

PDFN3030 Plastic-Encapsulate MOSFETS

Features

- VDS=-30V
- ID=-42A
- RDS(on)@VGS=-10V < 12mΩ
- RDS(on)@VGS=-4.5V < 18mΩ
- Trench Power LV MOSFET technology
- Voltage controlled small signal switch
- Fast Switching Speedze

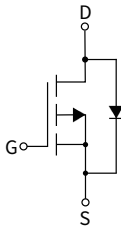
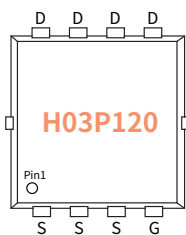
Applications

- Power switching application
- Load switch
- Power management

Mechanical Data

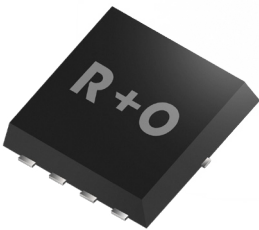
- Case: PDFN3030
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Drain-source Voltage
-30 V
Drain Current
-42 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, 50000, 13"

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

Table with 4 columns: PARAMETER, SYMBOL, UNIT, VALUE. Rows include: Drain-source Voltage (VDS, V, -30), Gate-source Voltage (VGS, V, ±20), Drain Current (ID, A, -42), Pulsed Drain Current (IDM, A, -230), Total Power Dissipation (PD, W, 73.5), Single pulse avalanche energy (EAS, mJ, 56), Junction temperature (TJ, °C, -55 ~+150), Storage temperature (Tstg, °C, -55 ~+150), Thermal Resistance Junction-to-Case (RθJC, °C / W, 1.7).

● 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 =-250μA	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} = ±20V, V _{DS} =0V	nA	—	—	±100
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	V	-1.3	-1.8	-2.4
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(ON)}	V _{GS} = -10V, I _D =-20A	mΩ	—	10.5	12
		V _{GS} = -4.5V, I _D =-15A		—	15.5	18
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-20A	S	—	25	—

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHZ	pF	—	1542	—
Output Capacitance	C _{oss}			—	265	—
Reverse Transfer Capacitance	C _{rss}			—	235	—

