

PDFN3030 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-20V$
- $I_D=-55A$
- $R_{DS(on)}@V_{GS}=-4.5V < 9m\Omega$
- $R_{DS(on)}@V_{GS}=-2.5V < 13m\Omega$
- Trench power LV MOSFET technology
- Voltage controlled small signal switch
- Fast switching speedze

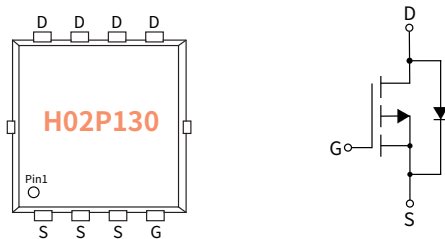
Applications

- Load Switch
- PWM Application
- 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



Ordering Information

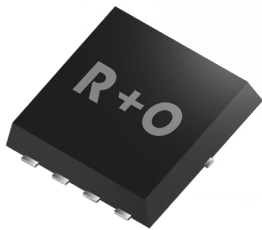
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
PDFN3030	R3	0.0218	5000	10000	80000	13"

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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-20
Gate-source Voltage	V_{GS}	V	± 12
Drain Current	I_D	A	-55
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-220
Total Power Dissipation	P_D	W	37
Single pulse avalanche energy ⁽²⁾	EAS	mJ	35
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	3.3

Drain-source Voltage
-20 V
Drain Current
-55 Ampere

PDFN3030



● 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	-20	—	—
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	μA	—	—	-1.0
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} =0V	nA	—	—	±100
Gate Threshold Voltage ⁽²⁾	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	V	-0.5	-0.9	-1.2
Static Drain-Source On-Resistance ⁽²⁾	R _{DS(ON)}	V _{GS} = -4.5V, I _D =-15A	mΩ	—	6.3	9
		V _{GS} = -2.5V, I _D =-12A		—	9	13

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHZ	pF	—	4585	—
Output Capacitance	C _{oss}			—	583	—
Reverse Transfer Capacitance	C _{rss}			—	490	—

