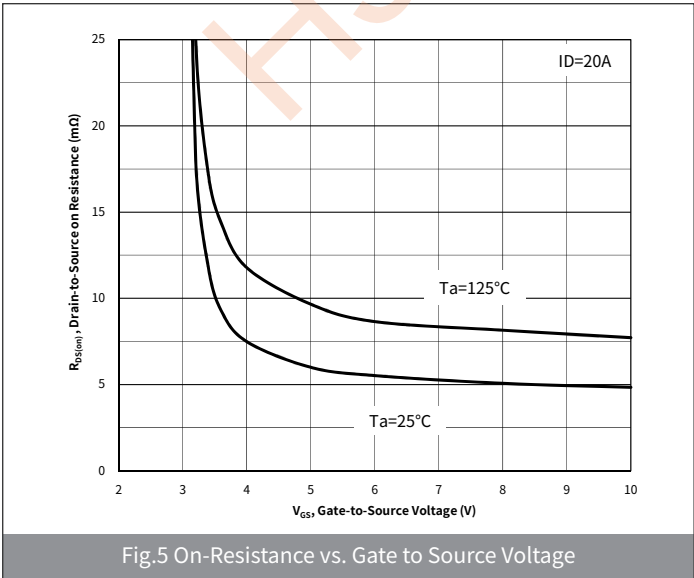
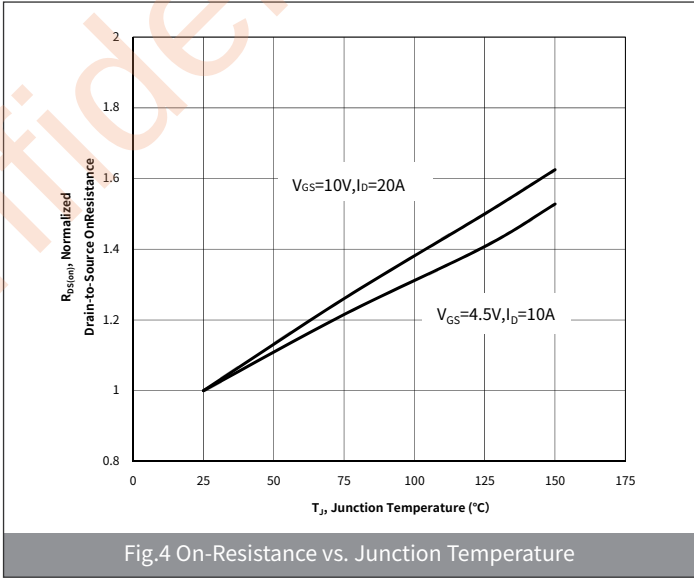
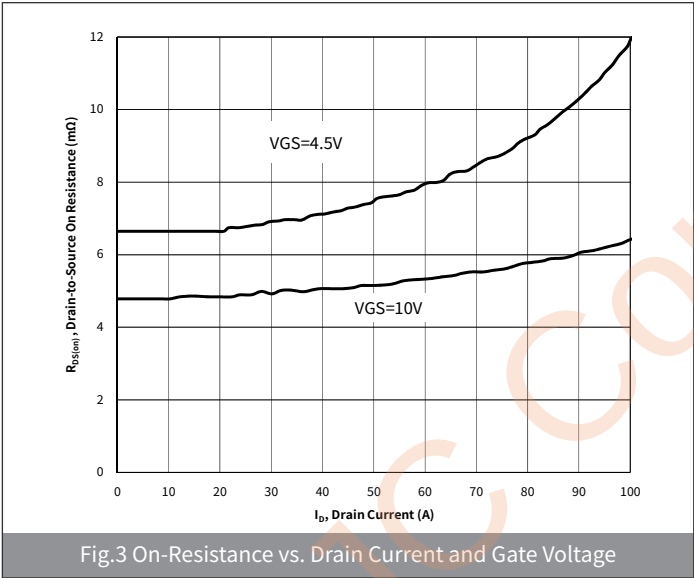
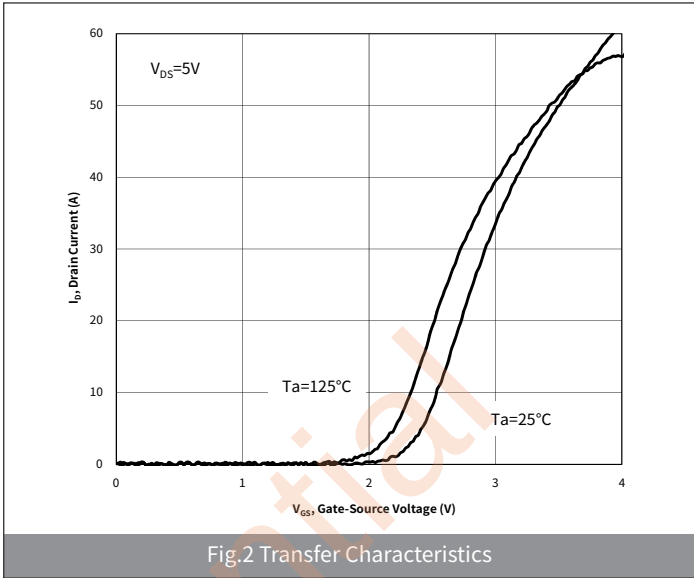
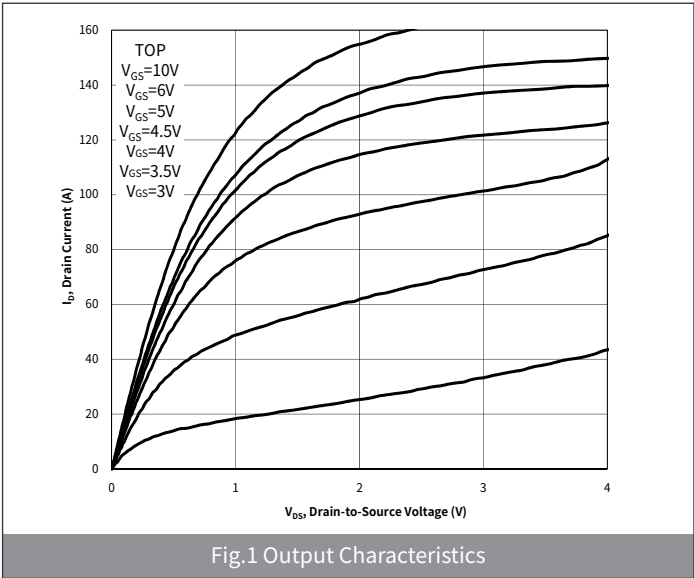
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =30A ,R _{GEN} =3Ω	nS	—	11.8	—