● Switching Parameters

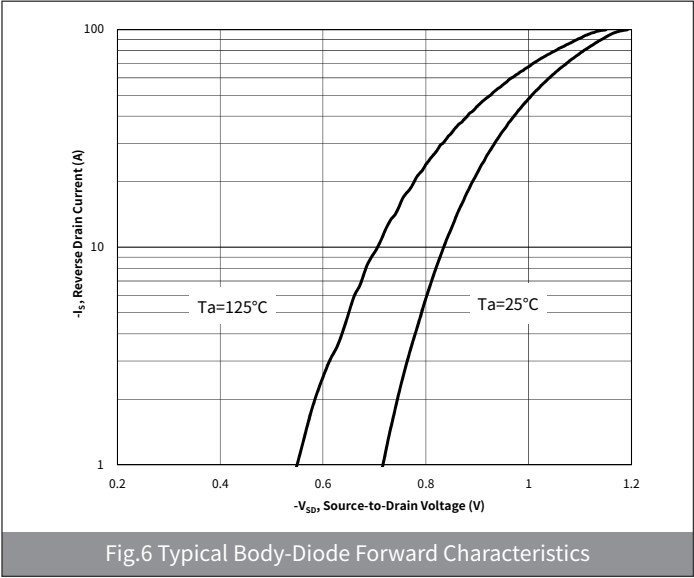
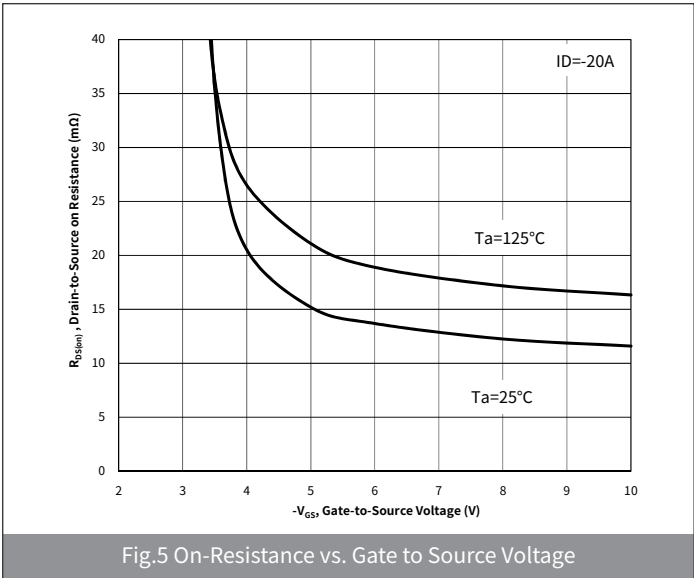
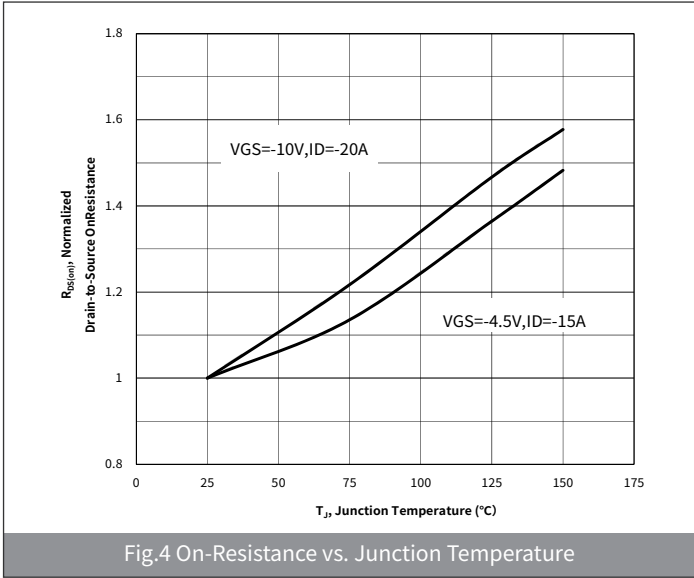
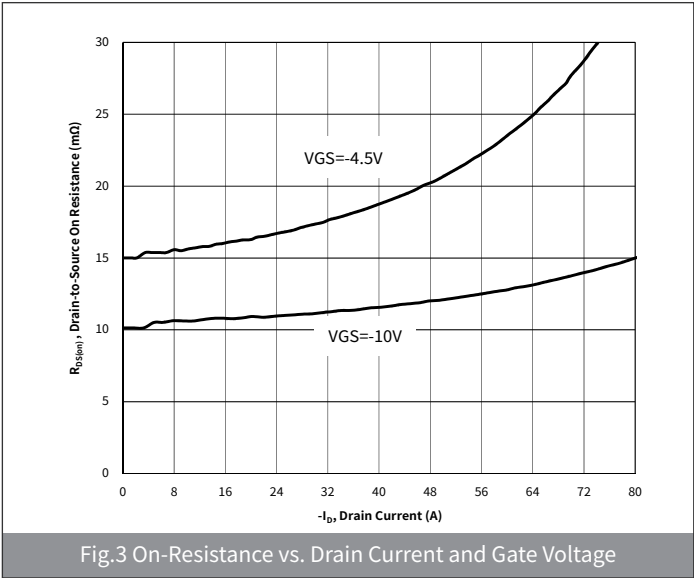
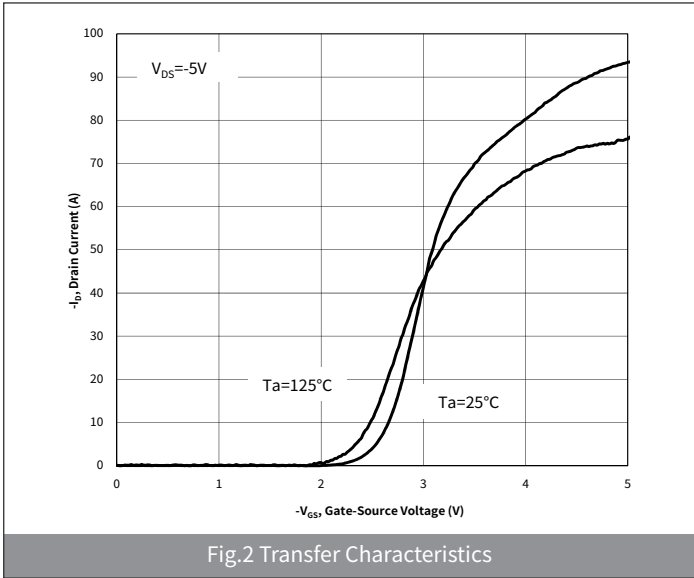
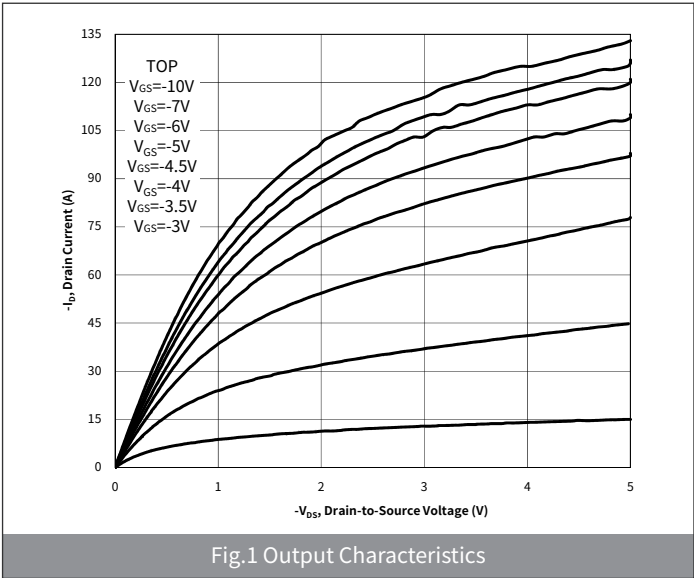
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-15V, I _D =-20A, R _{GEN} =2.7Ω	nS	—	8.5	—
Turn-on Rise Time	t _r		nS	—	54	—
Turn-off Delay Time	t _{D(off)}		nS	—	32	—
Turn-off fall Time	t _f		nS	—	19	—
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-20A V _{GS} =-10V	nC	—	41	—
Gate-Source Charge	Q _{gs}		nC	—	7.7	—
Gate-Drain Charge	Q _{gd}		nC	—	7.8	—