● Switching Parameters

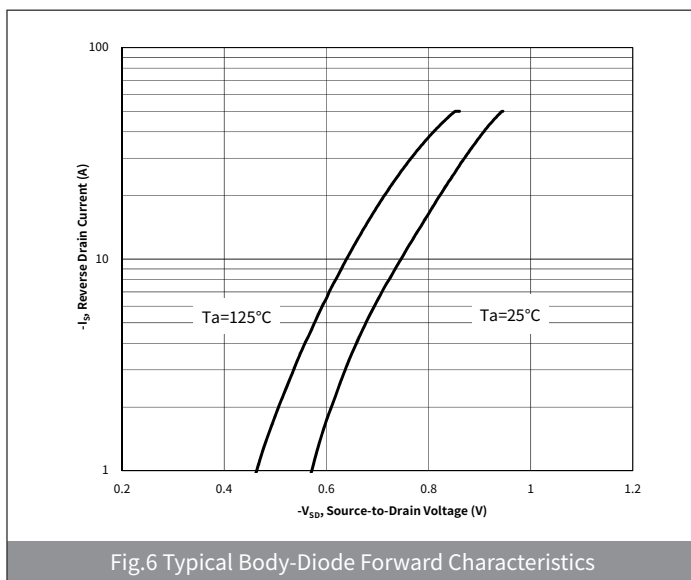
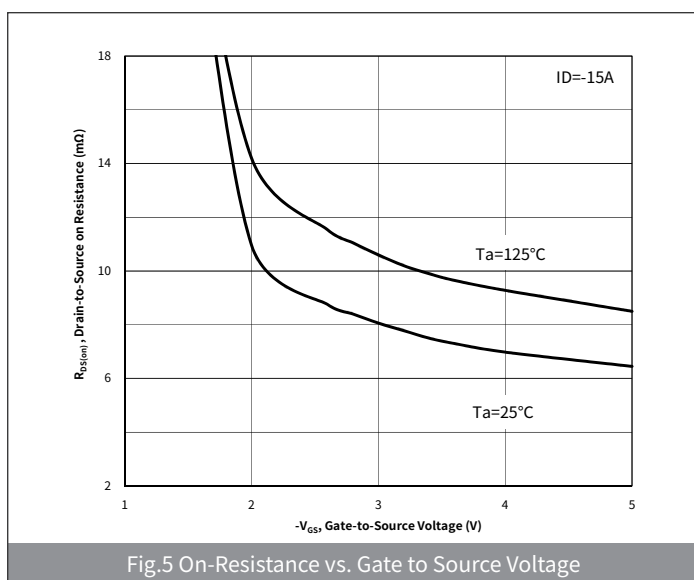
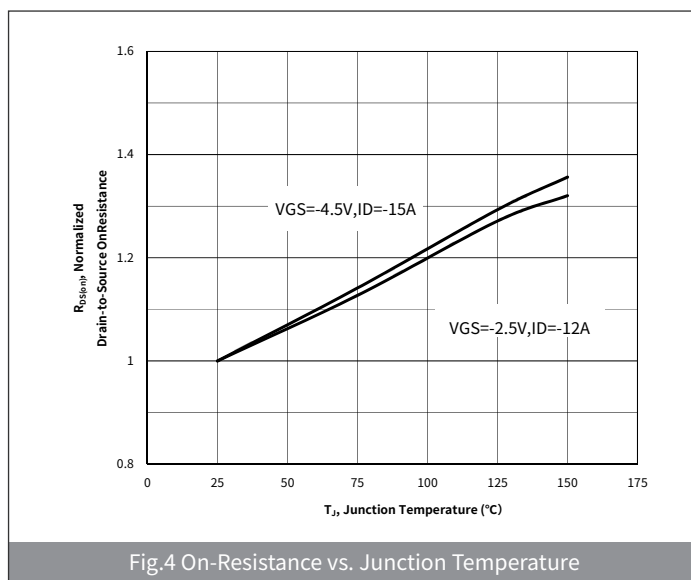
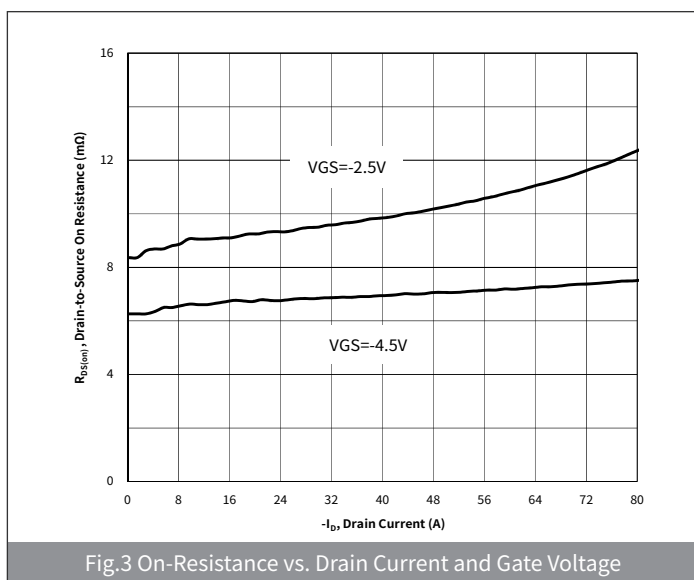
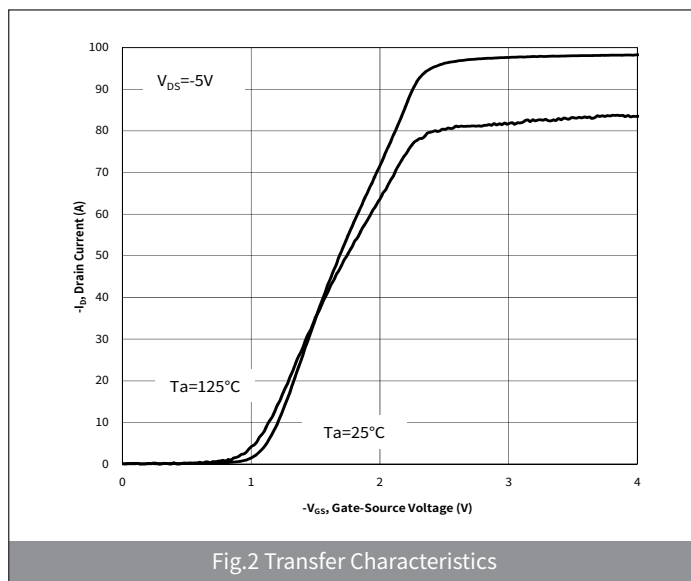
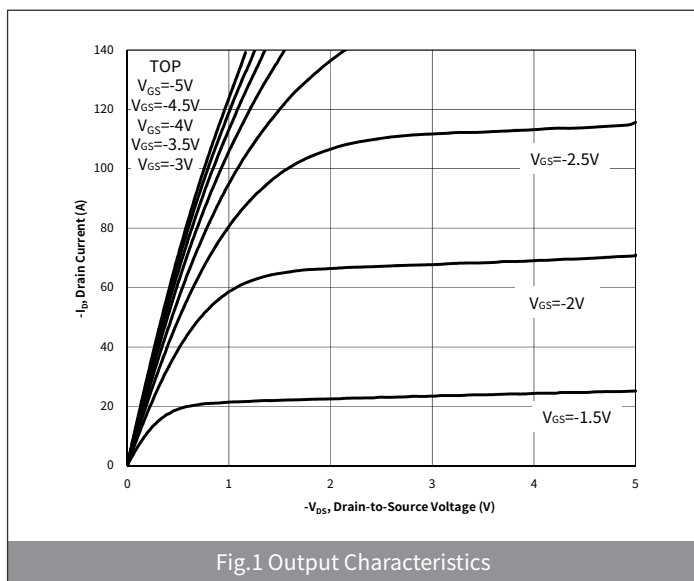
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-10V, I _D =-15A, R _{GEN} =2.7Ω	nS	—	8.4	—
Turn-on Rise Time	t _r		nS	—	69	—
Turn-off Delay Time	t _{D(off)}		nS	—	117	—
Turn-off fall Time	t _f		nS	—	46	—
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-15A V _{GS} =-4.5V	nC	—	49	—
Gate-Source Charge	Q _{gs}		nC	—	7.7	—
Gate-Drain Charge	Q _{gd}		nC	—	11	—