Turn-on Rise Time	t _r		nS	—	56	—
Turn-off Delay Time	t _{D(off)}		nS	—	15.6	—
Turn-off fall Time	t _f		nS	—	6.2	—
Total Gate Charge	Q _g	V _{DS} =20V, I _D =30A V _{GS} =10V	nC	—	16	—
Gate-Source Charge	Q _{gs}		nC	—	5.1	—
Gate-Drain Charge	Q _{gd}		nC	—	5.2	—

● Drian-Source Diode Characteristics

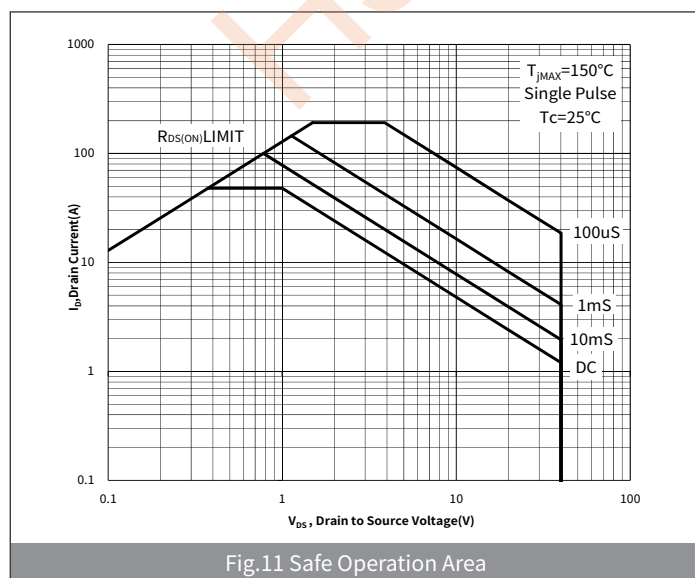
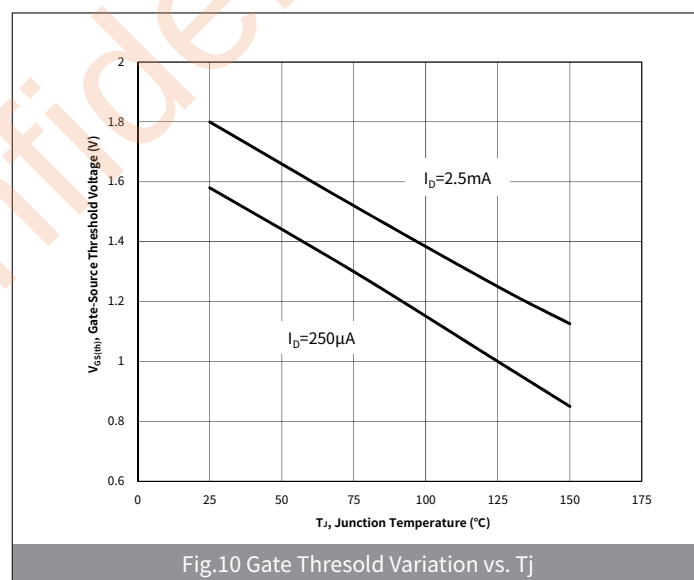
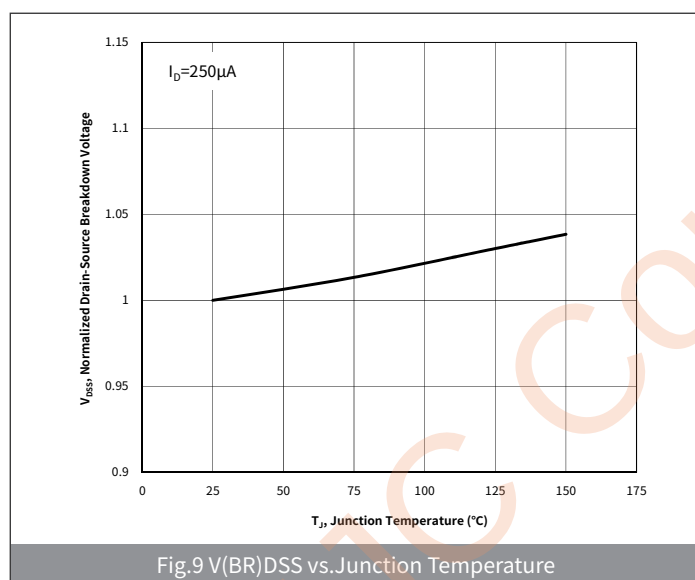
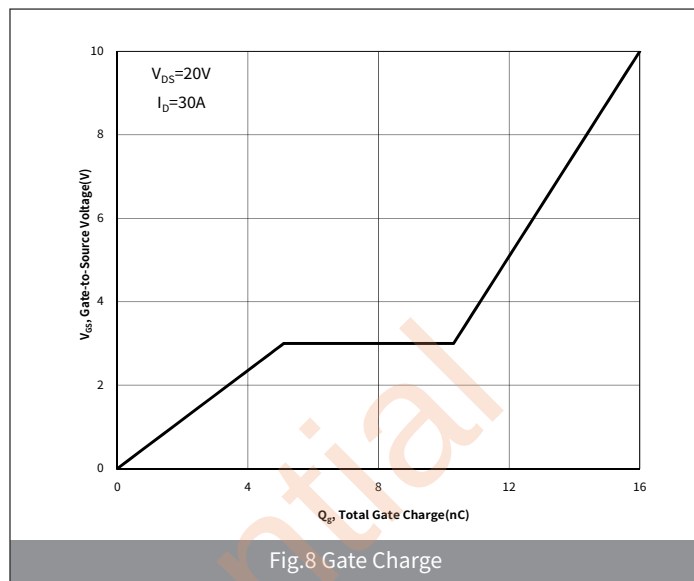
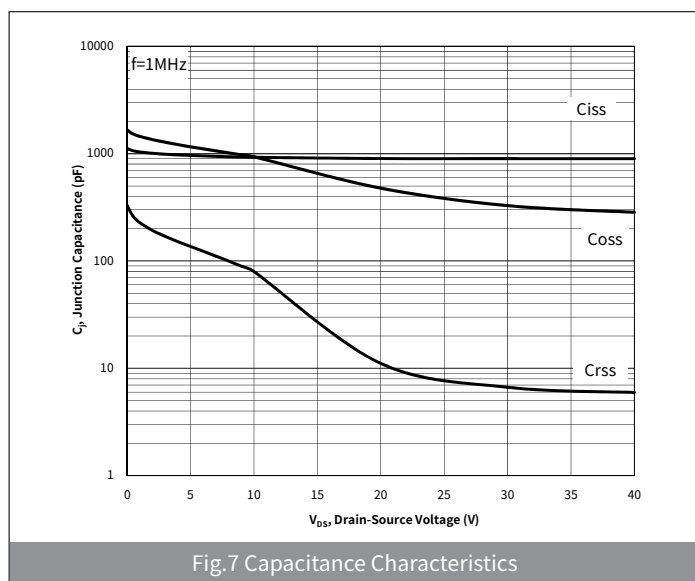
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =48A, V _{GS} =0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	48