● Drian-Source Diode Characteristics

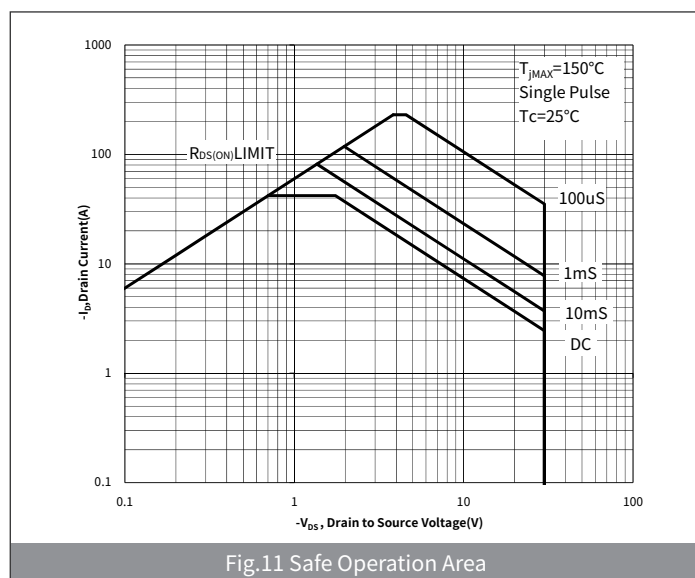
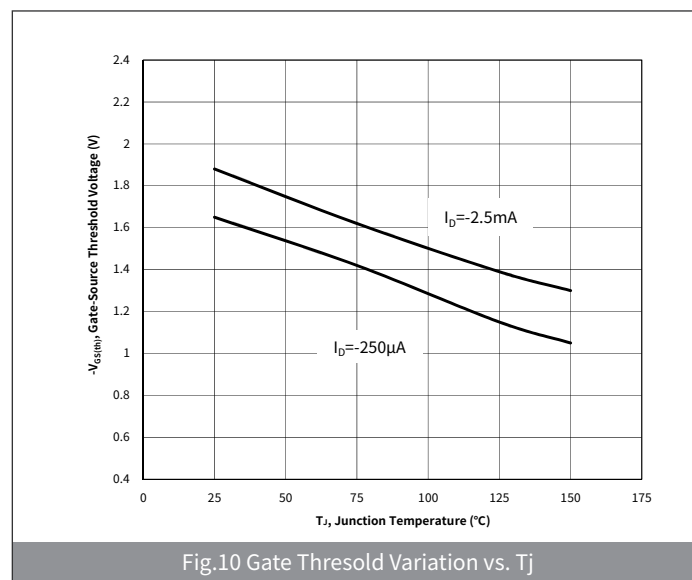
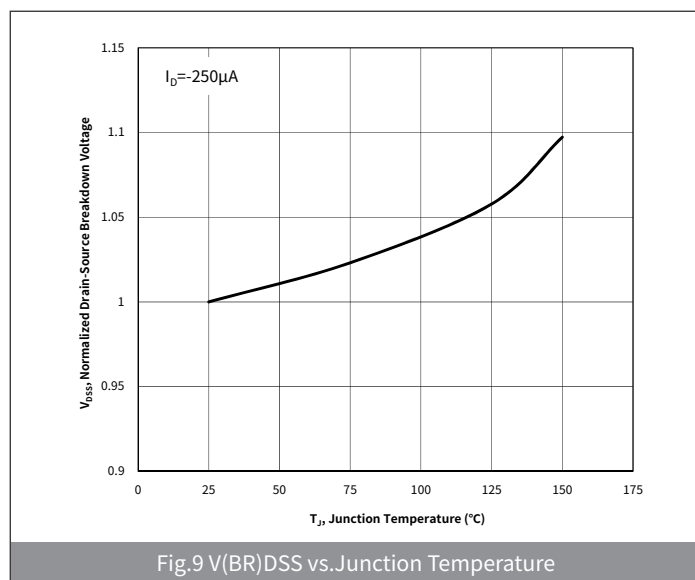
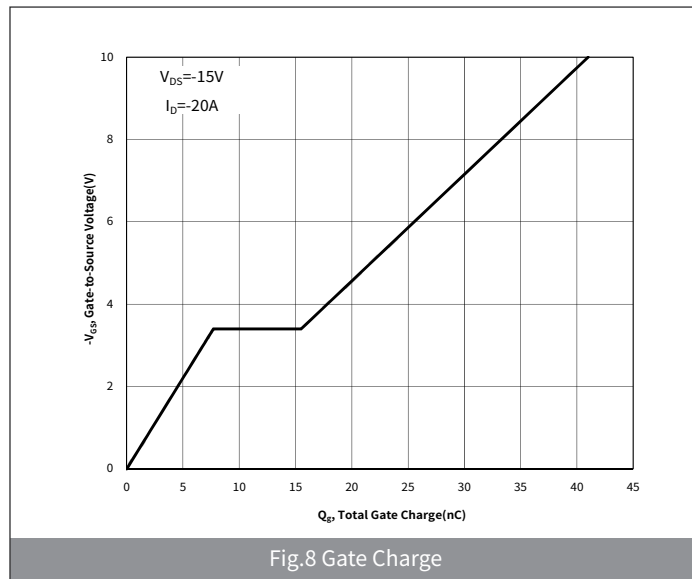
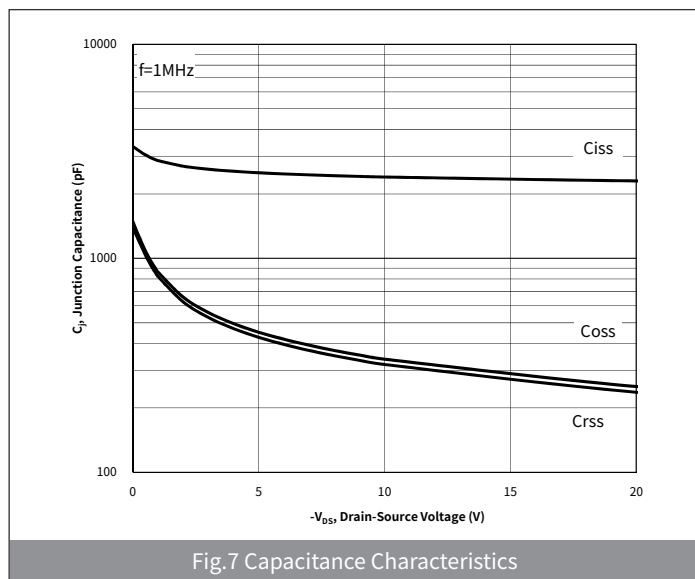
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =-20A, V _{GS} =0V	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	-42
Reverse recovery time	T _{rr}	V _{DD} =-15V I _S =-20A, V _{GS} =0V di/dt=-100A/μs	nS	—	15	—
Reverse recovery charge	Q _{rr}		nC	—	6.6	—