● Drian-Source Diode Characteristics

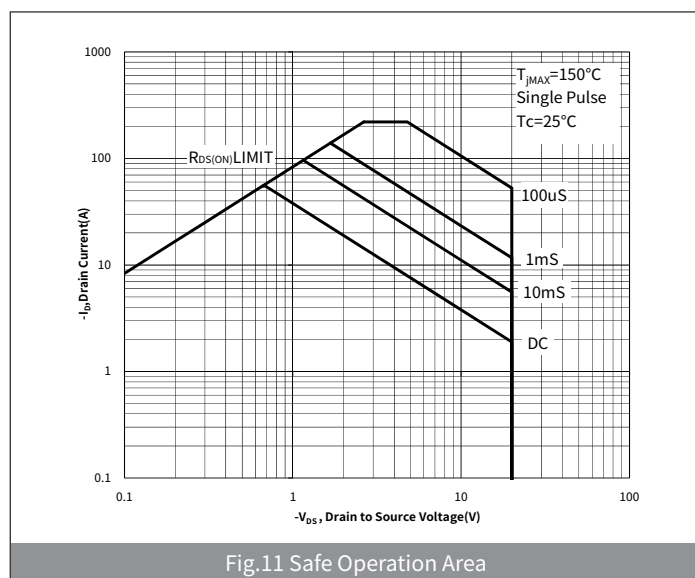
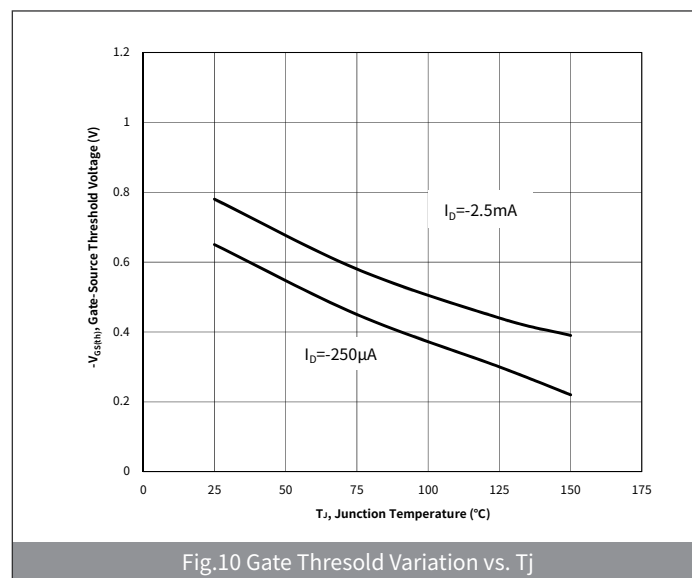
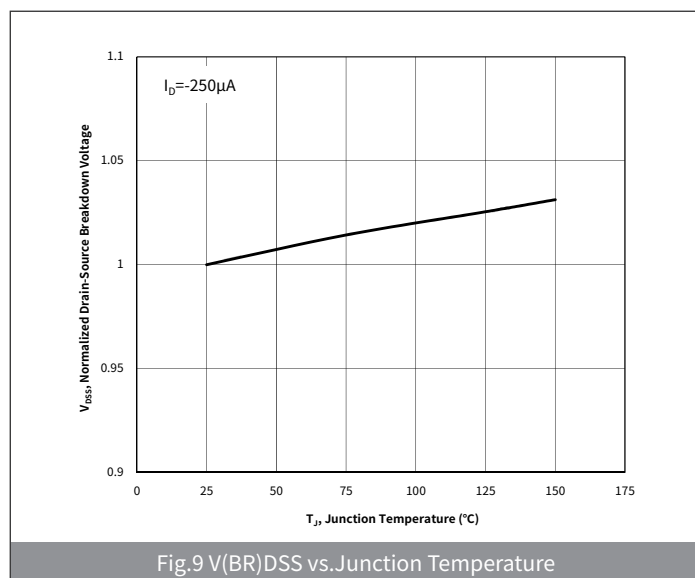
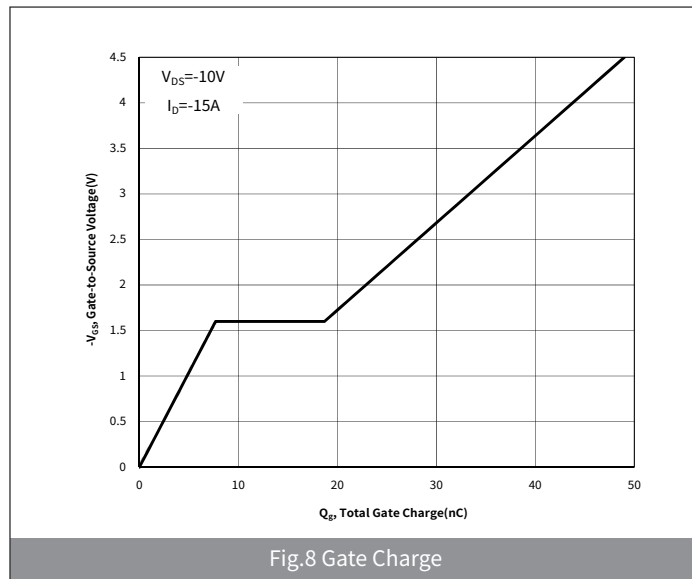
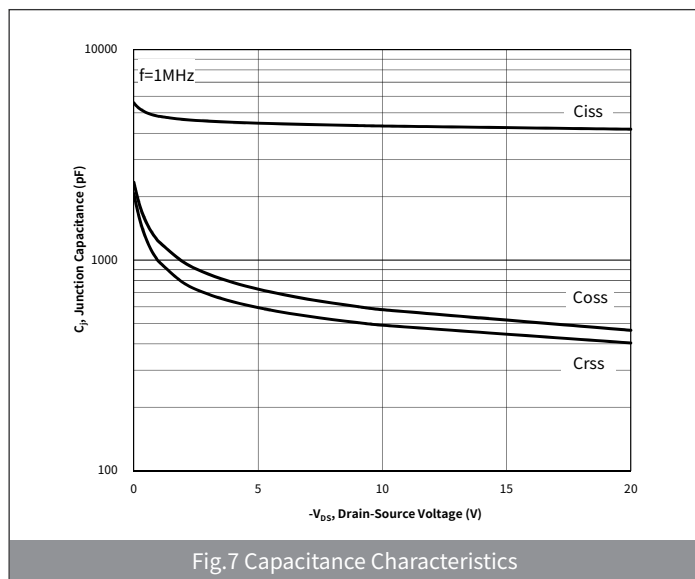
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =-55A, V _{GS} =0V	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	-55
Reverse Recovery Time	T _{rr}	Tj=25°C, I _S =-15A, V _{GS} =0V di/dt=-100A/μs	nS	—	16	—
Reverse Recovery Charge	Q _{rr}		nC	—	7.1	—