Reverse recover time	T _{rr}	I _S =48A, di/dt=100A/us, Tj=25°C	nS	—	24	—
Reverse recovery charge	Q _{rr}		nC	—	16	—

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=21A,Rg=25Ω.
(3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

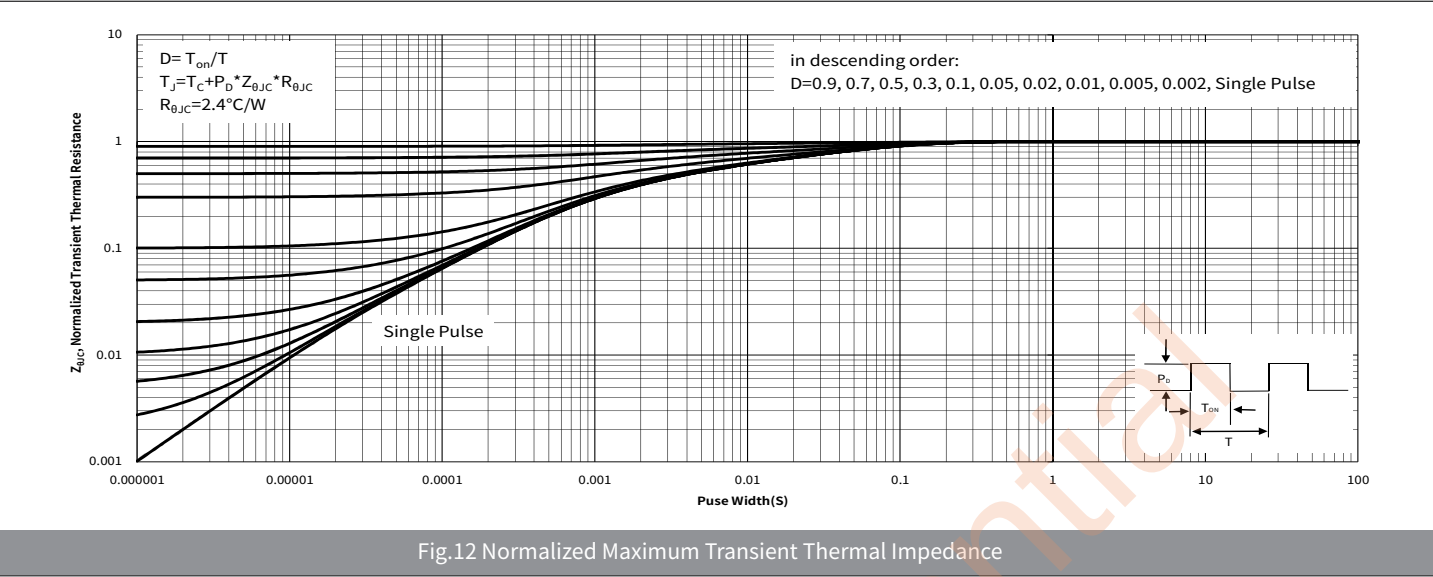