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=-15A,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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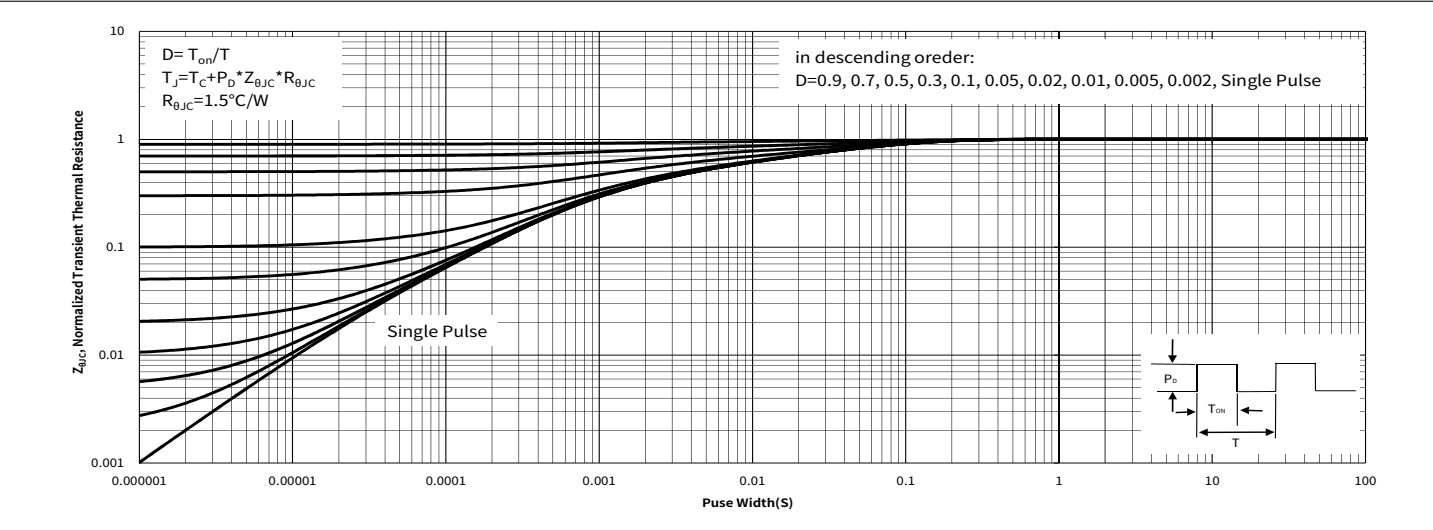
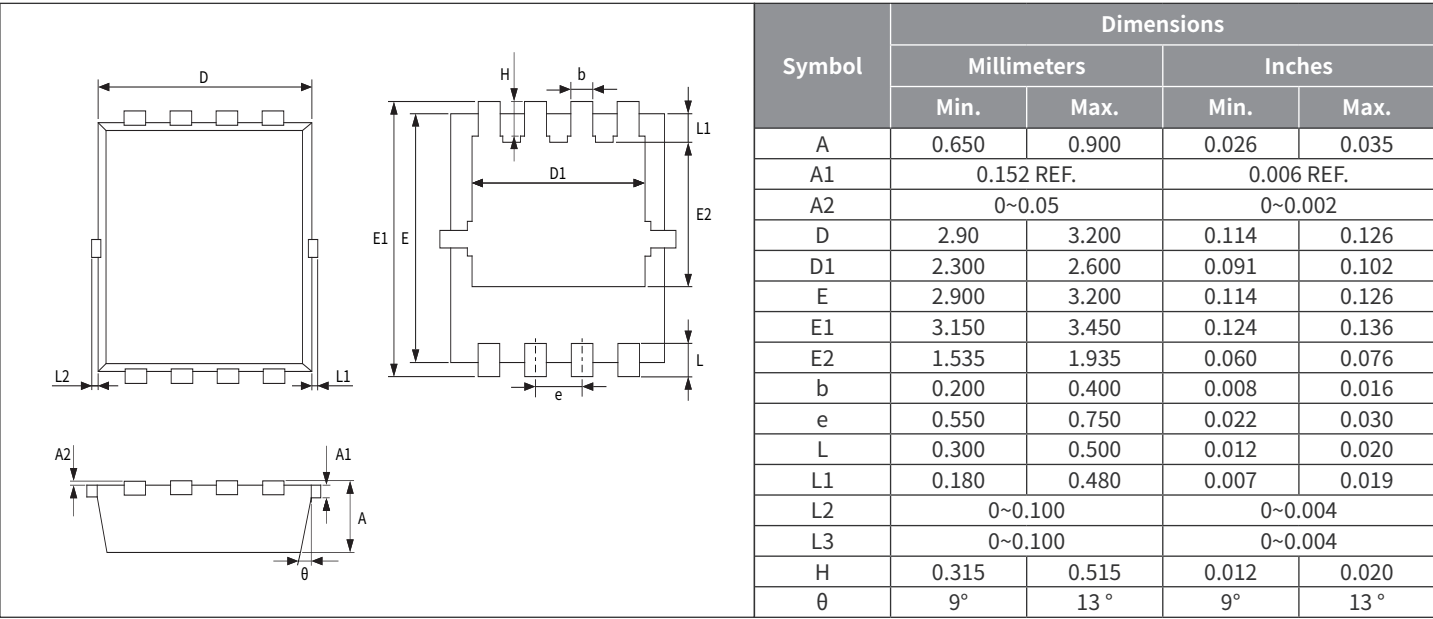
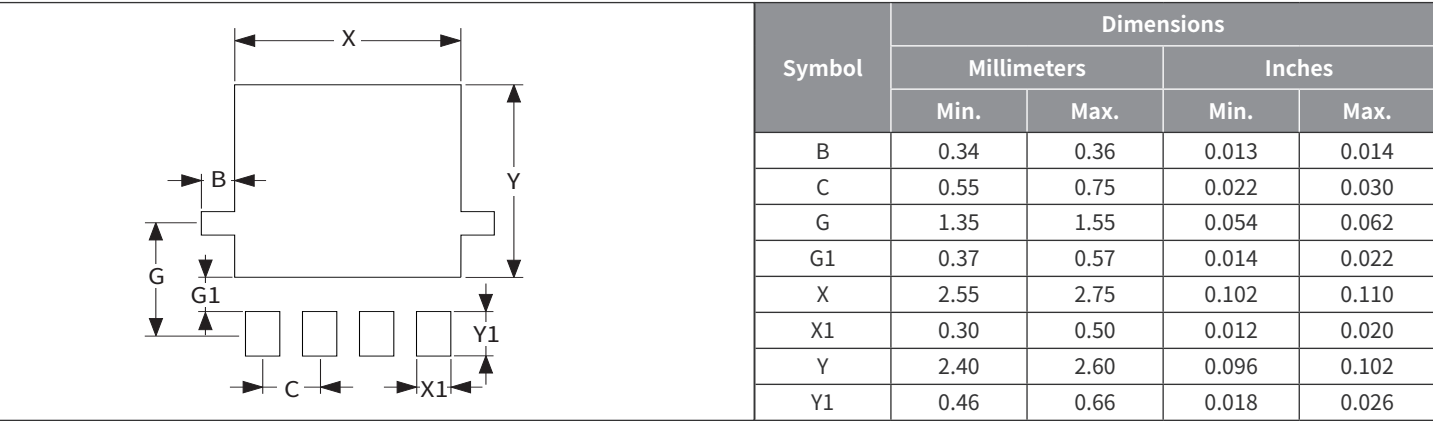