Note :
(1) Repetitive Rating: Pulse width limited by maximum junction temperature.
(2) EAS condition : Tj=25°C ,VDD=-10V,VG=-4.5V,L=0.5mH,IAS=-12A,Rg=25Ω.
(3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

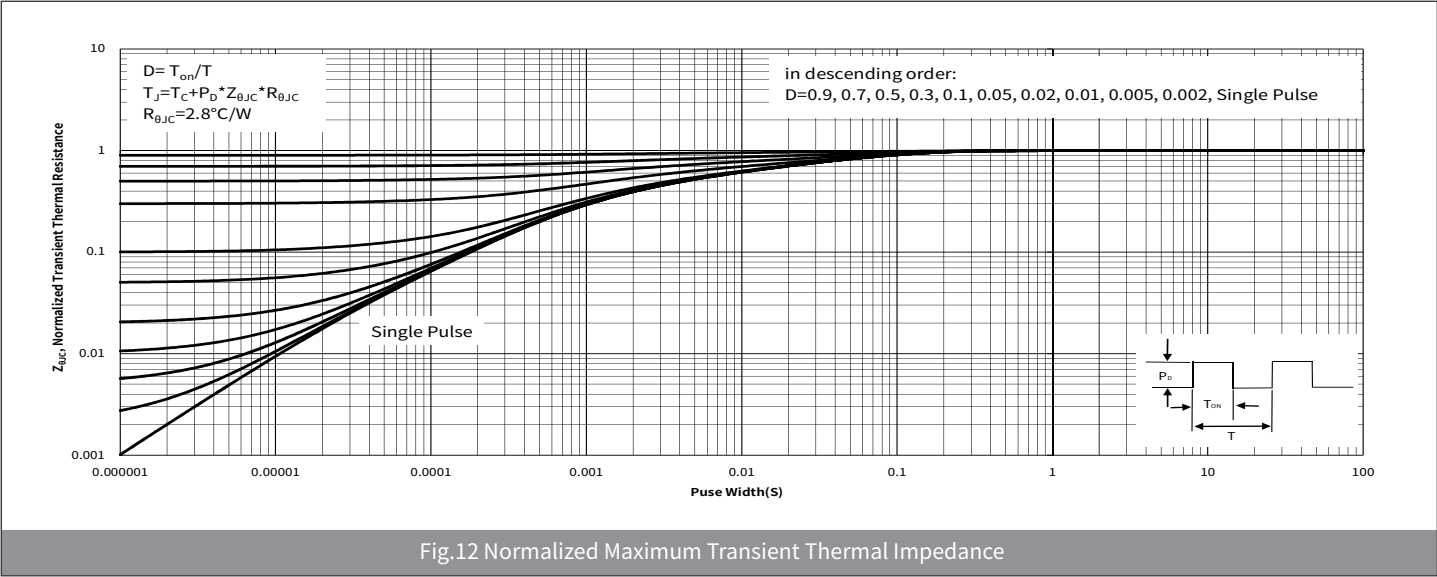
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