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



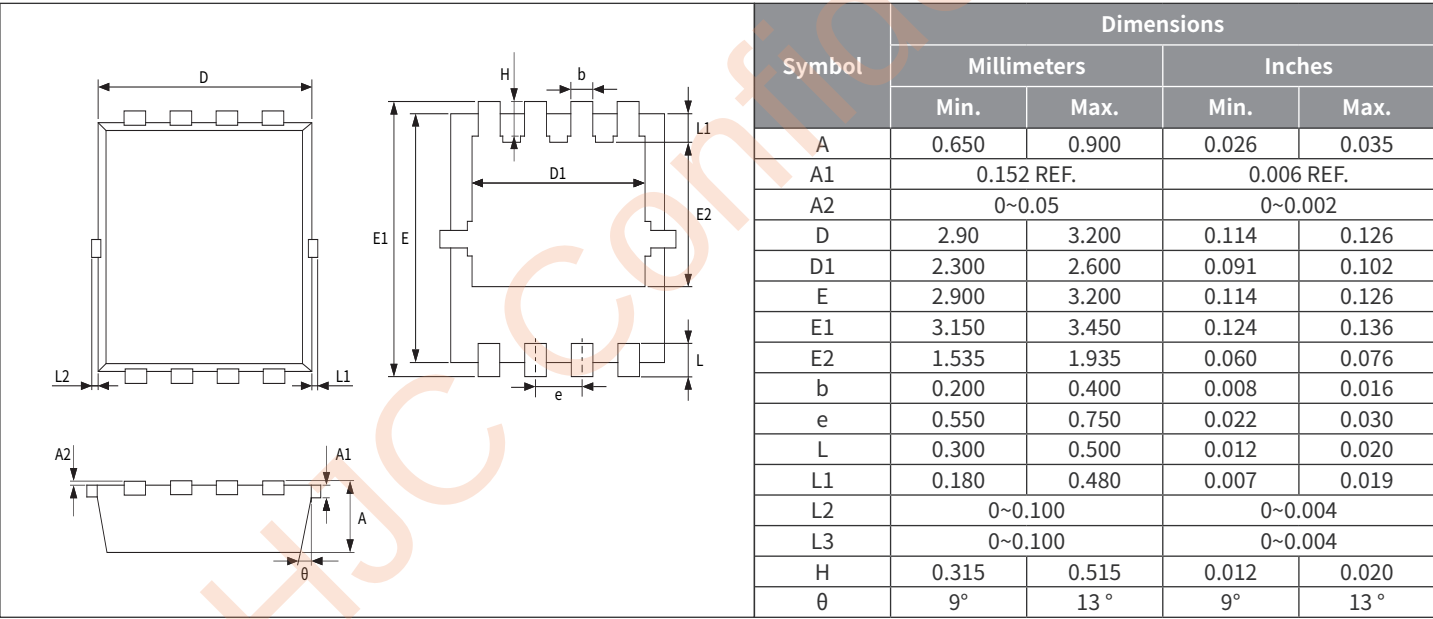
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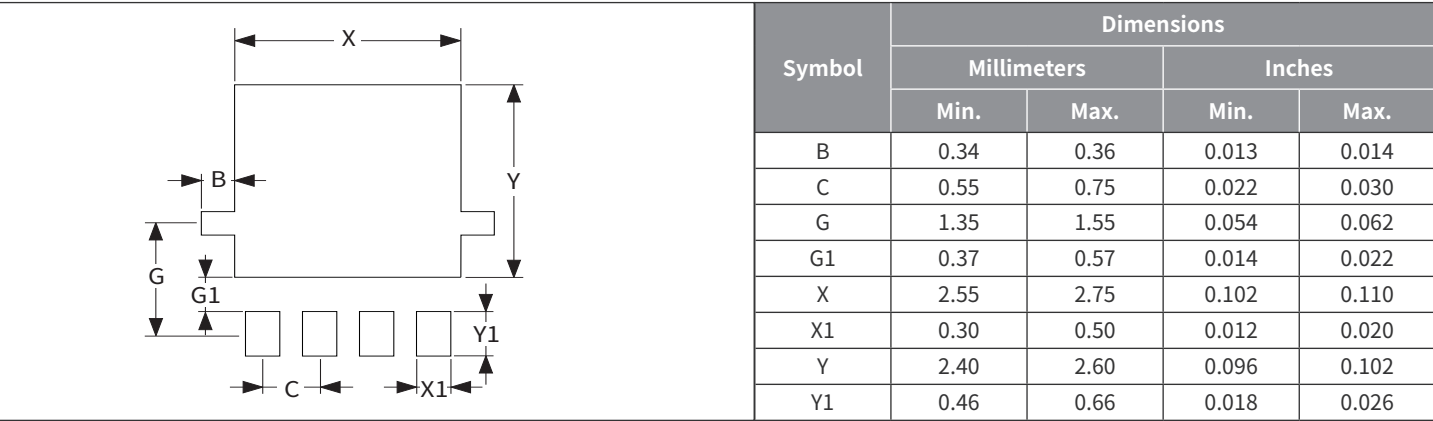
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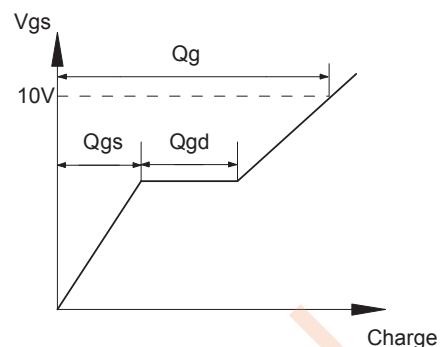
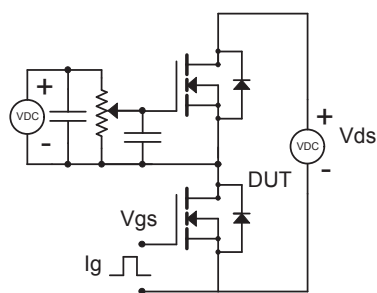