Fig.12 Normalized Maximum Transient Thermal Impedance

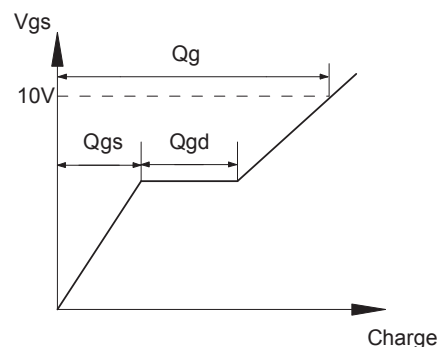
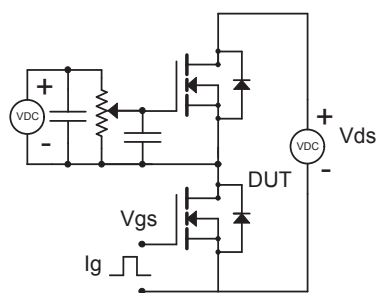
● Package Outline Dimensions (PDFN3030)



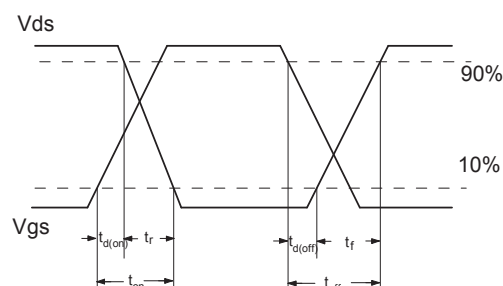
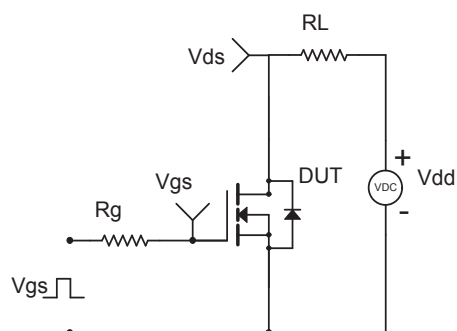
● Suggested Pad Layout



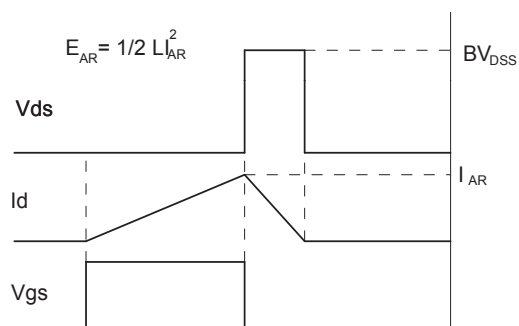
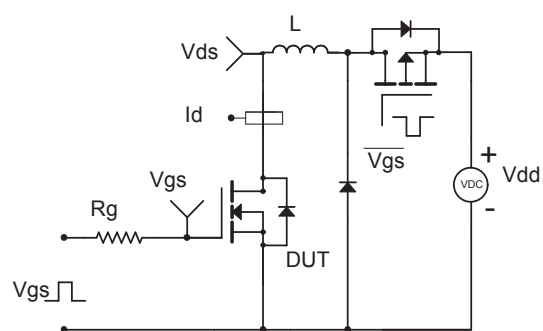
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