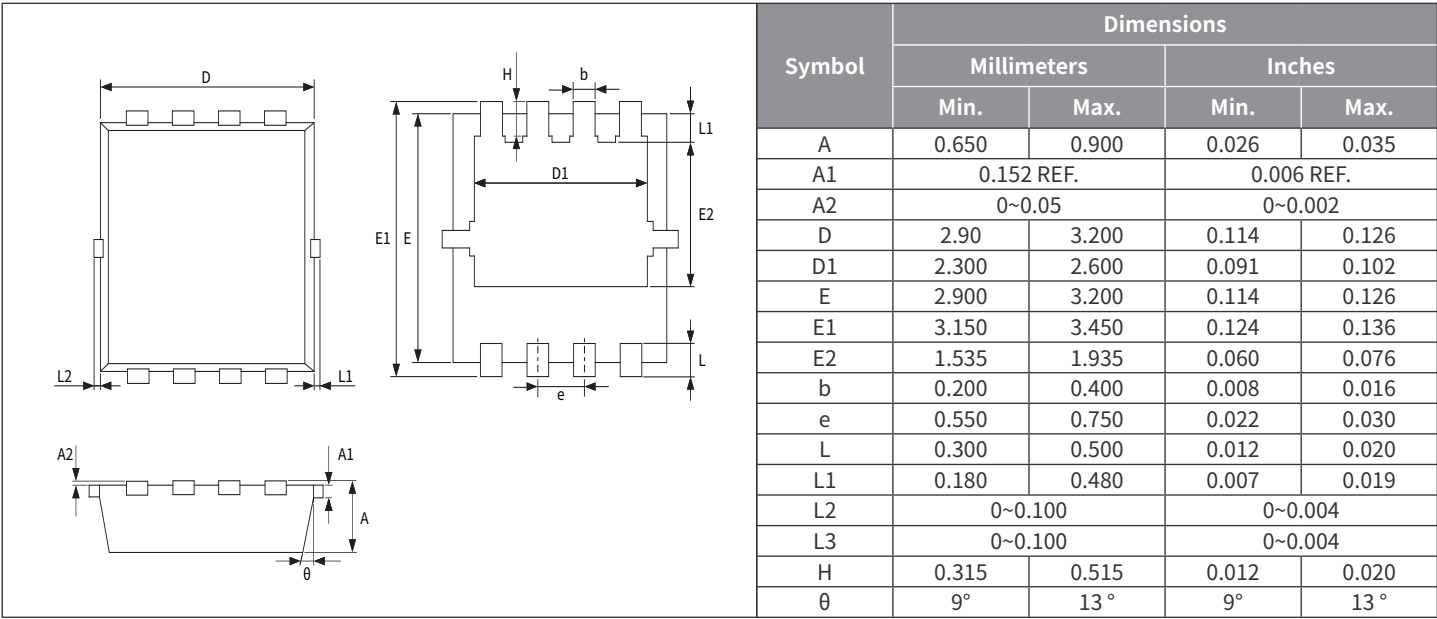
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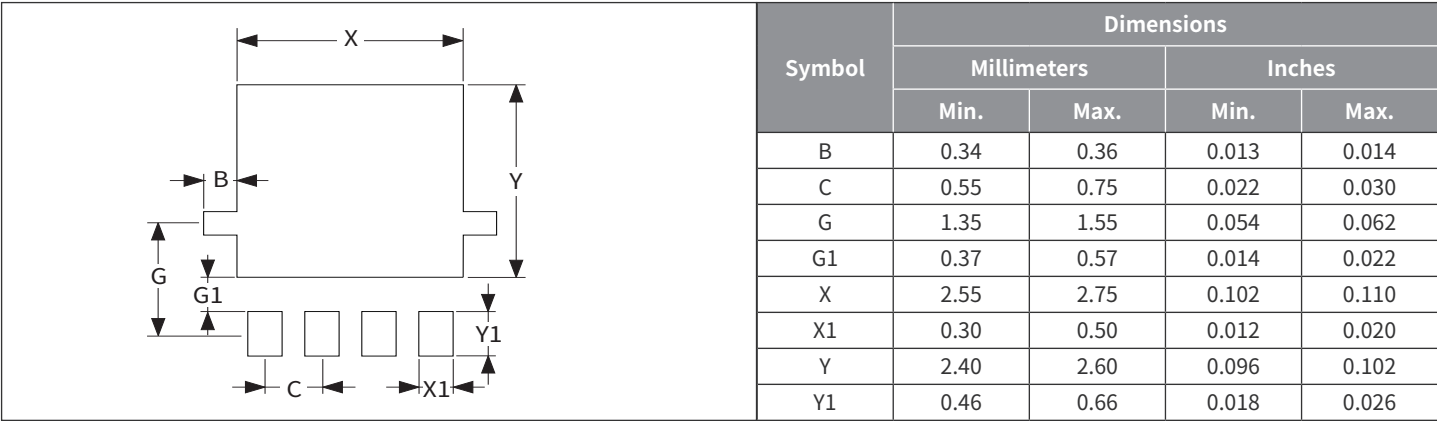
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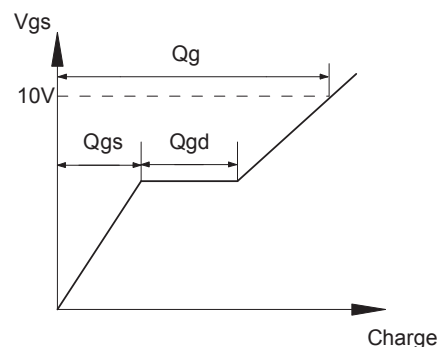
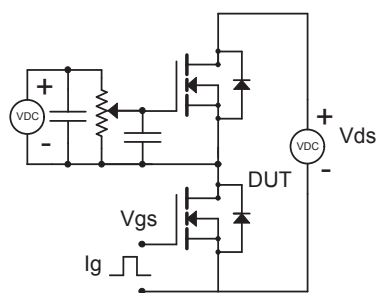
● Package Outline Dimensions (PDFN3030)