● Package Outline Dimensions (PDFN3030)



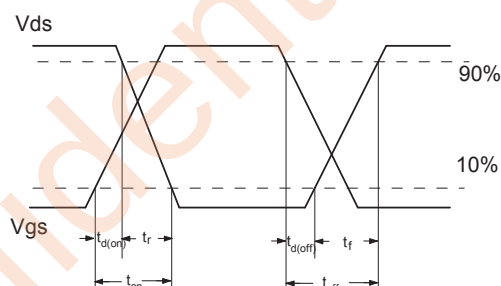
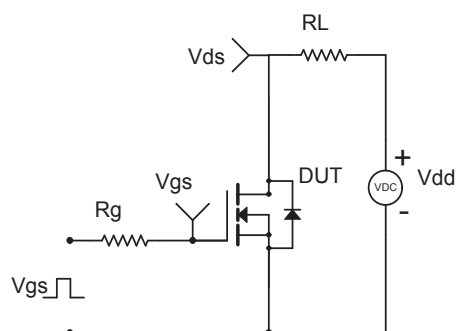
● Suggested Pad Layout



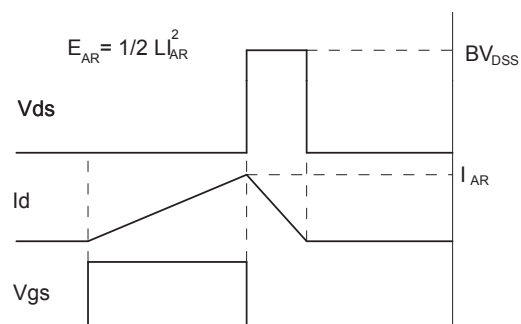
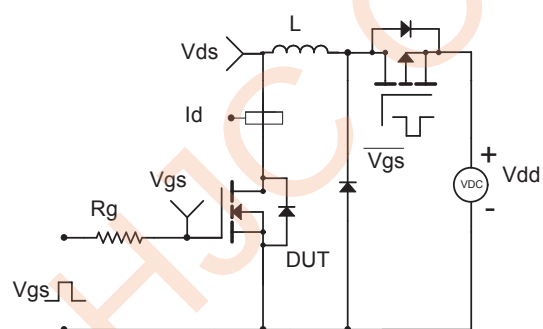
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