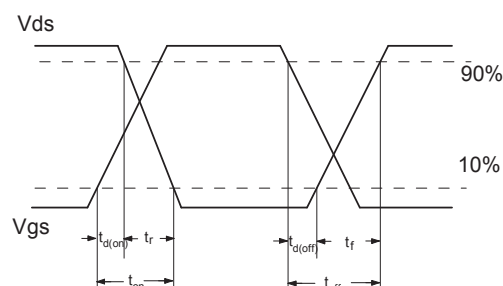
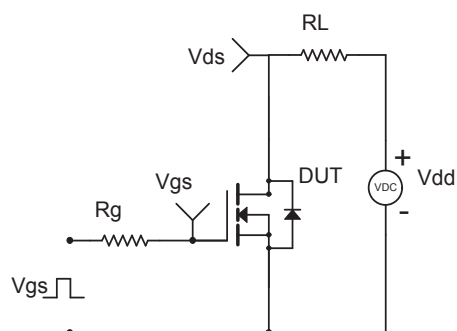
● Suggested Pad Layout



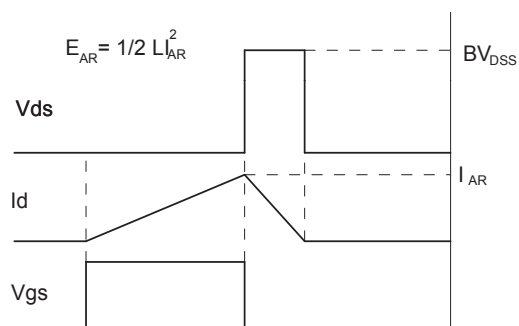
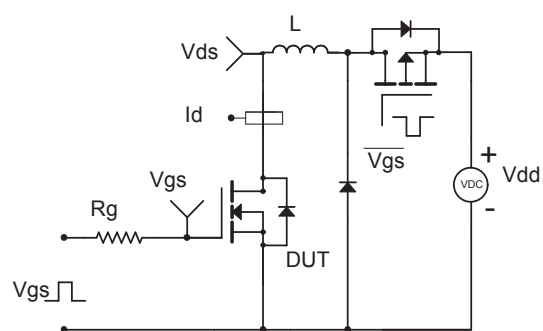
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

